

THE APPLICATION OF IMAGERY TO ENHANCE “FLOW STATE” IN  
DANCERS

EUN-HEE JEONG

DOCTOR OF PHILOSOPHY

SCHOOL OF SPORT AND EXERCISE SCIENCE  
FACULTY OF ARTS, EDUCATION AND HUMAN DEVELOPMENT  
VICTORIA UNIVERSITY

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## STUDENT DECLARATION

“I, Eun-Hee Jeong, declare that the PhD thesis entitled *the application of imagery to enhance “flow state” in dancers* is no more than 100,000 words in length including quotes and exclusive of tables, figures, appendices, and references. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work”.

Signature

Date

## ABSTRACT

In this thesis, I investigated imagery to enhance flow in dancers. To develop an imagery intervention, two Studies (Study 1 and 2) were conducted examining flow and imagery. Based on the findings from Studies 1 and 2, I developed an imagery intervention and tested its efficacy in terms of flow, anxiety, and performance in Study 3. Specifically, the aim of Study 1 was to examine flow experience and imagery use in professional dancers. This was a correlational study that investigated the relationship between flow experience and imagery use as a means of identifying what kind of imagery predicted flow experience during performance and training. The participants were 89 professional dancers of both genders (female=74; male=15), aged from 20 to 38 ( $M = 27.41$ ;  $SD = 4.03$ ). The Flow State Scale-2 (FSS-2), Dispositional Flow Scale-2 (DFS-2), and Sport Imagery Questionnaire (SIQ) were used to assess the flow state and dispositional experience of flow related to performance and training, and to assess imagery use in dance. The results showed that correlations between dimensions of flow and imagery use levels varied from moderate to high. In particular, autotelic experience was the flow dimension most strongly involved in dancers' flow experience, whereas, loss of self-consciousness demonstrated the weakest association. In addition, the results showed that these professional dancers found it easier to attain flow in training than performance (frequency; DFS-2), whereas, when dancers experienced flow during performance, typically, it was more intense (FSS-2) than it was in training. Moreover, there were strong correlations between flow experience and imagery use in dancers. Specifically, multiple regression analyses showed that motivational general mastery imagery and cognitive specific imagery were significant predictors of dispositional flow, and motivation-general-mastery imagery, cognitive general imagery, and cognitive

specific imagery were predictors of flow state. To summarise, results of this study indicated that for enhancing flow experience, dancers should be encouraged to use imagery related to motivational general mastery for training and cognitive specific imagery for performance. Research is needed to explore flow and imagery use related to flow experience in-depth, and to help enhance flow state specifically in professional dancers.

Thus, in Study 2, I explored the flow experience, facilitators of flow, and imagery use related to flowthrough in-depth interviews with professional Korean dancers. Dancers ( $N = 20$ ) were interviewed to explore their experience of the optimal psychological state of flow, to identify the facilitators of flow, and to identify how they used imagery to enhance flow. The results showed that dancers did experience flow states and they referred to many of the nine antecedents of flow. In addition, the facilitators of flow were achieving optimal arousal level, self-confidence, satisfying oneself, motivating oneself, exploring the dance and one's role in the performance, uniting of movement and music, positive thoughts, and communication with the audiences based on their positive response. Furthermore, dancers used imagery to retrieve bodily sensations, to become absorbed in the performance, to explore the feeling of movements, to connect to the stream of performance in each scene, and to create links between thinking and movement of the body. All the results in the first two studies provided support for the potential for imagery to enhance flow among dancers. Based on the results of these two studies, I devised the third study in this thesis to test the efficacy of an intervention designed to enhance flow state in dancers by using imagery during dance practice.

The purpose of Study 3, the final study, was to examine the effects of imagery intervention programs, focusing on flow imagery and relaxation imagery,

respectively, for enhancing dancers' motivation and dancers' self-confidence, which are key components of flow state. The participants were 64 professional dancers. They were randomly assigned to two conditions, flow imagery training ( $n = 33$ ), and pleasant place relaxation imagery training ( $n = 31$ ) as an attention control condition. Participants were asked to train using their assigned imagery intervention three times a week for 8 weeks. Then I encouraged participants to use their imagery script for another 8 weeks. The Flow State Scale-2 (FSS-2), Dispositional Flow Scale-2 (DFS-2), Sport Imagery Questionnaire (SIQ), and State-Trait Anxiety Inventory (STAI-Form Y) were used to assess the flow state and dispositional experience of flow related to performance and training, and to assess imagery use and anxiety in relation to dance training and performance. I devised a Dance Rating Scale, which dancers and teachers completed to assess performance. The flow imagery intervention was designed to evoke the flow experience focusing on facilitators of flow associated with self-confidence, positive thoughts, and exploring the dance and one's role in the performance. The relaxation imagery intervention was a simple pleasant place relaxation script designed to help dancers relax their mind and body. Thus, I hypothesized that the flow imagery intervention would enhance the flow experiences of dancers, reduce anxiety, and improve performance, whereas the relaxation imagery intervention, largely considered to be an attention placebo condition, would not influence flow state or disposition, or performance. However, the results revealed that both flow and relaxation imagery interventions had positive effects on state and dispositional flow, state anxiety, and performance. I concluded that flow and relaxation imagery training were valuable techniques with the potential to enhance the experience of flow, as well as performance.

Overall, results indicated that dancers experienced flow and used different kinds of imagery for a variety of purposes. Additionally, flow and relaxation imagery were effective for enhancing optimal positive experience and performance in dance.

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## TABLE OF CONTENTS

STUDENET DECLARATION.....	ii
ABSTRACT.....	iii
ACKNOWLEDGMENTS.....	vii
TABLE OF CONTENTS.....	viii
LIST OF TABLES.....	xv
LIST OF FIGURES.....	xvii
CHAPTER 1: INTRODUCTION.....	1
CHAPTER 2: LITERATURE REVIEW.....	6
Introduction.....	6
Nature of Dance.....	6
Flow in Sport.....	9
Definition of Flow.....	9
Dimensions of Flow.....	12
Challenging Activity and Required Skills.....	13
Merging of Action and Awareness.....	13
Clear Goals and Unambiguous Feedback.....	14
Concentration on the Task at Hand.....	14
Sense of Control.....	15
Loss of Self-consciousness.....	15
Transformation of Time.....	16
Autotelic Experience.....	17
Measurement of Flow.....	18
Experience Sampling Method (ESM).....	18
Qualitative Approach Using In-Depth Interviews.....	19



Quantitative Approach Using Questionnaires for Flow State and	
Dispositional Flow.....	19
Flow research in Sport .....	22
Flow research in Dance .....	35
Imagery in Sport .....	42
Definitions of Imagery.....	43
Theories of Imagery.....	44
Measurement of Imagery.....	50
Research on Imagery Related to Flow in Sport.....	54
Imagery and Performance.....	55
Imagery, Psychological Variables, and Performance.....	58
Imagery Interventions Related to Flow.....	67
Guidelines for Designing Imagery Interventions.....	73
Research on Imagery in Dance.....	77
The Present Thesis.....	88
CHAPTER 3: RELATIONSHIP BETWEEN FLOW EXPERIENCE AND	
IMAGERY USE IN DANCERS.....	90
Introduction.....	90
Method.....	91
Participants.....	91
Design .....	91
Measures.....	92
Procedures.....	94
Translation Procedures.....	94
General Procedure.....	94

Analysis.....	95
Results.....	96
Internal Consistency Reliability.....	96
Correlations between Flow and Imagery.....	101
Regression.....	104
Discussion.....	109
Internal Consistency Reliability of Flow and Imagery in Questionnaire subscales.....	109
Description of Flow and Imagery.....	112
Correlations between Flow and Imagery.....	113
Regression Analysis for Variables Predicting Flow.....	115
Methodological Issues and Future Research.....	118
CHAPTER 4: FLOW EXPERIENCES AND IMAGERY USE IN KOREAN DANCERS.....	120
Introduction.....	120
Method.....	121
Participants.....	121
Measures.....	121
Interview.....	121
Procedures.....	123
Analysis.....	123
Results.....	126
Experience of Flow.....	126
General Dimension 1: Total Concentration.....	128
General Dimension 2: Merging of Action and Awareness.....	129

General Dimension 3: Positive Feelings.....	130
General Dimension 4: Autotelic Experience.....	133
General Dimension 5: Sense of Control.....	135
General Dimension 6: Unambiguous Feedback.....	137
General Dimension 7: Loss of Self-Consciousness.....	138
General Dimension 8: Time Transformation.....	140
Facilitators of Flow.....	141
General Dimension 1: Well-Mastered Technique.....	143
General Dimension 2: Explore Feelings and Sensibilities.....	145
General Dimension 3: Optimal Pre-Dance Condition.....	148
General Dimension 4: Positive Feedback.....	149
General Dimension 5: Confidence and Absence of Anxiety.....	150
General Dimension 6: Total Concentration.....	154
General Dimension 7: Motivation.....	156
Imagery Use to Enhance Flow Experience.....	161
General Dimension 1: Imagery to Improve Performance.....	162
General Dimension 2: Imagery to Develop Confidence and Reduce Anxiety .....	164
General Dimension 3: Imagery to Absorb into Performance.....	165
General Dimension 4: Imagery to Promote Optimal Arousal and Motivation.....	168
Discussion.....	170
Experience of Flow.....	170
Facilitators of Flow and Imagery Use Related to Flow Experience.....	172
Methodological Issues.....	176

Future Research.....	178
Implication for Practice.....	180
CHAPTER 5: IMAGERY INTERVENTION FOR ENHANCEMENT OF FLOW	
EXPERIENCE IN DANCERS.....	183
Introduction.....	183
Method.....	185
Participants.....	185
Experimental Design .....	186
Measures.....	187
Interventions.....	189
Procedure.....	195
Data Analysis.....	196
Results.....	197
Dispositional and State Flow.....	197
Trait and State Anxiety.....	199
Performance.....	202
Discussion.....	206
Methodological Issue.....	211
Implications for Practice.....	216
Future Research.....	218
CHAPTER 6: GENERAL DISCUSSION.....	
Introduction.....	221
Conclusions.....	221
Methodological Issues.....	229
Measurement.....	229

Design of Three Studies.....	231
Implications for Future Research.....	231
Implications for Practice.....	234
Concluding Comments.....	238
REFERENCES.....	239
APPENDIX A – Study 1: Participant information form .....	262
APPENDIX B – Study 1: Consent form for participants.....	264
APPENDIX C – Study 1: Flow State Questionnaire (FSS-2).....	266
APPENDIX D – Study 1: Dispositional Flow Questionnaire (DFS-2).....	268
APPENDIX E – Study 1: Sport Imagery Questionnaire (SIQ).....	270
APPENDIX F – Study 2: Interview guide.....	272
APPENDIX G – Study 2: Participant information form .....	274
APPENDIX H – Study 2: Consent form for participants.....	276
APPENDIX I – Study 3: Information for participants (Relaxation imagery condition).....	278
APPENDIX J – Study 3: Consent form for participants (Relaxation imagery condition).....	280
APPENDIX K – Study 3: Information for participants (Flow imagery condition).....	282
APPENDIX L – Study 3: Consent form for participants (Flow imagery condition).....	283
APPENDIX M – Study 3: Flow imagery script.....	286
APPENDIX N – Study 3: Relaxation imagery script.....	290
APPENDIX O – Study 3: State Anxiety Questionnaire.....	293
APPENDIX P – Study 3: Trait Anxiety Questionnaire.....	294

APPENDIX Q – Study 3: Log about imagery experience.....	295
APPENDIX R – Study 3: Dance rating by dancers.....	297
APPENDIX S – Study 3: Dance rating by teachers.....	298

## LIST OF TABLES

Table 2.1 Measures of Flow Experience in Sport.....	22
Table 2.2 Studies Using Interventions to Enhance Flow in Sport.....	69
Table 2.3 Models or Guidelines for the Delivery or Application of Imagery in Sport.....	75
Table 3.1 Internal Reliability (Cronbach's alpha coefficient) for DFS-2 and FSS-2 in Training and Performance.....	97
Table 3.2 Internal Reliability (Cronbach's alpha coefficient) for the Dance Imagery Questionnaire (DIQ) Subscales.....	98
Table 3.3 Means, Standard Deviations, t-, p-, and d-values for Dispositional Flow in Training and Performance for Dancers.....	99
Table 3.4 Means, Standard Deviations, t-, p-, and d-values for State Flow in Training and Performance for Dancers.....	100
Table 3.5 Descriptive Statistics for Dance Imagery Questionnaire (n = 89).....	101
Table 3.6 Pearson's Product Moment Correlation for Five Imagery Subscales and Global Flow in Training and Performance.....	102
Table 3.7 Pearson's Product Moment Correlations for Nine Flow Subscales and Overall Imagery for DFS-2 and FSS-2 in Training and Performance.....	103
Table 3.8 Summary of Regression Analyses for Variables Predicting Dispositional Flow with Imagery Use as Predictors in Training with Dancers (N = 89)....	105
Table 3.9 Summary of Regression Analyses for Variables Predicting Dispositional Flow with Imagery Use as Predictors in Performance with Dancers (N = 89).....	106
Table 3.10 Summary of Regression Analyses for Variables Predicting State Flow with Imagery Use as Predictors in Training with Dancers (N = 89).....	107

Table 3.11 Summary of Regression Analyses for Variables Predicting State Flow with Imagery Use as Predictors in Performance with Dancers ( $N = 89$ ).....	108
Table 4.1 Characteristics of Flow.....	127
Table 4.2 Facilitators of Flow.....	141
Table 4.3 Imagery to Enhance Flow Experience.....	162
Table 5.1 Means and Standard Deviations for Dispositional Flow and State Flow in the Flow Imagery Condition and the Relaxation Imagery Condition.....	197
Table 5.2 Means and Standard Deviations for Anxiety Trait and Anxiety State in the Flow Imagery Condition and the Relaxation Imagery Condition.....	200
Table 5.3 Means and Standard Deviations for Dancers' and Dance Teachers' Ratings of Performance in the Flow Imagery Condition and the Relaxation Imagery Condition.....	203



## LIST OF FIGURES

Figure 5.1: Means of Pre-, Post-, and Follow-up Tests for Dispositional Flow in the Flow Imagery Condition and Relaxation Imagery Condition.....	198
Figure 5.2: Means of Pre-, Post-, and Follow-up Tests for State Flow in the Flow Imagery Condition and the Relaxation Imagery Condition.....	199
Figure 5.3: Means of Pre-, Post-, and Follow-up test for Trait Anxiety in the Flow Imagery Condition and Relaxation Imagery Condition.....	201
Figure 5.4: Means of Pre-, Post-, and Follow-up test for State Anxiety in the Flow Imagery Condition and Relaxation Imagery Condition.....	202
Figure 5.5: Means of Pre-, Post-, and Follow-up Tests for Dance Teachers' Ratings of Performance in the Flow Imagery Condition and the Relaxation Imagery Condition.....	204
Figure 5.6: Means of Pre-, Post-, and Follow-up Tests for Dancers' Ratings of Performance in the Flow Imagery Condition and the Relaxation Imagery Condition.....	205

## CHAPTER 1: INTRODUCTION

Dance, at the highest level, is a combination of highly disciplined movement skills and artistic interpretation. Putting these factors together in an optimal way is very challenging, because it requires practice for a long period of time in controlled mental and physical conditions (Taylor & Taylor, 1995). When dancers achieve a high skill level, they often experience a sense of ecstasy, that is, enjoyment and happiness, and also experience some feelings of entering a highly concentrated, hypnotic state or "automatic pilot", during practice and performance (Risner, 2000). This quality of experience or optimal psychological state was named "flow" by Csikszentmihalyi (1975), who studied this peak experience in many areas of life, such as the arts, sport, and work. He defined flow as an optimal and positive psychological state attained through deep concentration on the task at hand and involving total absorption (Csikszentmihalyi, 1990). In one study, Csikszentmihalyi reported that creative people and award-winning novelists frequently experienced flow through deep concentration and interestedness compared to other people, who rarely experience flow (Csikszentmihalyi, 1998). Moreover, Csikszentmihalyi's research indicated that in general life, people experienced more flow while reading books or doing leisure activities or work than while watching TV (Csikszentmihalyi, 1997). These results showed that the positive quality of the experience that constitutes flow is based on strong intrinsic motivation for the activity that the person is performing.

In sport, which is a similar performance context to dance, flow has been studied to understand factors that affect its occurrence, with the aim of facilitating the experience of flow in elite athletes (Jackson, 1995; Jackson & Csikszentmihalyi, 1999; Russell, 2001). For instance, Jackson and colleagues (Jackson & Eklund, 2002; Jackson, Kimiecik, Ford, & Marsh, 1998; Marsh & Jackson, 1999) have identified

major characteristics that contribute to the flow experience, such as balance of challenges and skill level, merging of action and awareness, clear goals, unambiguous feedback, concentration, sense of control, loss of self-consciousness, transformation of time, and autotelic experience.

The balance of challenges and skill level is a match between perceived level of challenge and skills related to the task at hand. The merging of action and awareness is the feeling that action and awareness are united based on strong concentration during a challenging activity. The dimension of clear goals involves the individual knowing very clearly what they aim to achieve. Unambiguous feedback is clear and immediate feedback that one is succeeding in one's goal. The dimension of total concentration is the clear focus on the task at hand, so that everything else disappears into the background. Sense of control is a feeling of being calm and in control of the activity. The dimension of loss of self-consciousness refers to a state in which the person feels free from consciousness of the self, which is generally related to negative self-concern or self-doubt, through deep concentration on the task at hand. The transformation of time dimension is the sense that time is different compared to normal time. In some cases actions appear to occur as if in slow motion, giving the individual more time to respond. In other situations time appears to speed up, so the person can process information and act very quickly. Autotelic experience is an overall sense that the situation represents an enjoyable and intrinsic rewarding experience.

In addition, Jackson and colleagues developed a Flow State Scale (Jackson & Marsh, 1996) and Trait Flow Scale (TFS; Jackson et al., 1998) to measure transient and dispositional aspects of the flow construct respectively. The Flow State Scale-2 (FSS-2) and Dispositional Flow Scale-2 (DFS-2) (Jackson & Eklund, 2002)

represented revised versions of the original Flow State Scale and Trait Flow Scale respectively.

So far, there have been few studies in sport of interventions to enhance flow. Pates and colleagues (Pates, Cummings, & Maynard, 2002; Pates & Maynard, 2000; Pates, Oliver, & Maynard, 2001) examined hypnosis interventions to improve performance and to increase the flow state. Also Straub (1996) investigated the application of a sport-specific mental imagery program to enhance psychological skills, such as confidence, motivation, mental preparation, anxiety control, and concentration, that influence the occurrence of flow experiences of collegiate wrestlers.

Researchers have thrown some light on the optimal experiences aspect of aesthetic performance in dance (Bannon & Sanderson, 2000; Oliver, 2000; Stinson, 1997). Studies have addressed the significance of aesthetic experience, but researchers have not specifically measured flow state or disposition. Further, no research has been published on interventions to enhance flow experience in dance. Because flow is a positive psychological state, enhancing it should be beneficial for the psychological well-being and personal development of dancers. Enhancing flow should increase dancers' enjoyment of dance training and performance. It also has the potential to increase intrinsic motivation, which leads to greater effort and persistence. Further, experiencing the positive aspects of flow could encourage greater creativity. Also, although individuals in flow focus on the positive experience of the moment, rather than the performance process or outcome, the flow state has often been associated with increased performance, for example, in sport (Jackson & Wrigley, 2004). Thus, enhancing flow has many potential benefits.

Imagery is a technique that has been employed successfully in sport to enhance performance, reduce anxiety, increase confidence, increase motivation, and increase concentration (Morris, Spittle, & Watt, 2005). Also, there have been published reports of the use of imagery to enhance dance performance or psychological states. Franklin (1996) reported that imagery could be effective in learning strategies to improve movement skills and to enhance dance performance.

Vaccaro (1997) was interested in imagery use to improve body posture in dance. Vaccaro reported that imagery could be used in dance to provide communication about the mechanics of precise movement skills, interpretation of movement, and analysis of the biomechanics associated with movements. Moreover, imagery and specific exercise programs that included muscular strength, muscular endurance, cardiovascular endurance, and flexibility improved performance in university dancers (Krasnow, Chatfield, Barr, Jensen, & Dufek, 1997).

Thus, imagery would appear to have the potential to increase the experience of flow in dance. In particular, imagery could be used to enhance key antecedents of flow.

Exploratory research is necessary to provide a basis for the design of optimally effective imagery interventions to enhance flow in elite level dance, because there has been little research on imagery use or the antecedents of flow experiences in dancers.

In the present thesis, I examine optimal experiences in dance from a psychological perspective, based on research in the similar performance context of sport. It would appear from examination of the literature that this is the first set of studies to explore imagery use to enhance the flow experience in performance dancers.

Thus, the purposes of this thesis are to explore the experience of flow in the context of elite dance, to examine the main antecedents of flow experience in dance,

and to develop and test imagery-based intervention programs to enhance flow state  
and to improve performance in dancers.

## CHAPTER 2: LITERATURE REVIEW

### Introduction

This literature review provides a general overview of the current knowledge on flow and specifically addresses research in the areas of flow in general, flow in sport, and flow in dance. In the first section I discuss the nature of dance and the role of peak experience in dance, as well as the value and meaning of the dancing experience. The second section focuses on flow experience in terms of definition and measurements, based on previous research undertaken to understand aspects of flow. The third section moves to imagery use specifically related to peak performance and psychological variables, which are confidence, concentration, and motivation in sport and dance. Then, the final section looks at the relationship between flow experience and imagery use through research supporting the possibility of applying imagery use to enhance the flow experience in dance and in other performance contexts, such as sport.

### Nature of Dance

Dance has changed and developed over time into various kinds of dance for different purposes throughout the world. People dance for many reasons, such as to celebrate, to relax, to mark a ritual, or to change their mood through exploring their inner emotions or feelings. Dance as a movement activity is a way to communicate with other people as a natural expression tool. People sometimes cannot explain their emotions fully by speaking, and the movements can express these more strongly than words. Hawkins (1988) explained that when a person has the same opinion as another person, they naturally show their thoughts through a movement such as a nod of the head. Moreover, movements convey feelings such as joy through joyful jumping and clapping, and sadness or disappointment through hanging down the shoulders and

displaying heavy legs. Thus, much research shows that dance is a tool to heal individual emotion or psychological problems as a natural therapy (Whitehouse, 1977; Leventhal, 1993; Lucas, 1999; Builth, 1999). Talking about dance, Csikszentmihalyi, the originator of the concept of flow, quoted a dancer he interviewed, thus:

“The main thing about dancing is that it’s an expressive medium. What do you do?... You move about and try to express yourself in terms of those motions. That’s where it’s at. It’s a body language kind of communicative medium, in a way.... When it’s going good, I’m really expressing myself well in terms of the music and in terms of the people that are out there.” (Csikszentmihalyi, 1975, p. 104)

People experience fun or enjoyment during dance because the dance activity provides an optimal or peak experience through the opportunity of social interaction, creation and learning of new skills, stress release, and self-expression (Stinson, 1997). In addition, dance movements themselves can provide an optimal or peak experience. In the situation of a professional dancer, dancing involves pleasure in terms of creative experience and communication with an audience, in which dancers can share emotion and feeling with others. Especially, when dancers are concentrating deeply on the dance, they experience an optimal positive state, that is called flow (Csikszentmihalyi, 1975). Such flow experience involves feelings of unity, with everything coming together automatically and all harmonising at that moment in time (Jackson & Csikszentmihalyi, 1999). More and more focused on dance, the movements become complete freedom without involving any effort, as summarised in another dancer’s words, quoted by Csikszentmihalyi:

“It’s more of a total immersion in the music, which is also a very good sensation and is also conducive to just dancing and being part of the music-



almost incorporating it. I can get totally into the music and not get self-conscious about dancing. I know that when I first start or if there is some distraction, or I'm conscious of the way I'm dancing. I don't dance as well as when I'm really totally into the music. [I feel the music in my body] when dancing. That's the way it's expressed, the way I feel about it, the way I think about it-which is why it's hard to articulate, because it's something that just comes out in my body, 'cause I don't usually think about the steps I'm going to do consciously" (Csikszentmihalyi, 1975, p. 105)

Csikszentmihalyi (1975) stated that the experience of flow provides intrinsic motivation to the dancer and the experience leads people to find their identity, to explore possibilities, and to experience personal growth. Moreover, the quality of the experience can go further, stimulating creativity (Csikszentmihalyi, 1996). Thus, flow experience while dancing makes people proud of themselves and gives them satisfaction, because success is experienced through movements (Csikszentmihalyi, 2000). Dancers might apply this quality experience to their life. Consequently, through dancing, people can mediate their own feelings towards a more positive state. For example, the positive inner experience could influence dancers' lives and also their psychological perception of themselves.

In particular, professional dancers practice tasks requiring high physical and psychological skills in order to maintain their standard for a longer period of time. Having clear goals and frequently experiencing optimal positive states in dance that influence dancers' intrinsic motivation can aid dancers to continue or maintain their dance activity. Thus, managing intrinsic motivation to enhance the peak experience or optimal experience is one of the important issues for trainers or dancers themselves.

Research in dance, however, has a limitation of translating the dance experience into words because of its artistic characteristics. As a result, there is a lot of potential to study dance systemically and academically. So far, studies of dance have focused on education (i.e., choreography, teaching skills) or rehabilitation (e.g., injury, eating disorders) because of the needs that are most readily observed among participants (Bannon, 2004; Bannon & Sanderson, 2000; Oliver, 2000; Noh, 2005). Thus, there is an opportunity for dance research to focus more on the experience of dance, such as the qualitative experience, which when it is optimal reflects flow. Moreover, it is beneficial if research explores the potential for techniques to be used to further develop aspects of dance, such as enhancing the optimal experience or peak experience that enhances intrinsic motivation for the activity, based on exploring positive experience in dance.

### Flow in Sport

Flow has not been widely examined in dance, but substantial research has now been conducted in the related performance activity of sport. To understand more about flow, I now consider its examination in sport as the basis to develop a direction for the study of flow in dance. The experience of flow has been explored across a range of circumstances by giving it different names, such as peak experience, in the zone, fun, enjoyment, ecstasy and flow.

### *Definition of Flow*

Flow is the name given by Csikszentmihalyi (1975) to a psychological state characterized by optimal positive experience, when people concentrate deeply on the task at hand. Also, the optimal experience is referred to as “the zone”, a place of unending happiness, by Krug (1999), as “holistic sensations” by Csikszentmihalyi (1975), and “self 3” by W. Timothy Gallway (1974) who explained that mind and

body are united in purpose. Moreover, the positive affective state of enjoyment, fun, and pleasure are also used as a synonym of flow in sport and exercise research. To define the enjoyment Kimiecik and Harris (1996) presented and distinguished flow from similar concepts, such as positive affect, attitude, pleasure, and intrinsic motivation. Kimiecik and Harris stated that enjoyment is different from positive affect, attitude, pleasure, and intrinsic motivation. They proposed that positive affect can be explained as four self-feeling categories which are sensible feelings, lived feelings, intentional values feelings, and feelings of the self. They explained attitudes as “intentional value feelings that are part of a person’s interpretive framework and are reflected by an overall like or dislike towards an object” (p.259). Pleasure Kimiecik and Harris explained as “a sensible feeling focused on the needs of the body” (p.259). They stated that intrinsic motivation is “an innate need for competence and self-determination and is intimately linked to enjoyment/flow states and positive affective experience” (p.257). Kimiecik and Harris (1996) clarified that enjoyment is the concept most closely associated with the flow experience. They defined enjoyment as “an optimal psychological state (i.e., flow) that leads to performing an activity primarily for its own sake and is associated with positive feeling states” (p. 256). Sometimes when people are in a flow state they don’t receive the positive affect until the end of process or even after it has ended. Thus, the flow is not just a positive affect as is emotion, but is an effective product of experience. It is an optimal psychological state and a psychological process that is more an exclusive, rather than an inclusive, construct (Kimiecik & Harris, 1996).

Flow also has similarities with peak performance and peak experience. For instance, when collegiate wrestlers were in peak performance, they explained that they experienced an intense competitive focus and high confidence, which are

characteristics of the flow experience (Eklund, 1994). Based on this research, flow is not just optimal experience or enjoyment; it is also strongly related to peak performance in sport. However, flow, peak performance, and peak experience can be distinguished individually. Privette (1983) and Jackson (1992c) discussed the relationship between peak experience, peak performance, and flow in elite sport. The term peak experience refers to a time of highest happiness and fulfilment. A peak experience is different from normal psychological states because of its strong intensity, meaningfulness, and richness. Peak performance is performing at an optimal level and is objectively measured in terms of scoring. However, flow is enjoyment, an intrinsically rewarding, or autotelic experience.

The flow state is conceived to involve total focus and complete absorption in a task. A most important point to observe is that flow experience leads to a dynamic intrinsic motivation to do something without effort (Kimiecik & Harris, 1996). The experience of flow frequently increases the desire to perform for the intrinsic rewards that provide potential for personal growth. According to Csikszentmihalyi (2000, p. 30) “to remain in flow, one much increase the complexity of the activity by developing new skills and taking on new challenges.....This inner dynamic of the optimal experience is what drives the self to higher and higher levels of complexity”, so it promotes optimal performance and, at the same time, enhances one's quality of life (Csikszentmihalyi, 1990, 1993).

Flow state can be divided into two levels that are *microflow* and *macroflow* experience (Csikszentmihalyi, 1975). The *microflow* experience is low levels of intensity of flow experience. For example, after warming-up dancers experience a positive feeling of lightness and energy in their body. That positive state can be characterised as *microflow* it is a state that is important in order to begin performing.

The *macroflow* experience is a deeper flow experience in which flow develops to a high level of complexity. For instance, during high quality performance, dancers completely immerse themselves into their performance and everything comes automatically. When dancers reach the climax of a performance, they experience the highly intensive *macroflow* experience. Thus, estimation of the frequency of occurrence of flow experience may be different for different individuals.

The definition of flow can be clarified from the perspective of Csikszentmihalyi's theory. Flow state is as an optimal psychological state that occurs when there is a perceived balance between high challenge and skills and total absorption in the task at hand. Flow intrinsically motivates people to perform for the sake of performance, regardless of outcome. The requirement for a balance between high challenge and the skills required to meet the challenge is a key differentiator of flow from peak performance and peak experience, which can both occur in the absence of such a balance. For example, expert meditators can generate peak experiences in the complete absence of challenge, in fact, in many spiritual disciplines striving is considered to be the anathema of peak experience.

### *Dimensions of Flow*

Csikszentmihalyi studied the characteristics that signify flow through a variety of research for a decade, using interviews and questionnaires with surgeons, university professors, young mothers, retired people, and teenagers. Based on the research, Csikszentmihalyi (1990) presented nine dimensions of the flow. These dimensions are: a challenging activity that requires skills, a merging of action and awareness, clear goals, unambiguous feedback, concentration on the task at hand, a sense of control, loss of self-consciousness, transformation of time, and an autotelic

experience, during working, reading, writing, singing, and dancing. Each of these dimensions is discussed in this section.

### *Challenging Activity that Required Skills*

Essential to the experience of flow, according to Csikszentmihalyi (1975) is the balance between perceived challenge and skills in the task at hand. Particularly, when there is a high challenge and high skills, flow more often occurs compared to low levels of challenge or skills. This balance between challenges and skills is a principal explanation of the flow. In his book of the same title, Csikszentmihalyi explained that flow occurs when people are "beyond boredom and anxiety". Csikszentmihalyi stated that when the challenge of the task is greater than the performer's skills, anxiety results. Conversely, when skills are greater than the challenge, people experience boredom. When skills and challenge match, flow can occur. For example, if people become involved in reading activity without understanding the meaning of words and creating images from the meaningful words they read, it is difficult to concentrate on the reading activity, so the person is unlikely to experience flow (Csikszentmihalyi, 1990).

### *Merging of Action and Awareness*

The merging of action related to the activity, whether this is physical, as in the case of sport or dance, or mental as in the case of the reader creating mental images, and awareness of themselves and their surroundings means that people feel everything uniting with action and awareness based on strong concentration. It could be that awareness refers to somatic awareness or it could be psychological or mental awareness. Csikszentmihalyi (1990) stated that "in normal life, we keep interrupting what we do with doubts and questions. Why am I doing this? Should I perhaps be doing something else? Repeatedly we question the necessity of our actions, and

evaluate critically the reasons for carrying them out. But in flow there is no need to reflect, because the action carries us forward as if by magic.” (p. 54) When there is merging of action and awareness in a flow state, a person’s activity becomes automatic and effortless.

### *Clear Goals and Unambiguous Feedback*

The clear goal during an activity refers to individuals knowing clearly what they must do. Without having a clear goal, people, such as dancers, might find it difficult to focus or concentrate on the task. For example, dancers know the process of the performance on stage and the sequence of movements so that the movements become automatic with strong concentration.

Moreover, during the activity there is clear and unambiguous feedback. The feedback could be internal through the body or external, such as from a director, peers, and the audience (Jackson & Csikszentmihalyi, 1999). Based on knowing the next step or goal clearly and obtaining clear positive feedback, dancers prepare the ongoing performance with positive expectation and strong motivation. When a person is in flow state the feedback is either positive and immediate or may be delayed. For example, some activities, such as creative arts might not have clear feedback in beginning of the performance, but when dancers enter a flow state they have a clear goal and direction about the activities as well as positive, clear feedback.

### *Concentration on the Task at Hand*

Total concentration is a clear focus on the task at hand. This is one of the most frequent experiences mentioned by people who are in a flow state (Jackson & Csikszentmihalyi, 1999). Even when there is balance between skills and the challenge, individuals, like dancers, still need to focus on the task at hand more than other things, otherwise it would be difficult to immerse into the performance. In an

interview by Csikszentmihalyi (1990), a dancer said: “Your concentration is very complete. Your mind isn’t wandering, you are not thinking of something else; you are totally involved in what you are doing... your energy is flowing very smoothly. You feel relaxed, comfortable, and energetic.” (p. 53). Thus, concentration on the task at hand plays an important role in establishing the conditions where individuals are likely to enter into a flow state.

### *Sense of Control*

In flow state, people have the feeling of control of the activity. This can also be described as a sense of power, confidence, total composure, and positive thoughts (Jackson & Csikszentmihalyi, 1999) based on believing their skills and being free from worry in their performance. Csikszentmihalyi (1990) explained from a dancer’s direct citation, that “A strong relaxation and calmness comes over me. I have no worries of failure. What a powerful and warm feeling it is! I want to expand, to hug the world. I feel enormous power to effect something of grace and beauty.” (p. 60) As explained previously, sense of control means that the activities are positive and become perfection even though there are serious risks or dangers (Csikszentmihalyi, 1990).

### *Loss of Self-consciousness*

Loss of self-consciousness means feeling free from consciousness of one’s self, which is generally related to negative self-concern or self-doubt. This is closely associated with the experience of deep concentration on the task at hand. Loss of self-consciousness during a flow experience means that people completely concentrate so that thoughts about how they appear to others or even what others would think of their behaviour, if they are alone, such as an audience watching dancers or a dancer



practising alone, disappear and just the activity exists in their mind. Csikszentmihalyi (1990) explained loss of self-consciousness using two quotations, one by a climber and the other from a long-distance ocean sailor. The climber explained, “You can get your ego mixed up with climbing in all sorts of ways and it isn’t necessarily enlightening. But when things become automatic, it’s like an egoless thing, in a way. Somehow the right thing is done without you ever thinking about it or doing anything at all... it just happens...” (p. 63) The other explanation was by a long-distance ocean sailor, who explained, “So one forgets oneself, one forgets everything, seeing only the play of the boat with the sea, the play of the sea around the boat, leaving aside everything not essential to that game...” (p. 63)

Thus, there is total involvement and absorption with the task at hand, placing it at the fore front of one’s mind.

### *Transformation of Time*

The transformation of time means that time feels different compared to normal time. Sometimes, it feels like time is passing really quickly, much faster than real time and sometimes it feels like time is passing very slowly. For example, when they are in a flow state, people lose track of the real time and one hour of real time seems like only five minutes in the person’s experience. A quotation that illustrates the transformation of time was presented by Csikszentmihalyi (1990). A ballet dancer related, “two things happen. One is that it seems to pass really fast in one sense. After it’s passed, it seems to have passed really fast. I see that it’s 1:00 in the morning, and I say: ‘Aha, just a few minutes ago it was 8:00.’ But then while I’m dancing...it seems like it’s been much longer than maybe it really was.” (p. 66)

The transformation of time occurs when people are concentrating intensely, but it is not always present during flow experience (Jackson, 1996). For instance, swimmers

need feedback about their performance when they are swimming so that every time they turn at the wall, they are very aware of the pace clock. Thus, aspects of the task can affect whether transformation of time occurs.

### *Autotelic Experience*

Autotelic experience accumulates the dimensions of flow already mentioned. Flow experience is enjoyable and is an intrinsically rewarding experience. Auto means the 'self' and telos means the 'goal'; therefore, the autotelic experience is doing the activity for its own sake (Csikszentmihalyi, 1990). There is no other external reward or benefit at the end of the process for doing the activity, or if there is a reward, the person is not thinking about it, but is totally engrossed in the activity for its own sake, so it is a more internal reward and focus on the process of doing the activities. For example, a sailor explained, "I am spending a lot of money and time on this boat, but it is worth it...nothing quite compares with the feeling I get when I am out sailing." (p. 67)

The autotelic experience of doing activities sometimes follows after a long period of time of doing the activity for external expectations or reasons such as to make money, to improve performance, or to become famous. For instance, a dancer endures the hard training process to improve performance and to become famous, but after a while dancers enjoy just doing it, because their experience becomes autotelic.

These nine dimensions of flow were originally proposed by Csikszentmihalyi (1975) on the basis of his extensive exploration of the experiences of high performers across a wide range of activities. Studies have supported the dimensions in general and also in sport (Csikszentmihalyi, 1990; Jackson, 1992; Young, 2000).

Questionnaires that are purported to be measures of flow have been developed on the

basis of the nine dimensions, and have themselves been widely used in research (Jackson & Wrigley, 2004).

### *Measurement of Flow*

Flow is a subjective, psychological experience; therefore, to measure it objectively and precisely is very difficult. Thus, few measures of the flow experience exist. So far, three types of measurement have been used to assess flow in life in general and in sport specifically. These are the Experience Sampling Method (ESM), in-depth interviews, and questionnaires, such as the Flow State Scale-2 (FSS-2), and the Dispositional Flow Scale-2 (DFS-2).

#### *Experience Sampling Method (ESM)*

Csikszentmihalyi and Larson (1987) developed the ESM approach to examine the subjective experience of flow using interview and questionnaires in everyday life. They used a beeper to stimulate people periodically to report on their psychological state during performance of an activity. The beeper sounded eight times a day, at which times participants reflected on their state and reported on their reflections in a booklet. Specifically, their mood was scored on a 7-point bipolar scale and intensity of concentration, self-consciousness, and sense of control were rated on 10-point scales. Furthermore, the details of the location and the activity being done were reported using open-ended questions. In the ESM, the mixed approach was used to examine the subjective empirical experience, including a focus on a balance between challenge and skills. This approach which explored the individual positive experience of flow, showed contrasting results in terms of reporting the balance between challenge and skills in the task at hand is still ambiguous. Moreover, the ESM is difficult to apply to some activities, such as sport and dance. For instance, during ongoing performance, dancers and athletes cannot stop to record their individual

experience on paper and keep the equipment with them on the stage or the sports arena. Not only does this approach interrupt ongoing performance, but it must also interrupt the flow state because the person has to come out of flow to make mundane judgements of their experience.

#### *Qualitative Approach Using In-Depth Interviews*

In-depth interviews have been used to understand the phenomenological or subjective experience of flow and to gain insight into the nature of flow experience. In general, to understand flow state, Csikszentmihalyi (1975) used in-depth interviews with surgeons, music composers, rock climbers, rock dancers, chess players, and basketball players. From the study, Csikszentmihalyi explored the positive experience that is flow and identified characteristics of flow experience through a variety of information (Csikszentmihalyi, 1990). In sports, using in-depth interviews, Jackson (Jackson, 1992c, 1995, 1996) examined the nature of flow experience, factors which facilitate, prevent, and disrupt the flow experience, and controllability of flow experience in track and field, rowing, swimming, cycling, triathlon, rugby, and field hockey. This study used an inductive and deductive analysis to explore the rich qualitative information.

#### *Quantitative Approach Using Questionnaires for Flow State and Dispositional Flow*

Jackson and Marsh (1996) developed the Flow State Scale (FSS) based on Csikszentmihalyi's theory (1990) and previous qualitative research (Jackson, 1992c, 1995) on flow. The FSS assesses intensity of flow experience on one occasion in sport and physical activity. The FSS comprises 36 items with nine dimensions each assessed by four items; the nine dimensions are challenge-skill balance, action-awareness merging, clear goals, unambiguous feedback, concentration on task at

hand, sense of control, loss of self-consciousness, transformation of time, and autotelic experience. The 394 athletes from 41 different sports completed the FSS questionnaire, making responses on 5-point Likert scales from 1(*strongly disagree*) to 5(*strongly agree*). The internal reliability ranged from .80 to .86. Marsh and Jackson (1999) developed a parallel measure to the FSS, the Flow Trait Scale (FTS) to assess frequency of flow experience in general, that is across many occasions. It has 36 items and 9 dimensions, like the FSS.

Jackson and Eklund (2002) later developed the Flow State Scale-2 (FSS-2) and the Dispositional Flow Scale -2 (DFS-2), within the sport context. These scales are revised versions of the original Flow State Scale and Trait Flow Scale, respectively (Jackson & Marsh, 1996). A major reason for the revisions is that time transformation and loss of self-consciousness did not show as strong relationships with global flow as the other flow factors in the original scales. Thus, some items that had been intended to measure loss of self-consciousness and time transformation were changed or replaced in the FSS-2 and DFS-2. The FSS-2 was designed to assess the experience of flow in a specific sport event. Thus, it is a state measure that assesses the intensity of the transient experience. The DFS-2 assesses the frequency with which respondents report experiencing flow in general, during participation in sport. The measure looks similar to the FSS-2, but it is akin to a trait measure, whereas the FSS-2 is like a state measure. The FSS-2 and DFS-2 are comprised of 36 items plus 13 additional items for confirmatory factor analyses. In the validation study, 600 physical activity participants, with different skill levels, completed the revised flow scales. Finally, 36 items were elicited from analysis. The internal reliability of the revised versions of the two flow scales are stronger than the predecessors, showing a range from .80 to .90 (mean alpha = .81) for FSS-2, and from .81 to .90 (mean alpha =

.85) for DFS-2. The FSS-2 and DFS-2 were designed for use in physical activity settings, but can be useful tools to measure flow experience in diverse areas as well.

Recently, brief versions of the flow scales were presented by Jackson, Martin, and Eklund (2008) in order to have succinct administration and save time. The brief versions of flow scales were retrieved from the original FSS-2 and DFS-2. The brief versions of the flow scales contained 9 items each, based on the nine dimensions of flow. Jackson et al. (2008) examined the long measures of flow (FSS-2 & DFS-2) and short flow measures in 1653 participants from a variety of physical activities. The confirmatory factor analysis revealed that both the FSS-2 and DFS-2 and the short form of the Dispositional Flow Scale-2 were a good fit to the nine-factor model, but the short form of Flow State Scale-2 was not such a good fit. Jackson et al. (2008) concluded that the new short dispositional flow scale might be a useful tool for brief assessment of the nine dimensions of flow. Further work was needed to develop the short form of the flow state scale into a valid and reliable measure.

The measures of flow experience in sport are presented in Table 2-1.

Table 2-1

*Measures of Flow Experience in Sport*

Scale	Authors	Dimensions	Question style	No. Items & Format
Experience Sampling Method (ESM)	Csikszentmihalyi and Larson (1987)	Mixed methods	Open-end questions & Questionnaire	7-point bipolar scale 10-point scales
Flow State Scale-2 (FSS-2)	Jackson and Eklund (2002)	9 dimensions	Questionnaire	36 items
Dispositional Flow Scale-2 (DFS-2)	Jackson and Eklund (2002)	9 dimensions	Questionnaire	36 items
A Brief Version of the Dispositional Flow	Jackson, Martin, & Eklund (2008)	9 dimensions	Questionnaire	9 items
A Brief Version of the State Flow	Jackson, Martin, & Eklund (2008)	9 dimensions	Questionnaire	9 items

*Flow Research in Sport*

Since flow was described by Csikszentmihalyi (1975), flow has been examined through qualitative and quantitative research in sport to understand this positive psychological state. To explore the inside nature of flow experience in sport, researchers (e.g., Jackson, 1992a, 1995) examined athletes' flow experience in terms of facilitating, preventing, disrupting, and controlling flow using qualitative approaches, particularly in-depth interviews. First, Jackson (1992a) interviewed 16 national champion figure skaters to examine flow experience. The results of inductive content analysis revealed that these elite athletes experienced a memorable or remarkable flow state on the basis of eight characteristics of flow that were similar to those presented by Csikszentmihalyi (1990). These facilitators of flow were positive mental attitude, positive pre-competitive and competitive affect, maintaining

appropriate focus, physical readiness, and partner unity. The factors preventing or disrupting flow were physical problems (mistakes), inability to maintain focus, negative mental attitude, and lack of audience response. The skaters believed that being well trained, maintaining appropriate focus, channelling energies and staying relaxed, thinking confidently, and enjoying what one was doing were controllable factors. The physical state, partner unity, and crowd response were uncontrollable factors. Jackson concluded that physical (physical readiness), psychological (positive mental attitude), and environmental (unity with partner) factors influence optimal flow experience in elite athletes. Jackson (1995) also conducted in-depth interviews with 28 elite level athletes from track and field, rowing, swimming, cycling, triathlon, rugby, and field hockey. The important factors related to flow experience from the inductive analyses were motivation to perform, achieving optimal arousal, competitive plans and preparation, physical preparation and readiness, feeling good while performing, focus, confidence and positive attitude, positive team play and interaction, experience, and optimal environmental and situational conditions. Jackson concluded that a large percentage of these elite athletes believed that flow experience is controllable. Moreover, Jackson (1996) also investigated the characteristics of flow related to the original flow concept from Csikszentmihalyi's (1990) study of 28 athletes using interviews. Jackson found that the autotelic experience, total concentration, merging of action and awareness, and sense of control were strongly supported in Csikszentmihalyi's model of flow. Overall, from her qualitative studies, Jackson (2000) proposed that the most important factors for getting into flow in sport were confidence and positive mental attitude. The interesting finding from Jackson's qualitative studies, that athletes believe flow is controllable, was the conclusion that



the occurrence of flow might be facilitated by various psychological skills through managing those controllable factors.

In addition, a similar study was performed by Young (Young, 2000; Young & Pain, 2005). Young examined flow experience while studying 31 professional female tennis players using in-depth interviews interpreted by inductive content analyses. Young and Pain (2005) found that the facilitators of flow were physical and mental preparation, positive mood, control of arousal, motivation, focus, situational/environmental conditions, and positive feedback. Recently, Sugiyama and Inomata (2005) also explored flow experience using semi-structured interviews with 29 elite athletes. The results supported conclusions of the studies by Csikszentmihalyi (1990), Jackson (1992a, 1995, 1996), and Young (2000; Young & Pain, 2005). Sugiyama and Inomata presented being relaxed, self-confident, highly motivated, completely focused, extremely positive and lacking negative thoughts and feelings as facilitators of the flow state in Japanese elite athletes.

In summary, the most frequently mentioned factors by athletes from the qualitative research reported here for facilitators of flow were positive mental attitude, motivation to perform, physical and mental preparation, self-confidence, and focus. These qualitative studies provided valuable information for exploring elite athletes' deep flow experience and influencing factors for the quality of flow experience.

Kimiecik and Stein (1992) proposed that personal and situational factors influence the experience of flow. The personal factors they suggested included dispositional-goal orientation (task and ego), attentional style, anxiety, confidence, and perceived sport competence. The situation factors they postulated were type of sport (e.g., self-paced vs other-dependent, open vs closed skill, individual vs team), competition importance, opponent ability, coach behaviour, teammate interaction and

behaviour, and competitive flow structure (e.g., choice, clarity, commitment, centring, challenge). The model Kimiecik and Stein (1992) proposed was interesting because it clearly explained the influence and occurrence of flow experience in relation to two different perspectives, the personal and situational aspects. There has been little research testing this interactionist model, however. Instead the focus of research has been on psychological variables.

The relationships between flow and a variety of psychological variables were studied by several researchers to understand more about what factors influence optimal flow experience. For example, Kowal and Fortier (1999) examined the relationship between motivational mediators, situational motivation, and flow state with 203 master level swimmers. Motivational mediators comprised three subscales, based on self-determination theory (Deci & Ryan, 1985), which were athletes' perceptions of autonomy, competence, and relatedness, such as relationship with teammates, in specific sport situations. Situational aspects of motivation were comprised of four subscales, also derived from self-determination theory, which were intrinsic, self-determined extrinsic, non-self-determined extrinsic motivation, and amotivation. Flow experience was assessed by using the Flow State Scale (FSS; Jackson & Marsh, 1996). Kowal and Fortier (1999) reported that intrinsic motivation and self-determined extrinsic motivation were positively related to flow experience, whereas non-self-determined extrinsic motivation and amotivation were negatively correlated to flow experience. Moreover, in terms of motivational mediators, competence and relatedness were more strongly correlated to the flow experience than autonomy. Also, the swimmers who had higher levels of intrinsic motivation and self-determined extrinsic motivation had more intensive experiences of flow state compared to swimmers who reported low intrinsic motivation and non-self-

determined extrinsic motivation (Kowal & Fortier, 1999). In another study, with 104 master level swimmers, Kowal and Fortier (2000) examined Vallerand's (1997) Hierarchical Model of Intrinsic and Extrinsic Motivation. Situational social factors, motivational mediators, motivation, flow, contextual motivation, and situational motivation were used to examine the psychological correlates of motivation. The situational social factors were comprised of perceptions of success and perceptions of mastery motivational climate. Mastering tasks, learning, and personal improvement were included in perceptions of mastery motivational climate. The contextual motivation included intrinsic motivation, extrinsic motivation, and amotivation. Flow experience was measured on the Flow State Scale (Jackson & Marsh, 1996). The results showed that situational motivation was correlated with flow experience. In particular, self-determined motivation was an important predictor of the flow experience. Moreover, their perceptions of autonomy, competence, and relatedness directly influenced swimmers' motivation. In addition, the people who perceived themselves to be successful also reported higher levels of perceived competence. Kowal and Fortier concluded that intrinsic and self-determined extrinsic motivation with perceptions of competence and relatedness were important factors associated with flow experience. The studies by Kowal and Fortier study provided valuable information to understand the flow related to various aspects of motivation.

Catley and Duda (1997) studied the relationship between pre-performance readiness factors (i.e., pre-round confidence, positive thinking, motivation, level of relaxation, mental focus, and physical readiness) and the frequency and intensity of flow in 162 recreational golfers. Catley and Duda used descriptions of flow characteristics in the literature (Csikszentmihalyi, 1975, 1990; Jackson, 1992a) to assess flow experience, on a 9-point Likert scale. The results indicated that frequency

and intensity of flow were significantly related to golf pre-round readiness, including confident readiness, pessimism, calmness, positive focus, and golfers' skill level. Specifically, confident readiness, positive focus, and positive thinking were strongly correlated to flow dimensions, such as clear knowledge of goals, enjoyment, and direct feedback on performance level. From this study, Catley and Duda concluded that the psychological states of confidence and positive state of mind were important pre-performance factors for facilitating flow experience in recreational golfers. This result supported Jackson's (1992) earlier qualitative study.

A psychological correlation study was conducted by Jackson, Kimiecik, Ford, and Marsh (1998) to examine possible psychological correlates of flow. Intrinsic and extrinsic motivation, goal orientation, trait anxiety, perceived ability, and typical flow experience were measured in 398 athletes from swimming, triathlon, cycling, track, and field. To examine the dispositional psychological correlates of flow, five measurements were used. The Sport Motivation Scale (SMS; Pelletier et al., 1995) was used to assess intrinsic motivation that consisted of intrinsic, extrinsic, and amotivation. The Perception of Success Questionnaire (PSQ; Roberts & Balague, 1989) was used to assess goal orientation that comprised of task and ego goal orientation. The Perceived Sport Ability Scale (PSAS; Jackson, 1995; Jackson & Roberts, 1992) was used to assess athletes' ability from a personal and normative perspective. The Sport Anxiety Scale (SAS; Smith, Smoll, & Schutz, 1990) was used to assess competitive trait anxiety, comprised of three subscales, concentration disruption, somatic anxiety, and worry. The Trait Flow Scale (TFS; Jackson & Marsh, 1996) was used to assess flow trait. The TFS comprised nine subscales measuring the nine characteristics of flow. The Ratings of Challenges and Skills, derived from the Experience Sampling Form (ESF; Csikszentmihalyi & Larson, 1987) was used to

assess perceived challenges and skills. The Flow State Scale (FSS; Jackson & Marsh, 1996) was used to assess flow state in the event. The results indicated that perceived ability, freedom from anxiety (concentration disruption), and intrinsic motivation to experience stimulation were predictors of trait global flow. Along similar lines, perceived ability, intrinsic motivation (stimulation), and freedom from anxiety (worry) were predictors of global state flow. However, goal orientation did not show any relationship with flow. Jackson et al. (1998) concluded that the positive perception of individual sport ability is an essential element to facilitate flow experience. Therefore, having a high perception of sport ability, being free from worry, and having intrinsic motivation might facilitate flow more frequently and intensely during training and performance.

Moreover, Jackson, Thomas, Marsh, and Smethurst (2001) examined the psychological factors of potential relevance to athletic flow experiences. They investigated state and dispositional flow, as criterion variables, and self-concept, psychological skills, and performance, as predictor variables, with 236 athletes from orienteering, surf life saving, and road cycling. The Flow State Scale (FSS; Jackson & Marsh, 1996) and Dispositional Flow Scale (DFS; Jackson and Marsh, 1996) were used to measure state and dispositional flow. The Elite Athlete Self-Description Questionnaire (EASDQ; Marsh, Hey, Johnson, Perry, 1997) was used to measure self-concept, consisting of skills, body, aerobic fitness, anaerobic fitness, mental competence, and overall performance. The Test of Performance Strategies (POPS; Tomas, Murphy, & Hardy, 1999) was used to assess psychological skills. This included activation, relaxation, imagery, goal setting, self-talk, emotional control, negative thinking, and automaticity. In this study, performance was measured by self-report of finishing position by athletes. The results showed most of the self-concept

and psychological skills predicted state and dispositional flow, with the exception of automaticity, in psychological skills. Specifically, positive self-concept for skill and performance, combined with appropriate level of activation and relaxation, and staying in control of one's thoughts and emotions positively predicted dispositional flow. Mental competence, overall performance, and skills in self-concept and avoiding negative thinking, emotional control, activation, and relaxation in psychological skills predicted state flow. The results showed that flow experience, especially autotelic experience and challenge-skill balance were strongly related to self-reported performance. Jackson et al. concluded from this study that developing positive self-concept and mastering psychological skills and strategies will facilitate optimal flow experience as well as performance. Specifically, Jackson et al. proposed that self-perception of physical and mental skills; competence in performance; the avoidance of negative thinking combined with good emotional control, relaxation, and appropriate activation levels; goal setting; use of imagery; and positive self-talk will promote the quality of flow experience and enhance performance. Jackson et al. (Jackson, Kimiecik, Ford, & Marsh, 1998; Jackson, Thomas, Marsh, & Smethurst, 2001) indicated that the kinds of psychological skills that researchers have reported help athletes to obtain the positive perception related to performance, confidence, and intrinsic motivation also seemed to facilitate the flow experience.

Aragon's (2002) descriptive study presented some strategies to strengthen mental skills and enhance flow experience of distance runners. Aragon emphasised that focusing on the task at hand and becoming totally absorbed in a race becomes difficult. However, it is an important component in order to experience flow. Aragon recommended that monitoring self-talk, using affirmation statements and using self-hypnosis may enhance confidence and concentration, and thus provide a chance to

experience flow. Voelkl, Ellis, and Walker (2003) identified several strategies to facilitate flow experience for a recreational program by reviewing previous flow research that presented the conditions and characteristics of flow. The first strategy to facilitate flow experience was to ensure balance between the participants' skill levels and demands of activities within the program. The second strategy was to minimize distractions and support the participants' full involvement. The third strategy was to recognise that a substantial amount of time and effort are required to develop or gain individual skills. The fourth strategy was to focus on the process instead of the outcome. The final strategy was to encourage individuals to value what they were doing. Voelkl et al. also discussed and revised a flow model that was divided into three steps. First, they presented the conditions of flow, second, the characteristics of flow, and finally, the outcomes of flow experience. The conditions of flow were clear goals, immediate feedback, and challenging activities that require skill. The characteristics of flow were intense concentration, merging of action and awareness, paradox of control, loss of self consciousness, and transformation of time. The outcomes of flow experience were positive effectiveness and self affirmation. Voelkl et al. proposed that this combination of strategies might enhance positive flow experience. However, they emphasised that there is still a need for practical evidence through substantial research to show effectiveness of the strategies.

Galan and Maguire (2000) also discussed psychophysiological facilitators of flow for maintaining the experience. Galan and Maguire claimed that being physically warmed-up, stretched out, and aroused to obtain maximum oxygen and blood flow to all working muscles are important factors in the occurrence of flow. An interesting point was that Galan and Maguire proposed that visualisation and breathing were also effective ways to focus attention. A higher ability to focus on the task at hand

provides more chances to experience flow. Galan and Maguire proposed that focusing attention on the task at hand was one of the “entrance doors” to the flow state.

Wager and Beier (2005) studied the correlation between flow experience, individual skill level, and situational challenge level with 61 windsurfers and 63 snowboarders. The skill levels included beginners, advanced, and experts. The challenge level included easy, medium, and difficult. Wager and Beier (2005) also investigated the relationship between flow experience and personality traits, such as self-efficacy, internality, social externality, and fatalistic externality. Some of the personality traits, self-efficacy and internality, were related to flow experience, whereas the variables of social externality and fatalistic externality had negative correlations with flow. Moreover, in terms of skill level, the experts experienced flow more frequently compared to beginners and advanced performers. This result supports Csikszentmihalyi’s (1990) proposition that people who have high skill or experience in activities tend to experience more flow. Csikszentmihalyi’s (1990) flow theory stated that the balance between perceived skill level and challenge level was an important factor that predicts flow experience. However, in this study, no significant differences were revealed between challenge levels (Wagner & Beier, 2005).

Russell (2001) studied helping, preventing, and disrupting flow experience using qualitative and quantitative approaches with 42 college athletes. The participants were from team sports such as football, baseball, volleyball, softball, and basketball, as well as individual sports, such as swimming, track, wrestling, and triathlon. The flow relationships using the Flow State Scale (Jackson & Marsh, 1996) showed that gender and sport types did not have a significant relationship on flow experience. Among flow dimensions, the action-awareness subscale had a significant relationship. The qualitative approach was similar to Jackson’s (1995) study, using an



interview format. This study showed similar patterns of results. The factors that helped flow were optimal pre-competitive plan, confidence and positive thinking, optimal physical preparation, optimal pre-competitive arousal, feeling good while performing, being motivated to perform, focus, optimal environmental conditions, and positive coach and team interaction. This study was the first to look at flow experience among gender and sport settings with less elite athletes.

Kee and Wang (2008) examined the relationships between mindfulness, flow dispositions, and mental skills adoption in 182 university student athletes from 23 sports, reflecting a wide variety of sport types, such as taekwondo, Malay martial arts, tenpin bowling, archery, soccer, rugby and dragon boating. The Mindfulness/Mindlessness Scale (MMS; Bodner & Langer, 2001) was used to assess mindfulness such as novelty seeking, novelty producing, flexibility, and engagement. Novelty seeking referred to seeking or looking at each environment actively and specifically to learn something new. Novelty producing referred to generating the process of new or useful information in the environment. Flexibility referred to assessing situations from multiple perspectives. Engagement referred to focusing on details of the environment similar to concentration. Kee and Wang used the Dispositional Flow Scale-2 (DFS-2; Jackson & Eklund, 2002) to assess dispositional flow. The Test of Performance Strategies (TOPS; Thomas et al., 1999) was employed to assess mental skills adoption. It consists of activation, relaxation, imagery, goal setting, self-talk, emotional control, attentional control, and automaticity. The results showed that more mindful people had higher scores on dispositional flow and mental skills adopting compared to low mindful people. The characteristics of mindfulness were positively related to dispositional flow. Specifically, mindfulness was strongly related to challenge-skill balance, clear goals, concentration, sense of control and loss of self-

consciousness. Moreover, novelty seeking, novelty producing, flexibility, and engagement tendencies were also positively related to mental skills adoption. Kee and Wang (2008) concluded that mindfulness of personality strongly related to individuals' mental skills adoption habits and their flow experience. This study was meaningful in terms of examining personal variables related to flow experience and mental skills. However, it is still unclear what causal directions exist among the relationships between flow, mental skills, and mindfulness.

Vea and Pensgaard (2004) examined the relationship between perfectionism and flow among young elite athletes. Veaa and Pensgaard indicated that the antecedents of flow were the nature of the activity, concentration on the task, positive mood, pre-competitive and competitive planning, positive mental attitude, physical readiness, and motivation. Veaa and Pensgaard proposed that characteristics and personality in people influence their experience of flow as well. For example, perfectionism and flow experience in young elite athletes were strongly negatively correlated. Specifically, concern over mistakes negatively correlated to time transformation and personal standards also negatively correlated to loss of self-consciousness (Vea & Pensgaard, 2004). This study demonstrated that parental criticism, expectations, and doubt about actions had negative effects on flow experience. It disturbed the balance between challenge and skills, action-awareness merging, and sense of control.

Krug (1999) stated that quality preparation will lead to quality performance based on hard work for the physical, strategic, and technical demands of performance. Krug argued that psychological skills, such as appropriate concentration or focus on the task at hand, would enhance flow state during performance. Thus, he proposed that quality preparation would lead to quality performance (Krug, 1999).

Recently, an interesting study was conducted by Schuler and Brunner (2009). Schuler and Brunner investigated the relationship between flow and performance in marathon racing through three studies. The first study examined the relationship among flow, running motivation, and race performance in 112 race runners. The second study investigated the relationship between flow, pre-race training behaviour, future running motivation, and race performance in 109 race runners. In the final study, Schuler and Brunner conducted tests on the relationship between flow, pre-race training behaviour, future running motivation and performance in 65 race runners. Flow experience was measured four times, at kilometre 10, 20, 30, and 40 during marathon the race. In Studies 1 and 2, a retrospective measure was used to assess flow experience using the Flow Short Scale. This was developed by Rheinberg, Vollmeyer, & Engeser (2003). However, in Study 3, the experience-sampling method was used to assess flow experience. In comparing the two measures, the results indicated that the retrospective measure of flow revealed consistently higher scores than the experience-sampling method and overestimated the degree of flow. The results showed that flow predicted future running motivation, but not race performance in Study 1. In Study 2, similar results were revealed regarding flow, motivation, and performance. In addition, pre-race training behaviour predicted race- performance and future motivation. The results of the final study showed that pre-race training behaviour and motivation predicted race performance. Flow predicted pre-race training motivation, but not race performance. Overall, from their three studies, Schuler and Brunner concluded that flow has an indirect effect on performance through enhancing motivation and training behaviour, which in turn improves performance.

In conclusion, the research on flow in sport has explored the characteristics of flow experience and various facilitators to understand the subjective optimal

psychological state. Particularly, through qualitative and quantitative studies, researchers have unanimously agreed that confidence combined with positive mental attitude, motivation and pre-competitive preparation will increase flow for athletes. By applying psychological skills to manage those facilitators of flow, the experience of flow can be increased and greater flow experience may cause athletes to maintain exercising in the long-term by enhancing motivation, which leads to enhanced performance.

### *Flow Research in Dance*

Research in the dance domain has developed in a variety of fields, including phenomenology, physiology, and psychology. The study of dance is, however, still in its infancy in systematic and academic terms, compared with other similar performance contexts, such as sport, because of the artistic characteristics, such as creativity, changeability, lack of exact evidence of the antecedents of performance, and difficulty in writing about aspects of dance experience (Coe & Strachan, 2002). In particular, few studies have been reported on flow in dance, although in Csikszentmihalyi's (1975) early work, he examined flow experience with non-professional dancers in rock dance, which is a type of social dance. The rock dance study was conducted with 12 participants, with an average age of 24.25 years, using observations, casual discussions, interviews, and questionnaires to examine their flow experience. Csikszentmihalyi found that dancers, who experienced deep flow states, were less self-conscious, got clearer feedback, felt more in control of the dance, felt more in harmony with the environment, felt time passed faster, and were less often distracted compared to the other dancers who had less experience of flow. The sources of enjoyment in rock dance were elicited from body movements, involvement with music, involvement with a partner, and the feeling of togetherness.

Since Csikszentmihalyi's (1975) study, dance researchers, who have studied the experience of optimal psychological states, have focused on aesthetic experiences of dancers, such as the value of the aesthetic experience aspects of dance education in the curriculum (Bannon & Sanderson, 2000; Risner, 2000). For example, Bannon and Sanderson (2000) proposed that the aesthetic experience in dance focuses on understanding the concept of aesthetic experience for promoting a coherent view of dance as a humanising pedagogy. In this descriptive perspective, Bannon and Sanderson discussed how the aesthetic concept is significant in dance education, dance creation, performance, and appreciation. Bannon and Sanderson explained that dance experience comes from interconnections of movements, location, sound, and rhythm in space and time. Bannon and Sanderson concluded that enhancing aesthetic experience in dance can be valuable for the work knowledge and self-awareness of dancers. It can also enhance artistic exploration and aesthetic sensitivity.

Risner (2000) also explored dance experience from the perspective of epistemology during the rehearsal process in 10 university students. Risner used a semi-structured interview lasting between 30 and 45 minutes twice a week for an 11-week rehearsal period. The results revealed that experience of the rehearsal process linked to knowing as an interpersonal construction, knowing by doing, knowing as memory, musical memory, programme memory, body memory, and knowing as certainty. Risner concluded that confidence and certainty was an important element to balance with the ambiguity that is often characteristic of the performance process. Dancers required total confidence and assurance in the rehearsal process. The studies by Bannon and Sanderson and Risner illustrate an educational perspective on dance experience during dance rehearsal, rather than addressing the direct meaning of dance experience in dancers.

A particularly interesting study was Stinson's (1997) interpretive study. Stinson studied 'fun' in engagement in dance education to increase understanding of what factors motivate students to become involved in dance activities. Stinson indicated that the sources of fun during dance were from social interaction, making up dances (i.e., creative movements), moving around, learning, stress release, focus and concentration, self-expression, freedom, and transcendence. The aspects considered not "fun" occurred where the students mentioned that dance was not useful or valuable for their future life, so that students who emphasized doing activities that would specifically prepare them for their future felt bored during dance sessions. Music also influenced them in their experience of dance in class. Stinson's study pointed out important factors for engagement in dance for adolescents; students must be allowed choice, freedom, and control to encourage intrinsic motivation. The study did not answer the original questions, in regards to the reasons that some students have more fun than others, and strategies that could predict or control students' engagement in dance classes. Although this research addressed the aesthetic experience, Stinson reported factors similar to those found in examination of the flow experience, based on personal positive experience, through deep concentration, stress management, and with a strong interest in dance. Further, Stinson noted that dance was also a way of finding non-destructive opportunities to provide sensory pleasure, an experience which is highly meaningful in human life (Stinson, 1997).

Jackson and Eklund (2004) examined the flow experience in dancers, including a variety of athletes and artists in their study. They used the FSS-2 and DFS-2 and conducted confirmatory factor analysis to confirm the measurement model for dispositional and state flow. Jackson and Eklund found that dancers experienced flow as in other performance areas, such as sport, music, writing, and science.

In addition, flow experience was revealed in the results of a study by Bracey (2004). Bracey examined dance experience in technique class based on a post-positivist methodological framework with five university dancers, using semi-structured interviews. Dancers explained that their reason for engagement in dance activity is that dance provides a pleasurable physical sensation as well as a variety of never-ending challenges. Dance is a personal learning opportunity. For example, while dancing the dancers felt empowered, strengthened, and in better shape. These positive feelings made these dancers want to keep dancing. One interesting finding was that dancers sometimes tended to consider their external appearance (how things looked), rather than how they felt while they were dancing. Bracey (2004) concluded that dancers need to be balanced between what it looks like and how it feels. This conclusion is very suggestive regarding typical characteristics of dance as a type of artistic display. Thus, dancers need to be aware of the appearance of their movements; however, if dancers are exceedingly self-conscious about their appearance it disturbs their concentration on performance, as well as the quality of the optimal experience of dance. Although Bracey did not discuss flow explicitly, this observation seems to relate to the flow dimension of total concentration on the task, as well as to loss of self-consciousness, which is a key characteristic of flow.

An interesting study from a performance context similar with dance was that of theatre actors' experiences of flow and their motivational characteristics with 40 theatre students (Martin & Cutler, 2002). Martin and Cutler used the Flow State Scale (FSS; Jackson & Marsh, 1996) to assess flow state and the Sport Motivation Scale (SMS; Pelletier et al., 1995) to assess motivation. The SMS measures intrinsic motivation (to accomplish, to experience stimulation, and to know), extrinsic motivation (introjection, identification, and external regulation), and amotivation. The

results showed that, for theatre students, overall flow was positively related to intrinsic motivation, to experience stimulation, and to accomplishments. Moreover, Martin and Cutler found that optimal experience or flow was a very enjoyable experience that motivates engagement in actors. Flow occurred in these actors when they had a high degree of concentration, a skill-challenge balance, and had established clear acting goals. The actors reported an average of four optimal experiences a year. The significance of this study was that the flow concept was applied systematically to artistic performers to understand the optimal positive experience. However, it is questionable whether they could accurately report individual flow experience as occurring four times a year. The reason is that intensity of flow experience varies from person to person and people interpret their flow state differently.

Psychologist Hanrahan (2005) worked with professional dancers who are clients. During practical environment, Hanrahan interested in relation to why professional dancers involve in dance for a long periods of time. Hanrahan found that all of the dancers dance because they love and enjoy dancing, highlighting a characteristic of flow experience in dancers.

Recently, Hefferon and Ollis (2006) examined flow experience in nine professional dancers using in-depth semi-structured interviews. Hefferon and Ollis explored characteristics, facilitators, and inhibitors of flow. The characteristics of flow were autotelic experience, challenge and skill balance, and absorption in the task, consistent with Csikszentmihalyi's (1975) flow theory. The facilitators and inhibitors of flow were confidence, music and choreography, pre-performance routine, costumes and make-up, stage setting, and relationship with others. Hefferon and Ollis' study was significant in terms of directly exploring flow experience within professional dancers. To analyse the data, they used interpretive phenomenological analysis,



however, the results of characteristics of flow were too vague to capture the flow experience in professional dancers. The reason being that flow experience was limited to three characteristics of flow in dancers compared to Csikszentmihalyi's (1975) and Jackson's (1992) nine characteristics of flow study. If Hefferon and Ollis include more participants to explore flow, they might obtain lots of useful information regarding characteristics of flow in dance. In addition, this study did not clearly explore the inhibitors of flow.

Most studies showed that dancers experience an optimal psychological state, that is flow, during dance. The flow experience motivates dancers to continue dancing. Thus, several studies have presented strategies to create optimal performance as well as a positive experience. For instance, Loizou's (2005) view on enhancing the quality of performance was that the focus or effort should be in the management of the mind as training to develop physical technique. Loizou stated "training your mind can be as important as training your body" (p. 98). Specifically, Loizou proposed that if dancers set goals (i.e., long-term and short-term goals), were optimistic (i.e., gave oneself a positive mental encouragement), visualized (i.e., internal and external), and kept on dancing (i.e., focus from distractions), these psychological and behavioural factors could enhance the quality of their performance. According to Veal and Pensgaard's (2004) study, to engage in the flow state, professional dancers need to make an effort to cope with the criticism and expectations from other people and the doubt in oneself. Moreover, dancers need some immediate sources of satisfaction instead of long-term goals to motivate them to dance. Nieminen, Varstala, and Mainninen (2001) examined the goal orientations, professional dancers' perceived purposes of dance, and the views on the purpose of dance in relation to their goal perspectives based on a pilot study. Goal orientations were assessed with 72 female

dance students, using the Perception of Success Questionnaire (POSQ) and the Purpose of Dance Questionnaire (PDQ). Nieminen et al. found that dancers use more task orientation than ego orientation. The task orientation was associated with a feeling of well-being, being physically active, and mentally strong. The ego orientation was related to social statutes, high career aspirations, competitiveness, and not to give-up. Dancers perceived physical mastery as the most important predictor among the task goals. Nieminen et al. (2001) added that creativity, self-expression, and communication were also important factors in dance students' views of the purposes of dance.

Hamilton (1998) discussed strategies to create optimal performance and flow experience by addressing performance anxiety. Hamilton stated that the sources of performance anxiety in dancers were poor training experience, inadequate stage experience, perfectionism, and competitive feelings. To deal with the performance anxiety created by those sources, Hamilton recommended goal setting, imagery training, cognitive anxiety management, self-talk, and regulating physiological arousal psychological intervention techniques. In particular, with reference to goal setting, dancers were recommended to choose a goal related to the process of performance instead of an outcome goal; also, the goal should be achievable. Hamilton proposed that imagery training should include sensory awareness, vividness, and controllability with the intent to enhance self-awareness, enhance motivation, focus attention, build self-confidence, reduce anxiety, and acquire skills. However, Hamilton's recommendations of valuable psychological skills need to be investigated in future studies for systematic and scientific effectiveness of flow experience and performance.

Overall, looking at research on flow in the dance domain, dancers appear to desire to experience flow based on their previous and positive experiences, but there is little evidence that dancers have the knowledge of factors that can facilitate flow as a positive optimal experience. Thus, knowledge of the characteristics and facilitators of the flow experience still need to be explored in the context of dance. Most researchers have not systematically examined ways to enhance the flow experience, such as with intrinsic motivation based on exploration of the facilitators of flow experience in dance. Thus, intervention studies need further development to promote or increase flow experience in the dance domain. One aspect of this research should be a focus on the most effective content of interventions intended to enhance flow. An approach that has shown some success in the related performance context of sport is to focus on developing dimensions of flow thought to be antecedents of the flow state. Another important aspect of this intervention research is the delivery mode. Again, a mechanism for the delivery of psychological interventions that has proved to be effective in sport is the use of imagery. To understand this approach to delivering content intended to enhance flow, imagery is considered next in this review.

### Imagery in Sport

Imagery is a psychological process that has been widely examined by psychologists. In particular, imagery can be used to imagine situations previously experienced and even to create experiences a person has never had. Imagery can be developed so that it can be applied in many contexts. In this sense, imagery can be thought of as a psychological skill. In sport, imagery has been used as a psychological skill to improve performance, to control arousal, to reduce anxiety, to enhance body awareness, and to enhance self-confidence, all of which are strongly linked to flow experience. However, there are few studies that focus on the relationship between

imagery and flow. Thus, to explore the possibility of imagery being an effective way to deliver appropriate content to enhance flow experience, first, I briefly address a definition of imagery to describe and analyse imagery terms and characteristics in sport domain. Secondly, I consider the assessment of imagery in sport. I then review research on imagery especially related to peak performance and psychological variables, such as confidence, anxiety, and motivation, which are related to flow experience. Imagery in sport is considered because of the paucity of research on imagery in dance. Sport is a movement activity similar to dance, in that both require long periods of practice to improve physical performance. Moreover, research in sport is well established academically and in practice. Thus, reviewing imagery research from sport provides valuable knowledge to understand and apply imagery in the dance domain.

### *Definitions of imagery*

Imagery is a ubiquitous psychological process; most people use imagery almost all the time to think through what they plan to do or to remember what they did in the past. Imagery is not a fantasy or daydream, it is more practical and requires active work, using all the sense modalities, such as sound, sight, smell, taste, and touch. In sport, a number of terms have been used to describe the imagery process, such as “imagery”, “mental practice”, “mental rehearsal”, “hypnosis”, “cognitive rehearsal”, and “visualization”. Several researchers have defined imagery. Denis (1985) defined imagery as:

a psychological activity which evokes the physical characteristics of an absent object (either permanently or temporarily absent from our perceptual field). It is worth emphasizing here that imagery is not restricted to recollection of the appearance of static objects, but it extends to moving objects; objects

undergoing transformations, in other words, dynamic events. The scope of imagery is not limited to recalling objects or events that have been perceived in the past (recent or distant past), but imagery also refers to objects or events that have not yet been accomplished. Imagery allows people to anticipate future (or even purely theoretical) events” (pp. 4-5).

Morris, Spittle, and Watt (2005) summarised imagery in sport from different perspectives:

Imagery, in the context of sport, may be considered as the creation or re-creation of an experience generated from memorial information, involving quasi-sensorial, quasi-perceptual, and quasi-affective characteristics, that is under the volitional control of the imager, and which may occur in the absence of the real stimulus antecedents normally associated with the actual experience (p. 19).

Moreover, White and Hardy (1998) defined imagery, as:

an experience that mimics real experience we can be aware of ‘seeing’ an image, feeling movements as an image, or experiencing an image of smell, tastes, or sounds without actually experiencing the real thing. Sometimes people find that it helps to close their eyes. It differs from dreams in that we are awake and conscious when we form an image (p.389).

### *Theories of Imagery*

Many theories in relation to how imagery functions have been presented in the sport research area, based on psychoneuromuscular, symbolic learning, dual-code, bioinformational, triple-code, gross framework or insight, attention-arousal set, self-efficacy or self-confidence, and motivational explanations. I briefly discuss theories relevant to the application of imagery to enhance flow state.

In the psychoneuromuscular theory, Jacobson (1930) proposed that imagery of movement in the brain triggers the same neuromuscular innervations as actual movement, but at lower levels, so no actual movement occurs. Thus, according to psychoneuromuscular theory, imagery of movements is a way to practice and to improve performance by training the neural pathways by low level innervation. For example, when dancers are imagining a high jump technique with fine position without actual movement, their muscles are sent the same signals for movement as would be sent for real movement, but low level innervation means that movement does not occur. Researchers have shown innervation of muscles used in a simple movement like a biceps curl, but it has also been shown that other muscles not involved in the intended movement are activated, so a general activation explanation is an alternative. Also, no studies have demonstrated performance changes that correspond to nerve and muscle activity during imagery (Morris et al., 2005).

Sackett (1934) proposed symbolic learning theory, arguing that imagery involves the symbolic aspects of movements. For example, when learning a new movement imagining the entire movement cognitively helps performers to learn the sequence of movements. For example, a dancer might imagine a part of a new routine and each time they repeat the imagery they learn symbolically more of the steps until they can physically repeat the whole sequence. Symbolic learning theory predicts that imagery is more effective for highly cognitive skills, rather than motor tasks, because there are more sequential elements in cognitive tasks that can be symbolised. Some evidence has supported the greater effectiveness of imagery for cognitive tasks (Feltz & Landers, 1983).

In dual-code theory, Paivio (1975) proposed that movements can be coded separately in verbal and visual (imagery) coding systems for recall later. Thus, it is

valuable for people who are learning movement skills, such as sport or dance skills, to evoke new movement sequences through key memories both verbally and visually as images. For example, in order to memorise the movement sequence in a routine, dancers might imagine the movements visually and use a verbal code, such as “step-flex-jump-land”. If one code (imagery) is forgotten, there is another code (verbal) giving higher probability of learning being effective. Although dual-code theory has gleaned some support from research, it is limited in terms of explaining imagery capability because it focuses on visual imagery (Morris et al., 2005).

Lang (1977) proposed bioinformational theory on the basis of research on emotion. Lang proposed two kinds of representation. Stimulus propositions represent the content of the scene, and response propositions, which represent the appropriate response. For example, when performers imagine emotional and physical feelings, such as fear or anxiety, these are response propositions related to corresponding stimulus propositions, such as a dangerous move that could cause injury (fear) or a tough audience for a dance performance (anxiety). Some research supports Lang’s theory in relation to emotional reactions in sport, which were more powerful when both stimulus and response propositions were involved than either alone. However, there is little evidence to date of the connection between performance and the physical/emotional response (Morris et al., 2005).

The triple code model (Ahsen, 1984) states that imagery works through three steps of internal sensation in which imagery is stimulated by the scene, somatic response in response to the scene, and meaning of the image, which is the interpretation of the scene to find meaning. Particularly, the meaning of imagery is likely to differ between individuals, even for the same objective situation. Thus, researchers and practitioners should consider individuals’ experience leading to

differences in meaning they may have for the same imagery content (Morris et al., 2005).

The Lang's (1977) bioinformational theory and the Ahsen's triple code model (1984) seem to be related to dance domain. In terms of the bioinformational theory, for example, dancers need to explore the feelings of movement for high quality of performance or flow experience. Without feelings in movements it is just a circus. Thus, dancers imagine a performance's love story or an excited audience in a performance as a stimulus propositions when dancers explore corresponding emotional and physical feelings, such as happiness or lightness, these are response propositions. Regarding the triple code, imagery works through three steps. For instance, imagery is stimulated by the story of performance, response somatic movements, and individual meaning of the image (which is the interpretation of the scene) to find meaning. Both imagery theories are well explained for dance domain, however, these theories only explain one aspect of imagery use and are limited in explaining fully the purpose of variety and imagery use in dance.

Proponents of self-efficacy or self-confidence theories (Bandura, 1977a; Budney, Murphy, & Woolfolk, 1994; Grouios, 1992; Perry & Morris, 1995) propose that imagery positively influences self-confidence or self-efficacy. Many researchers (e.g., Callery & Morris, 1997; She & Morris, 1997) have investigated imagery use to enhance self-confidence with a variety of participants, often also demonstrating the effectiveness of imagery for improving performance. Increases in self-confidence cannot account for all the effects reported for imagery programs in the literature (Morris et al., 2005), but the demonstrated effect of enhancing confidence by imagery training might be important in the promotion of the flow state in which confidence plays a key role.



The motivation explanation (Paivio, 1985) is that imagery improves performance by triggering motivation or cognition, either specifically and generally. This approach to imagery provided the foundation for development of the Sport Imagery Questionnaire (SIQ: Hall, Mack, Paivio, & Hausenblas, 1998), which includes cognitive general (CG), cognitive specific (CS), motivational general-arousal (MG-A), motivational general-mastery (MG-M), and motivational specific (MS) uses of imagery (Morris et al., 2005).

Martin, Moritz, and Hall (1999) developed the applied model of imagery use based on the triple-code model, bioinformational theory, and Paivio's motivational explanation. The model comprises four factors: sport situation, types of imagery use, imagery ability, and outcomes associated with imagery use. The sport situations include training, competition, and rehabilitation. The types of imagery are cognitive general (CG), cognitive specific (CS), motivational general-mastery (MG-M), motivational general-arousal (MG-A), and motivational specific (MS). CG imagery is imagery of strategies and routines related to a performance event. CS imagery is imaging specific sport skills. MS imagery is imaging a specific goal. MG-M imagery is imaging being mentally tough, confident, and focused during sport performance. MG-A imagery represents feelings of relaxation, stress, arousal, and anxiety in performance. The imagery abilities are divided into kinaesthetic and visual abilities. The outcomes associated with imagery use are acquisition and improved performance of skill and strategies, modification of cognitions, and regulation of arousal and anxiety.

Based on Jeannerod's (1997) motor preparation theory, Holmes and Collins (2001) developed a functional equivalence model that they called the PETTLEP model, based on the seven elements of the model. Functional equivalence states that

when a person imagines movement the central nervous system works the same as when doing actual movement. The reason is that the “brain stores memories in the form of a central representation for physical preparation and execution that is accessed by both physical preparation and execution and, more importantly, by motor imagery associated with this preparation and execution” (Holmes & Collins, 2001, p. 60). Holmes and Collins suggested a 7-point checklist for developing imagery interventions. The PETTLEP model comprises physical, environment, task, timing, learning, emotion, and perspective. Holmes and Collins proposed that the physical element is that imagination involves active physical movements. For example, when dancers practice jump and turn dynamically they should imagine the physical movement as closely as possible to actual performance. The next element of environment refers to when an image is individualised to the surroundings of a real performance using multi sensors. For example, dancers imagine the enthusiastic audience in front of the stage, the fragrant smell of cosmetics, and the smooth feel of their costume during an actual performance. The task element is that the imagination should match the real performance task. The timing component is when imagined movement is at the same speed or rhythm as the real performance. Especially when time is an important component of performance (such as in swimming or cycling), the time of imagination should match the real performance. The learning element refers to that imagery that is one of the processes of learning or practice. For example, it might be difficult for beginner dancers to imagine complicated dance movements. Thus, imagery should be similar to the individual’s stage of learning. The emotion element is imagining the emotions associated with performance. For example, when dancers imagine a performance, they should imagine experiencing emotions that are appropriate to that scene to create empathy for the performance. The perspective

element is the idea that imagery should be visualised from an internal or external perspective depending on which best suits in the real-life situation.

The applied model of imagery use and the PETTLEP model provide clear theoretical backgrounds and conceptual frameworks for designing imagery experiments and the development of imagery interventions for a variety of purposes, such as enhancing confidence, reducing anxiety, and motivation, in which these are related to flow experience. Overall, no theory of imagery has been widely accepted in general psychology or in sport psychology. At the same time, imagery training is widely practised by sport psychologists. Often they use elements from different theories to develop an imagery program that is designed to suit a specific purpose. Different theories include aspects that could be helpful in the development of effective imagery programs to promote the experience of flow.

### *Measurement of Imagery*

The measurement of imagery has long been a difficult problem primarily because imagery is not directly observable, which means that measures must rely on self-report or they must require the imager to undertake a mental manipulation task that it is assumed can only be accomplished by using imagery. In the latter type of imagery measure, speed of correct completion or level of complexity correct is the criterion for how well people can imagine. Measures using the right/wrong manipulation approach are not common and not relevant to the present thesis, so only one that has been used in sport, the Group Mental Rotations Test, will be briefly described here.

Among measures that assess imagery using self-report there is a long history in the study of imagery. Betts (1909) developed a measure, the Questionnaire on Mental Imagery (QMI) of imagery across all the sense modalities, more than a

century ago. Other tests that have been developed mainly followed Betts' lead by measuring the vividness of mental imagery. A popular measure of this kind is Marks' (1973) Vividness of Visual Imagery Questionnaire (VVIQ). Gordon (1949) developed a measure of imagery control. These measures have not been used widely in sport, so they will not be reviewed further here. More recently, psychologists interested in movement and sports have developed measures based on the models developed in the broader study of imagery. For example, Isaac, Marks, and Russell (1986) developed the Vividness of Movement Imagery Questionnaire (VMIQ), based on the format of the VVIQ. The VMIQ has been used in motor imagery research and also in some sport studies, so it will be reviewed. Hall and Pongrac (1983) developed the Movement Imagery Questionnaire (MIQ) to examine visual and kinaesthetic imagery of simple movements, which individuals actually perform before they imagine doing them. This measure has also been popular in motor imagery and has been used in sport. Watt, Morris, and Andersen (2004) developed a measure of imagery that was designed specifically for sport, the Sport Imagery Ability Measure (SIAM). The name of the SIAM reflects the basis of all the measures listed to this point, namely that they measure some aspect of imagery ability or how well a person can use imagery. Hall, Mack, Paivio, and Hausenblas (1998) addressed a different aspect of imagery in the Sport Imagery Questionnaire (SIQ). The SIQ focuses on what types of imagery people use, rather than how well they use imagery. All these measures of imagery related to movement and sport are described briefly here.

The Vividness of Movement Imagery Questionnaire-II (VMIQ-II; Isaac, 1995) measures the vividness of movement imagery. The original VMIQ was developed by Isaac, Marks, and Russell (1986) to measure visual imagery of movement and kinaesthetic sensations regarding individual movements. The VMIQ has 24 items,

rating from 1 (*perfectly clear and as vivid as normal vision*) to 5 (no image at all).

The VMIQ attained moderate to high internal consistency reliability (alpha coefficients through several studies (e.g., Eton, Gilner, & Munz, 1998; Isaac et al., 1986; Lequerica et al., 2002). However, there were difficulties in distinguishing individual differentiations of motor skill levels in the VMIQ. Thus, the VMIQ-II is the recent revision of the VMIQ, which was focused on a single specific factor for its adaptation, such as kinaesthetic sensation rather than general, multimodal imagery. The VMIQ-II is comprised of 18 items, using the same ratings as the original version. The internal consistency was .96 and test-retest was .76.

The Movement Imagery Questionnaire, Revised (MIQ-R; Hall & Martin, 1997). The original MIQ was developed by Hall and Pongrac (Hall & Pongrac, 1983). The MIQ comprised 18 items, presenting the same nine items on the visual subscale and the kinaesthetic subscale, using a 7-point rating scale ranging from 1 (*very easy to picture or feel*), to 7 (*very difficult to picture or feel*). Each item involves physically making a simple movement, such as standing on the left leg and touching the knee with the right foot. Then the person imagines what that looks like (visual) and what it feels like (kinaesthetic). Focusing on doing imagery of actual tasks intuitively seems to tap more directly into the person's experience of their imagery than asking people simply to say how well or vividly they can imagine a task with no requirement to use imagery. The internal consistency coefficients for the MIQ ranged from .87 to .89 for visual imagery and .86 to .91 for kinaesthetic imagery. Using the MIQ to assess imagery ability is more useful for motor learning, rather than sport performance because of the simple movements involved, which have low ecological validity for imagery of complex sport skills. Thus, the revised version of the MIQ-R was developed by Hall and Martin (1997) to control administration time and focus on

physical movements. The MIQ-R has a reduced number of items and modified words. It comprises 8-items on 7-point Likert scales, ranging from 1 (*very hard to see/feel*) to 7 (*very easy to see/feel*). The internal consistency was .87 for visual and .88 for kinaesthetic imagery (Abma, Fry, Li, & Relyea, 2002). The MIQ-R is useful for physical movement settings regardless of whether it is used in small or large groups.

The Sport Imagery Ability Measure (SIAM; Watt, Morris, & Andersen, 2004) was developed to provide a multimodal, multidimensional measure of imagery ability that relates to sport. It is based on respondents imagining a personal version of four generic scenes, such as a “slow start” for one minute and then rating their imagery. The SIAM comprises 12 subscales, six sense modalities, which are visual, auditory, kinaesthetic, tactile, olfactory, and gustatory imagery; five dimensions, which are vividness, controllability, ease of generation, speed of generation, and duration of imagery; and emotion. The SIAM is scored on visual analogue scales, with opposing anchors, such as “no feeling” to “very clear feeling” for the tactile modality. The analogue is a 100mm line between the anchors. Respondents place a cross along the line at the point that reflects their rating. Each subscale is the sum of the ratings for that sense or dimension for all four scenes. This means that scores can range from 0-400, giving this measure good discriminability. Internal consistency is from .66 to .87 and test-retest reliability is from .41 to .76 over four weeks.

The Sport Imagery Questionnaire (SIQ; Hall, Mack, Paivio & Hausenhlas, 1998) is used to measure the cognitive and motivational functions of imagery in sport. The SIQ is modified from Paivio’s (1985) model and uses 30 items to measure five subscales, which are cognitive-general, cognitive-specific, motivational general-mastery, motivational general-arousal, and motivational-specific imagery. The items use 7-point Likert scales, anchoring from 1 (*rarely*), to 7 (*often*). The internal

consistencies for each subscale were acceptable, ranging from .68 to .87. The SIQ is revised by Hall, Stevens, and Paivio (2005). Because, the original 1998 paper does not indicate the confirmatory factor analyses, the revised SIQ was conducted. There is some debate whether the SIQ measures imagery functions or imagery use (Nurphy, Nordin, & Cumming, 2008; Cumming & Ramey, 2009). There is a difference between imagery function (outcome) and imagery use (type) in practice. The use of each five types of imageries might provide a variety of functions (outcomes) depending on individual purpose. For example, the cognitive-specific imagery might relate to several functions, such as enhancing confidence and motivation, and improving skills. Thus, more often in its wide use in the research literature researchers refer to types of imagery use. The SIQ now has substantial use in correlational studies with measures of other psychological variables, including motivation, anxiety, and confidence (Callow & Hardy, 2001; Abma, Fry, Li, & Relyea, 2002). The SIQ was employed in a doctoral dissertation on flow in which the five types of imagery use were correlated with the nine dimensions of flow (Koehn, 1997).

Based on the systematic development of questionnaires to measure imagery, there have been many studies in sport particularly during the 1990s and 2000s. Thus, I will examine imagery research focused on psychological variables related to flow experience and enhancing performance. Finally, I will discuss research that has examined whether imagery interventions can enhance flow experience.

### *Research on Imagery Related to Flow in Sport*

Imagery techniques have been used for a variety purposes in sport, the most common application being to improve sport skills or control psychological variables. The psychological variables that have been studied with imagery include confidence, competitive anxiety, and motivations. These are potential keys to experience flow.

However, some studies have focused on the connection between imagery and flow experience. Thus, to understand the mechanisms relating imagery and flow, in this section I will thoroughly review research on imagery that has any link to flow.

Particularly, I will review briefly the previous research in which conducted imagery treatments have been applied to improve performance. Then, I will review the imagery research that examined ways to enhance performance and psychological variables, including confidence, anxiety, self-efficacy, and motivation, which have been proposed to facilitate the occurrence of flow experience. In the final section, I will examine those studies that have examined the application of imagery to enhance flow experience and performance.

### *Imagery and Performance*

As mentioned previously, there is a great deal of evidence from research that has demonstrated that imagery training improves performance; whereas, few studies have examined whether imagery training enhances flow experience. In terms of performance, although it is emphasised in the accounts of flow experience that athletes in flow focus on the task not on the outcome, higher scores of flow have been noted to be produced by athletes with the best performance outcomes (Jackson & Roberts, 1992). Moreover, performers with high skills tend to experience flow more frequently compared to performers with low skills (Wagner & Beier, 2005). The characteristics of optimal or peak performance are similar to flow, suggesting a connection between the two. The key characteristics of peak performance are a narrow focus of attention; being immersed in the present, feelings of control and confidence; having no fear; and feeling physically and mentally relaxed; which also are the core antecedents of flow and could be controlled using imagery. Thus, flow may be enhanced by improving performance, which is improved using imagery. To



understand the connection between imagery and performance, a meta-analysis by Hinshaw (1991) examined the effectiveness of imagery for performing a motor task compared to no practice from 21 studies. The results revealed that across the 44 effect sizes there was a moderate effect of imagery on task performance. For example, McKenzie and Howe (1991) examined the effect of imagery on tackling performance in rugby. The conditions were mental imagery, physical practice, and mental imagery plus physical practice. The 74 male rugby players were assigned randomly. The results showed that mental imagery plus physical practice significantly improved tackling performance over physical practice or mental imagery alone. A similar study was conducted by Savoy and Beitel (1996). Savoy and Beitel used reversal design to examine the effect of two conditions, physical practice only and a combined physical practice and imagery intervention, in foul shooting for 10 highly skilled basketball players. The results revealed that the combination of physical practice and imagery had positive effectiveness on performance when compared to physical practice only. Savoy and Beitel recommended that, when consistency is maintained, imagery training can improve performance significantly. They stated that imagery with physical practice would be more effective rather than physical practice only. These two studies supported the effectiveness of imagery training with physical practice for improvement of performance.

More specifically looking at the functions and direction of imagery, Short, Bruggeman, Engel, Marback, Wang, Willadsen, and Short (2002) examined the effect of imagery functions on self-efficacy and performance in a golf-putting task. The cognitive specific (CS) and motivation general mastery (MG-M) imagery functions and facilitative and debilitative imagery direction were examined. Facilitative imagery was imagining a positive outcome, such as making the putt, and debilitative imagery

was imagining a negative outcome, such as missing the putt. The 83 golfers were divided into seven conditions: CS and facilitative imagery, CS and debilitative imagery, MG-M and facilitative imagery, MG-M and debilitative imagery, CS imagery only, MGM imagery only, and a control condition. The results revealed that facilitative imagery helped improve performance, while debilitative imagery decreased performance. A similar study was conducted by Ramsey, Cumming, and Edwards (2008), who examined the effects of facilitative and debilitative imagery direction on golf putting. Facilitative imagery was designed to have a positive influence on individual ability. Debilitative imagery was designed to disturb individual ability. The 75 golfers were divided into three conditions: facilitative, debilitative, and a no-imagery control condition. The results revealed that the golfers in the facilitative imagery condition improved significantly on golf putting performance over the debilitative imagery and control condition players. Smith, Holmes, Whitemore, Collins, & Devonport (2001) examined the effects of imagery training for field hockey players on penalty flick performance, based on bio-informational theory (Lang, 1977). This also used the Langian imagery perspective in presenting stimulus and response propositions. Twenty-seven novice field hockey players of both genders completed the Movement Imagery Questionnaire (MIQ-R; Hall & Martin, 1997) and Smith et al. assigned them to one of three conditions: a stimulus imagery condition, a stimulus and response imagery condition, and a control condition. Stimulus imagery included experience of the external environment, such as noise made by the crowd and sight of the goal when taking a penalty flick in the final minute of a close field hockey match. Response imagery involved responses of individuals to the stimuli, such as muscle contractions, dry mouth, and sweaty palms. The results showed that players in the stimulus and response imagery condition

significantly improved their performance when compared to those in the stimulus imagery condition and control condition players. Smith et al. concluded that, when conducting intervention studies, to be effective an imagery script, should include response propositions as well as stimulus propositions. The study by Smith et al. also demonstrated that a mixture of internal and external imagery might be effective for enhancing performance. Lee (1990) examined effectiveness of imagery for performance of bent knee sit-ups. The participants were 52 male psychology students between 18 and 30 years of age. There were three conditions, namely relevant imagery, irrelevant imagery, and distraction control. For the relevant imagery condition, participants were asked to imagine their best sit-up performance and also any feelings of success experienced at the time of the performance. Participants in the irrelevant imagery condition were asked to imagine any situation in which they felt especially happy and/or confident. Participants in the distraction control condition were asked to count backwards from 500 by subtracting seven from each subsequent difference in a loud manner as well as to concentrate specifically on the numbers being said. The results showed that participants who experienced the relevant imagery condition produced significantly larger improvements over baseline compared to those in the irrelevant imagery condition and a control condition.

Overall, the previous studies demonstrated that the content of imagery was an important element for the enhancement of performance. Thus, imagining using a mixture of internal and external perspectives, using imagery related to performance tasks, and facilitative imagery have the potential to provide positive effects on performance.

*Imagery, Psychological Variables, and Performance*

With reference to psychological variables, many studies in sport have shown that imagery modified psychological variables, such as reducing anxiety (Carter & Kelly, 1997; Gould & Udry, 1994), increasing confidence (She & Morris, 1997), and increasing intrinsic motivation (Martin & Hall 1995). These psychological variables are closely associated with the flow dimensions sense of control (anxiety and confidence), clear goals (intrinsic motivation), and autotelic experience (intrinsic motivation).

To understand the relationship between imagery, self-confidence, and anxiety, correlation studies have been conducted by several researchers. Moritz, Martin, Hall, and Vadocz (1996) identified the image content related to confidence in 57 elite competitive roller skaters. The roller skaters completed the Movement Imagery Questionnaire-Revised (MIQ-R) to assess visual and kinaesthetic imagery ability. They also answered the Sport Imagery Questionnaire (SIQ) to assess imagery use and the State Sport Confidence Inventory (SSCI) to assess sport confidence. The results of this correlation study showed that athletes with high confidence used mastery and arousal imagery. Moreover, the athletes with high confidence had higher kinaesthetic and visual imagery ability than the athletes with low confidence.

In addition, Vadocz, Hall, and Moritz (1997) examined relationships between competitive anxiety and imagery use with 56 Junior North American roller skating championship competitors. All participants completed the revised Movement Imagery Questionnaire (MIQ-R), Sport Imagery Questionnaire (SIQ), and Competitive State Anxiety Inventory-2 (CSAI-2; Martens, Burton, Vealey, Bump, & Smith, 1990). The results revealed athletes who used more MG-Arousal imagery reported higher cognitive anxiety and athletes who used MG-Mastery imagery had higher levels of self-confidence. In addition, athletes who had higher levels of imagery ability used

imagery more frequently in their sport. Self-confidence and kinaesthetic imagery ability were also observed to discriminate between medallists and non-medallists. Vadocz et al. suggested that imagery can be used to control competitive anxiety levels, thus enhancing self-confidence. Callow and Hardy (2001) investigated the imagery types associated with sport confidence in low and higher skilled netball players. The 110 female national league netball players completed the SIQ and State Sport Confidence Inventory (SSCI; Vealey, 1986) to measure the relationship between the five types of imagery use, namely motivational general-arousal (MG-A), motivational general-mastery (MG-M), motivational specific (MS), cognitive general (CG), and cognitive specific (CS) on one hand, and state sport confidence on the other. The results indicated that CG imagery, which is concerned with imagining plans and strategies and MG-A imagery, which is about dealing with challenging situations, predicted confidence in low skilled netball players, whereas, MS imagery, which is about imagining goal achievement, was a significant predictor of confidence in higher skilled netball players. The results suggested that different sport types and individual skill levels might influence the effect of imagery functions.

Abma, Fry, Li, and Relyea (2002) investigated the differences on imagery content and imagery ability between 101 high and low trait confident track and field athletes. There were three measures: the Trait Sport Confidence Inventory (TSCI; Vealey, 1986) to assess confidence, the SIQ to assess imagery use, and the MIQ-R to assess imagery ability. The results showed that highly confident athletes used significantly more of all types of imagery compared to athletes with low confidence. On the other hand, there was no difference in imagery ability between high and low confident track and field athletes. The study supported the proposition that using a variety of imagery more frequently might help reduce athletes' anxiety and enhance

performance and confidence. Recently, a study looked at imagery and observational learning use and their relationship to sport confidence with 345 athletes (Hall, Chandler, Cumming, Law, Ramsey, & Murphy 2009). The Functions of Observational Learning Questionnaire (FOLQ; Cumming, Clark, Ste-Marie, McCullagh, & Hall, 2005), the SIQ, and the TSCI were completed in practice and competitive situations. The results revealed that athletes used all types of imagery more frequently in competition than they did in practice, where their observational learning functions were used more frequently. Moreover, CS and MG-M imagery strongly predicted sport confidence in competition and practice, whereas observational learning only predicted practice confidence. This study suggested that CS and MG-M imagery have a significant impact on confidence in the sport environment. Beauchamp, Bray, and Albinson (2002) examined the relationship between pre-competition imagery use, self-efficacy, and golf performance with 51 varsity golfers. There were three measures in the study. The SIQ measured pre-competition imagery use, the Self-Efficacy Questionnaire which was single-judgement format, developed specifically for this study to measure strength of self-efficacy based on Bandura's (1997) micro-analytic method for measuring task specific self-efficacy, and gross score for the round of golf played was used to measure golf performance. The results showed that imagery, especially MG-M imagery, was related to higher self-efficacy and golf performance. In addition to providing further confirmation that types of imagery use can predict confidence and performance, another significant aspect of the results from this study was that self-efficacy predicted golf performance.

An interesting intervention study that linked imagery and self-efficacy was conducted by Jones, Mace, Bray, MacRae, and Stockbridge (2002). The 33 novice

female climbers were randomly assigned to either an experimental group (imagery intervention focus on motivational general-mastery and motivational general-arousal) or a control group (light exercise program). Pre- and post-tests were conducted using the Perceived Stress Index (PSI; Jacobs & Munz, 1968) to measure perceived stress. The Self-Efficacy Test included two items that were developed to measure participants' self-efficacy. Performance was measured using a 10-point scale from 1 (*very poor*) to 10 (*excellent*). The scale was developed to rate climbing performances that were recorded on video. Participants in the imagery intervention condition revealed significantly lower perceived stress and higher self-efficacy than those in the control condition. However, there were no differences between the two conditions in climbing performance. These studies support the proposition that motivational general-mastery and motivational general-arousal imagery training have a positive effect on self-efficacy.

In an experimental study, Callow, Hardy, and Hall (2001) investigated the effects of motivational general-mastery (MG-M) imagery on the confidence of four high-level badminton players using a single-case, multiple-baseline design. Callow et al. employed the MIQ-R to assess imagery ability, the SSCI to assess sport confidence, and the SIQ to assess imagery use. Participants completed six imagery sessions twice per week for three weeks. The results revealed a facilitative effect for the imagery intervention on state sport confidence for three of the four participants. This study supported imagery functions and that MG-M imagery specifically has a positive effect on performance confidence, both prior to a competition and during the competitive season in elite sport.

A similar study was conducted by Callow and Waters (2005). They investigated the effect of a kinaesthetic imagery intervention on sport confidence in

three flat-race horse jockeys, using a single case, multiple-baseline design. The SSCI was used to assess state sport confidence and the MIQ-R was used to measure visual and kinaesthetic imagery ability. There were six sessions of the kinaesthetic imagery intervention conducted twice weekly for three weeks. The results showed a significant effect of kinaesthetic imagery in increasing performance and confidence in two jockeys out of three. Callow and Waters argued that the jockeys might have prepared for their performance using kinaesthetic imagery, which has a cognitive function, and this influence enhanced their self-confidence. The studies by Callow and colleagues supported the results of the correlation study conducted by Vadocz, Hall, and Martiz (1997) that imagery, such as motivation general-mastery imagery and kinaesthetic imagery, can reduce anxiety, which enhances confidence as well as performance.

Martin and Hall (1995) investigated the relationships between mental imagery and intrinsic motivation in 15 male and 24 female golfers from a university community. The 39 beginner golfers were assigned to one of three conditions: performance plus outcome imagery, performance imagery, and no imagery control group. The imagery intervention consisted of six sessions. The first three sessions were learning-oriented, and the other three sessions were performance-oriented. Martin and Hall included the Task Reaction Questionnaire (TRQ; Mayo, 1977) to assess intrinsic motivation, the Physical Self-Efficacy Scale (PSES; Ryckman, Thornton, & Cantrell, 1982) to assess task-specific self-efficacy, a scale measuring task-specific self-efficacy, which was developed for this study, to assess magnitude and strength of self-efficacy based on Bandura's (1977b) two conceptualised dimensions of self-efficacy, and the MIQ to assess visual and kinaesthetic movement imagery ability. The results demonstrated that participants in the performance imagery condition spent more time practising the golf-putting task than those in the control



condition. This study suggested that imagery related to performance could enhance motivation positively to continue individual training programs. There was no effect on self-efficacy or the correlation between self-efficacy and motivation. It is possible that six intervention sessions was not enough to enhance the self-efficacy for participants who are absolute beginners.

Carter and Kelly (1997) examined the effectiveness of imagery with 43 male and 30 female intramural college basketball players. Carter and Kelly employed three conditions: confidence imagery, paradoxical imagery and a control condition. Paradoxical imagery involved the participant visualizing shooting basketball free throws while also imagining he or she is anxious and doubtful. The results demonstrated that confidence imagery reduced state anxiety, whereas, paradoxical imagery increased anxiety. From the results of this study, it was suggested that the contents of imagery might influence performance anxiety level. Page, Sime, and Nordell (1999) also investigated the effects of imagery on 40 female college swimmers' perception of anxiety. The 40 female participants completed the Competitive Anxiety Perception Scale (CAPS; Murray, 1989) to measure pre-competitive anxiety and the CSAI-2 to measure perceptions of anxiety pre to post imagery intervention. Once a week over the course of five weeks, participants received an imagery intervention that comprised 30 minutes of motivational and cognitive imagery. The results revealed that imagery affected individuals' perceptions of anxiety from less positive to more positive. Page, Sime, and Nordell suggested that motivational and cognitive imagery can modify perceptions of anxiety. These two intervention studies demonstrated that motivational and cognitive imagery that emphasises confident performance can reduce anxiety during performance.

Feltz and Riessinger (1990) examined the effects of in vivo emotive imagery and performance feedback on self-efficacy and muscular endurance with both genders for 105 college students, who were assigned to one of three conditions: mastery imagery plus feedback, feedback alone, or a control condition. The muscular endurance task was back-to-back competition against a confederate. Participants in the imagery condition produced significantly higher muscular endurance and self-efficacy compared to students in the feedback alone and control conditions.

Callery and Morris (1997) examined the effects of an imagery program on self-efficacy and performance with 8 elite Australian rules football players, using a single-case, multiple-baseline design. Bandura's microanalytic technique was used to measure self-efficacy. The performance measure was the proportion of front and centre positions in league matches. The imagery treatment was five 30-minute sessions in the first week and three 20-minute sessions a week until the end of the season. Also, the imagery training included a brief relaxation and video session each week to help front and centre performance in the real game situation. The results showed that the imagery intervention significantly improved performance skills and also enhanced self-efficacy for all players.

In a similar real competition study, She and Morris (1997) investigated an imagery rehearsal program to examine state self-confidence and performance in baseball batting in expert performers, using a single-case design. The participants were 9 elite and sub-elite Australian state male baseball batters. Batting average scores in state competition and an expert rating of batting by recording video during performance in the same matches were used to measure performance. Also, She and Morris used Bandura's microanalytic technique to assess self-efficacy and the SSCI to assess state self-confidence. Imagery rehearsal focused on the process of hitting rather

than the outcome. The results revealed that imagery rehearsal enhanced the hitting performance, self-efficacy, and state self-confidence of expert baseball players. From the results, She and Morris concluded that imagery rehearsal positively affected self-confidence and performance in a real competitive context.

Most studies showed that various types of imagery use were positively related to self-confidence and performance skills. Specifically, the roles of imagery contents revealed that motivation general-mastery and cognitive specific imagery were strongly related to self-confidence, while motivation general-arousal imagery was related to athletes' anxiety and arousal. However, athletes use imagery for a variety of purposes and functions depending on sport types and the individual.

In summary, the correlation studies consistently demonstrated positive relationships between imagery and psychological variables. However, the type of imagery use that showed the strongest relationship with psychological variables and performance did vary from context to context. This suggests that correlational studies between imagery use and psychological variables, such as flow dimensions, should be conducted as a precursor to intervention studies, in which imagery is used to modify those psychological variables. Then the focus of imagery training can be on the relevant imagery use types. At the same time, the cause and effect relationships between imagery and those psychological variables is unclear from correlational studies. Thus, to explore the causal relationships between imagery and psychological variables, such as confidence, anxiety, and motivation, several researchers addressed a variety of intervention studies.

Overall, correlation and intervention studies have consistently demonstrated that imagery reduces anxiety and enhances self-confidence, self-efficacy, and motivation. Those psychological variables, which relate to flow experience, also

positively influence performance. Thus, enhancing those psychological variables using imagery might positively influence flow experience as well.

### *Imagery Interventions Related to Flow*

Flow is one of the reasons for participating in or dropping out of activities. Flow is defined as an optimal psychological state that leads to the pursuit of an activity for its own sake and is associated with positive affect experiences. Recently, researchers have attempted to develop instruments that measure the flow experience and thereby encourage further research that may elucidate methods that mediate this experience (Jackson & Eklund, 2002; Jackson & Marsh, 1996). Particularly, in a number of studies, researchers have examined how imagery is related to flow state, peak experience and peak performance in athletes. For instance, Angelo (2002) recommended strategies to enhance flow state. These included using affirmation statements, changing negative thoughts to positive thoughts, countering, reframing, and self-hypnosis. The aim of these strategies was building confidence and developing concentration skills. Moreover, Grove and Lewis (1996) studied the relationship between hypnotic susceptibility, prior experience, heart rate, and flow with 96 circuit trainers. Imagery has much in common with hypnosis, so some implications have been drawn about the potential use of imagery from studies examining the relationship between hypnosis and flow experience. Grove and Lewis found that high hypnotic susceptibility and prior experience of circuit training were positively related to the experience of flow. There was no significant relationship between heart rate and self-reports of flow experience. In addition, Straub (1996) examined the effect of a specific imagery program on flow and psychological skills in

five wrestlers. He found that a specific imagery program significantly increased flow state and psychological skills. However, one of the limitations of this study was the small sample size of five wrestlers.

Pates and colleagues (Pates, Cummings, & Maynard, 2002; Pates, Karageorghis, Fryer, & Maynard, 2003; Pates & Maynard, 2000; Pates, Maynard, & Westbury, 2001; Pates, Oliver, & Maynard, 2001) and Lindsay, Maynard, and Thomas (2005) have explored the effects of hypnotic interventions on flow states. The studies using hypnotic interventions to enhance flow in sport are summarised in Table 2.2.

Table 2.2

*Studies Using Interventions to Enhance Flow in Sport*

Author	Sample	Intervention	Methods	Result
Straub (1996)	Five wrestlers	Specific imagery program	Case study	Increased psychological skills & flow state
Pates & Maynard (2000)	Three golfers	Hypnosis (Relaxation, imagery, hypnotic induction, hypnotic regression, and trigger control)	Single-subject, ABA-design	Improved performance & increased feelings and cognitions associated with flow
Pates, Oliver, & Maynard, (2001)	Five competitive Golf players	Hypnosis	An idiographic, single-subject, multiple baselines, across-subjects design	Improved golf putting performance & flow
Pates, Cummings, & Maynard (2002)	Five collegiate basketball players	Hypnosis (Relaxation, imagery, hypnotic induction and regression, and trigger control procedures)	An idiographic, single-subject, multiple baselines, across-subjects design	Improved three-point shooting performance & flow
Pates, Karageorghis, Fryer, and Maynard (2003)	Three collegiate netball players	Self-selected music & imagery	An idiographic, single-subject, multiple baselines, across-subjects design	Improved netball shooting performance by triggering emotions, cognitions associated with flow
Lindsay, Maynard, & Thomas (2005)	Three elite cyclists	Hypnosis (Relaxation, imagery, hypnotic induction)	Nonconcurrent, multiple baseline design	Two of three participants improved performance & all participants increased flow state (FSS)
Koehn (2005)	Four junior elite tennis players	Imagery, using CS & MG-M imagery to enhance dimensions of flow	Single-case, multiple-baseline design across competitive tennis season	Three players increased flow and all four increased performance of service and ground strokes. All four increased national junior ranking.
Nicholls, Polman, & Holt (2005)	Four high-skilled amateur golfers	Individual MG-M imagery, CS imagery	Single-subject ABA-design	Four players increased intensity of flow and all four increased their performance

Pates and Maynard (2000) examined the effects of hypnosis on flow states and golf-chipping performance of three male golfers, using a single-subject ABA design. The hypnosis interventions included relaxation, imagery, hypnotic induction, hypnotic regression, and trigger control procedures over 15 weeks and 21 trials. As a trigger, golfers used their optimal performance through visual, auditory, tactile, olfactory, and gustatory senses. For performance, the distance the ball ended up from the hole was measured. For flow experience, the FSS was administered. The results showed that all golfers improved their golf-chipping performance and flow experience during the intervention. In addition, intense relaxation, confidence, concentration, and control of the stroke were experienced in the practical assessment. Pates and Maynard concluded that hypnosis increased flow state and performance by controlling golfers' emotions, thoughts and perceptions. To extend the work of Pates et al. (2000), Pates, Oliver, and Maynard (2001) examined the effect of hypnosis on golf-putting performance and flow state in five competitive players using a single-subject multiple baselines design. The hypnosis intervention was composed of hypnotic induction, hypnotic regression, and trigger control for 40 minutes. The results revealed that golf putting performance and flow state were improved by using hypnotic intervention. Pates et al. concluded that hypnosis was an effective tool for improving golf putting and controlling cognitions associated with flow states. A similar study was conducted by Pates, Cummings, and Maynard. Pates et al. (2002) examined hypnosis in the performance of three-point shooting and monitored flow state in five collegiate basketball players. The hypnosis consisted of relaxation, imagery, hypnotic induction, hypnotic regression, and trigger control procedures. The results showed that basketball three-point shooting performance and the athletes' flow state were positively increased by hypnotic training. Moreover, Pates, Karageorghis, Fryer, and Maynard (2003)

demonstrated that self-selected music and imagery interventions enhanced athletic performance by triggering emotions and cognitions associated with flow, through examining the effects of asynchronous music on flow and netball shooting performance in three netball players. Lindsay, Maynard, and Thomas (2005) examined the effects of hypnosis on flow state and cycling performance in three elite cyclists. The hypnotic intervention consisted of relaxation, imagery, hypnotic induction, hypnotic regression, and triggers associated with optimal performance. The results revealed that one participant had a positive influence during the cycling performance, while the second participant had a sporadic influence. The third participant did not perceive any effects from the intervention on his cycling performance. For flow experience, one of three participants increased flow state. Even though the work of Lindsay et al. did not support the studies by Pates et al., the hypnosis interventions, including relaxation, imagery, hypnotic induction, hypnotic regression, and trigger control procedures, improved performance and increased feelings and cognitions associated with flow in golf, basketball, netball, and cycling. Thus, as previous studies demonstrate, imagery can enhance flow directly or through psychological variables. Also, imagery interventions can be used as a tool to enhance performance, while flow could be a mediating factor.

While the studies by Pates et al. on the application of hypnosis, including imagery, to enhance flow state and performance appear promising, there has still been little study conducted on enhancing the flow state, using other psychological interventions including imagery training in its own right. The evidence cited previously showing that imagery has the potential to modify psychological variables, such as anxiety, confidence, motivation, and concentration, that have independently been shown to affect flow, suggests that imagery could be an effective technique for



use in interventions to enhance flow. Hence, application of a variety of psychological skills such as imagery to enhance flow and performance might provide valuable information for practice and future research. It should also be noted that the studies of hypnosis and flow examined only the effect of that imagery-like technique on global flow. Since those studies were completed, Jackson and Eklund have demonstrated the reliability and validity, and particularly the confirmation of the 9-factor structure, of the DFS-2 and the FSS-2. This opens up the field of research on flow to examine more readily the effect of interventions on each of the dimensions, which should further enhance the understanding of how to enhance flow efficiently and effectively.

Nicholls et al. (2005) examined the effects of individualised imagery on flow intensity and frequency, and also performance for four high-performance amateur golfers, using a single-subject ABA-design. The imagery interventions included individualised MG-M imagery and CS imagery over a 12-week period. For performance, participant-selected golf skills were measured. The FSS-2 and DFS-2 were measured for flow intensity and frequency. The results showed that three of the four players increased the mean global flow intensity and all four golfers increased mean global flow frequency and performance. In addition, all participants believed that their imagery ability had improved because of the intervention. Nicholls et al. concluded that individualised imagery increased flow intensity and frequency as well as performance.

Recently, an unpublished PhD thesis employed this approach to examine the development of flow in tennis. Koehn (2007) administered the SIQ, the DFS-2, and the FSS-2 to 415 high-level junior tennis players. He used correlation and regression to identify which of the five types of imagery use were related to which dimensions of flow. Koehn found that cognitive specific and motivational general-mastery showed

the strongest relationships to flow dimensions. In particular, the flow dimensions of challenge-skills balance, clear goals, total concentration on the task, and sense of control were influenced by one or both of those types of imagery use. Koehn then developed an imagery script in which statements related to those key aspects of flow were made emphasising the type of imagery use most strongly linked to the specific flow dimension. He delivered the imagery script to four elite junior tennis players, using a single-case, multiple-baseline design over a competitive season, during which he measured service and groundstroke performance in competition as baseline for several matches, then administered the intervention and monitored performance for several more matches. Three of the players increased flow levels after the intervention and all four increased service and groundstroke performance. Importantly, in real terms, all four players increased their national rankings substantially during the course of the study. There seems to be promise in this approach in which key components of imagery use are identified in relation to important dimensions of flow, as the basis for devising an imagery training program optimal for a specific performance activity, a squad, or even an individual performer.

#### *Guidelines for Designing Imagery Interventions*

Morris et al., (2005) observed that research on imagery in sport is wide-ranging. There are many studies in which imagery is employed with the intention of influencing performance, other kinds of behaviour, and psychological variables, both cognitive and affective. These studies have been conducted in diverse contexts with many different types of participant. Drawing coherent guidelines from all this work for the application of imagery in sport is, thus, challenging. In this section, I consider some suggestions that have been made to help practitioners and researchers use imagery effectively.

Gregg, Hall, and Hanton (2007) studied effectiveness of mental imagery in heptathletes. A semi-structured interview was conducted to explore the influencing factors when using mental imagery by six heptathletes. The results revealed that factors influencing the effectiveness of imagery were relevance, quality (control and senses), temporal factors (level of competition, event, and setting), and mental state. Gregg et al. (2007) concluded that images which are more related to the present event, familiarity about the rhythm of an event, focusing on a few key images of whole performance, and positive physical and mental state were effective factors to consider in using imagery to enhance performance. In addition, heptathletes explained that the anxiety of competition was reduced by using imagery. The conclusions of Gregg et al. are meaningful in terms of proposing essential elements or guidelines for designing imagery interventions.

There are a number of models or guidelines that present strategies for the delivery or application of imagery in sport. Those that are more commonly cited or used in practice are listed in Table 2.3.

Table 2.3

*Models or Guidelines for the Delivery or Application of Imagery in Sport*

Strategies	Process of strategies
Visuo-Motor Behavior Rehearsal (VMBR: Suinn, 1984)	1) Use of progressive muscular relaxation to induce a relaxed state 2) Imagine typically targets the demands of the athlete's sport 3) Focus on specific skills and elements of the sporting performance 4) Relaxation activity
AIM Strategy (Korn, 1994)	1) Active relaxation 2) Imagery of the end result (Goal-oriented imagery) 3) Mental Rehearsal
Sport Imagery Training (SIT: Martens, 1987)	1) Sensory awareness 2) Vividness development 3) Controllability 4) Development 5) Practice
Guided Imagery (Ungerleider, 1996)	1) Evaluation 2) Practicing of imagery (Develop vivid images, Control those images, Understand your perspective of imagery) 3) Application of guided imagery to the athlete's specific sporting activities
Stress Inoculation Training (Meichenbaum, 1977, 1985)	= Cognitive- behavioural intervention 1) Relaxation training 2) Imagery 3) Coping behaviours into a single plan
Five Step Strategy (Singer, 1988)	1) Readyng 2) Imaging 3) Focusing 4) Executing 5) Evaluating
PETTLEP (Holmes & Collins, 2001)	Seven stage imagery delivery model 1) Physical 2) Environment 3) Task 4) Timing 5) Learning 6) Emotion 7) Perspective
Imagery Training Program Model (Morris, Spittle, & Watt, 2005)	Six component model 1) Personal Factors 2) Environment 3) Content 4) Rehearsal Routines 5) Enhancements 6) Evaluation

In visuo-motor behaviour rehearsal (VMBR: Suinn, 1984), Suinn proposed four steps in the application of imagery in sport. The first step is progressive muscular relaxation, which is intended to induce a relaxed state, a state Suinn argued is important for effective imagery use. Others have questioned the need for relaxation to

precede imagery. The second step of imaging typically targets the demands of the athlete's sport. The third step concerns specific skills and elements of a sport performance. The final step is relaxation activity. The AIM strategy (Korn, 1994) has three steps: active relaxation, imagery of the end result (goal-oriented imagery), and mental rehearsal. Martens (1987) proposed sport imagery training (SIT: Martens, 1987), which has five steps: sensory awareness, vividness development, controllability, development, and practice. Guided Imagery (Ungerleider, 1996) has three steps: evaluating an athlete's imagery skills, practising of imagery (develop vivid images, control those images, understand the perspective of imagery), and application of guided imagery to the athlete's specific sporting activities. Stress inoculation training (Meichenbaum, 1977, 1985) is a cognitive-behavioural intervention that has three steps: relaxation training, imagery, and combining coping behaviours into a single plan. The five step strategy (Singer, 1988) is readying, imaging, focusing, executing, and evaluating. Holmes and Collins (2001) proposed a seven part model for doing imagery, PETTLEP. The seven phases are physical, environment, task, timing, learning, emotion, and perspective. Morris et al. (2005) presented a broader model involving six components, which are prerequisites, environment, content, rehearsal routines, enhancements, and evaluation. This approach recognised the breadth and diversity of research on imagery use. It did not aim to provide a definitive set of principles. Morris et al. argued that the evidence is so diverse that it must be applied to each context. The six components direct practitioners to the major kinds of issues that they need to consider by examining the latest research.

Gould et al. (2002) developed an imagery-training program that had four phases. The first phase was awareness, realistic expectations, and basic education. The

second phase was imagery skill evaluation and development based on sensory awareness training, vividness training, and controllability training. The third phase was using imagery, which included the coach or psychologist reminding players to use imagery. It is helpful if players use imagery frequently in many situations. The fourth phase is imagery evaluation, adjustment, and refinement, because individual ability and situations are different.

Gould, Damarjian, and Greenleaf (2002) proposed some important tips for using imagery. These are to practice imagery on a regular basis, use all senses to enhance image vividness, develop imagery control, use internal and external perspectives, facilitate imagery through relaxation, develop coping strategies through imagery, use imagery in practice and competition, use videotapes or audiotapes to enhance imagery skills, use triggers or cues to facilitate imagery quality, emphasize dynamic kinaesthetic imagery, imagine in real time, and use imagery logs. These tips are useful for designing imagery interventions and also maximising the effectiveness of imagery.

In conclusion, imagery is a valuable technique that can be used in a range of contexts, such as learning new skills or strategies, improving performance, focusing concentration, enhancing self-confidence, developing motivation, managing arousal, changing negatives into positives, and relaxation (Short, Afremow, & Overby, 2001). Also, imagery has great potential to be beneficial for the enhancement of flow experience. Those benefits of using imagery that have largely been demonstrated for athletes should also be appropriate for use in the similar performance context of dance.

### *Research on Imagery in Dance*

Professional dancers are perhaps similar to actors in terms of expressing human thoughts and feelings through their body on stage, although the focus is more on extensive movements in dance than in most acting. Imagery use may be an elemental tool for moving with emotions in dance. Research in sport has supported this idea showing imagery use positively influences the performer's arousal and emotional state as well as their thoughts and behaviour (Gould et al., 2002). Among current theories in the sport area, the triple-code and bioinformational imagery theory seem appropriate in relation to the dance domain. The reason is dancers use imagery for triggering emotion, characteristics and interpretation of the role or performance. As mentioned earlier, dancers communicate only through the movement of their body to empathize with the audience. Dancers require more sensitiveness in terms of their body movements to express the role of performance. As a result, dancers use imagery to stimulate their feelings and to translate their thoughts into body movements. Purcell (1990) supported this claim that imagery use helps dancers explore dance movement elements, create an environment, use the qualities of an object, develop a sequence or storyline for a dance, and inspire dance movements. An interesting aspect of dance is that even if dancers perform a set routine, which involves the same movements, the expression of the movements varies on different occasions because each individual feels and articulates the movements differently and same dancer feels different on different occasions. Thus, the expression of thoughts and feelings involves a variety of complex processes. To understand imagery use in dance looking at the research area, the typical focus on the use of imagery by researchers in dance has been on technical improvement, based on biomechanical analysis. For example, Hanrahan and Salmela (1990) examined three dance movements which were *Releve*, *Developpe*, and

*Dattement* using relaxation imagery, lines of movement imagery, and global imagery with 15 intermediate dancers. Pre- and post-tests were used to measure objective (kinematic) evaluation, dancers' appreciation of the images' efficacy and future imagery utility. For objective evaluation, they measured two different methods, namely movement amplitude, such as height of head and legs in inches, and expert observation. The objective evaluation revealed that the lines of movement and global imagery processes were effective on two out of three movements by expert observations, but, there were no significant differences in the movement extent results. In regard to dancers' perception of efficacy and future imagery utility, there were significant increases in lines of imagery and global imagery while there was no significant effect for actual efficacy as measured objectively. This study is valuable in terms of measuring the effectiveness of different types of imagery process on different movements and measuring relationships between dancers' perceptions of the images' efficacy and their actual efficacy as measured objectively. However, the contradictory results between expert observation and dancers' perception of the images' efficacy might be explained in terms of imagery training time. The high scores in dancers' imagery efficacy and future utility compared to actual efficacy as measured by objective methods might be because dancers used imagery training just once for 30 minutes. Compared with most imagery interventions, this is a short period of imagery training to achieve improvement of performance, thus a longer intervention of several sessions on lines of movement and global imagery processes, might lead to improved performance skills in objective evaluation by expert observation.

A similar study was conducted by Hanrahan, Tetreau, and Sarrazin (1995) to examine the use of imagery with 65 dance students in performing dance movement. The focus of this study was to evaluate empirically the effect of mental imagery when



used as a facilitator during actual performance of three dance movements, *Battement*, *Developpe*, and *Arabesque*. Hanrahan et al. found that *Battement* and *Arabesque* were significantly improved by imagery training, whereas control and relaxation conditions were not significant. This study was meaningful for examining the effectiveness of imagery related to different movements. However, the above two studies have questionable applicability because it is unclear whether changing a single movement is likely to improve the aesthetic quality of performance in dance.

Vaccaro (1997) was interested in the application of imagery use to improve body posture (i.e., alignment) in dance, using “Found Images”. Found Imagery was used to overcome the problem of individual differences in imagery visualizing skills. “Found Images” were presented by pictures or drawings of different body alignments and movements. Vaccaro stated that the imagery technique was efficient and provided communication about the mechanics of precise movement skills, interpretation of movement, and analysis of the biomechanics in dance. Found Imagery clearly and accurately described imagery of body movements. Thus, it should be beneficial to apply to educational dance environments.

Samuels (2005) explained the benefits of imagery use in dance based on individual anecdotal evidence. Each benefit summarized seven specific purposes of imagery use, which were overcoming performance anxiety, magnifying stage presence (e.g., through filling energy into a performance space for enhancing performance), healing injuries, improving alignment, mastering difficult moves, rehearsing, and relaxing. Samuels (2005) also recommended that the best way to use imagery skill was to make a mental blueprint as real as possible for at least 10 minutes a day at any place. In addition, to succeed in imagery use in individuals, dancers should make realistic goals and stay positive. Moreover, mental imagery has been

proposed to be valuable for developing movement, the role of the constructive position, lines of movement for body reorganization, refining technique, and enhancing artistic experience (Taber, 2002). Purcell (1990) recommended imagery skills enhancing learning movements focused on children's dance experience. Purcell proposed that imagery positively influences exploration of dance movement elements, creating an environment, using the qualities of an object, developing a sequence or storyline for a dance, and inspiring dance movements. The propositions made here about imagery by several writers discussing the dance experience require further study to provide evidence of the benefits of imagery use in dance through systematic and practical research.

Krasnow, Chatfield, Barr, Jensen, and Dufek (1997) examined the influence of two different programs: imagery and conditioning programs. Krasnow et al. used the Performance Competence Evaluation Measure (PCEM), a modification of the Aesthetic Competence Evaluation (ACE: Chatfield & Byrnes, 1990), to assess dancer performance and the Dynamic Alignment Measure (DAM) which was developed to assess body alignment, in 19 university dancers through a move called the grand *plie*. The 19 dancers were divided into four groups that were imagery only, conditioning only, conditioning-with-imagery, and control. They trained one hour, three times per week for eight weeks. The imagery included anatomical and metaphorical lines of movement, as well as global, visual, and kinaesthetic imagery. The conditioning involved specific exercise programs that included muscular strength, muscular endurance, cardiovascular endurance, and flexibility. The unexpected results revealed no significant effect between the conditions and showed that all four groups improved positively in terms of performance and alignment. The only main effect was in time on performance and alignment. Even though the study showed unexpected results, it

systematically approached and examined the question of using imagery interventions in dance.

A noteworthy study of imagery use in dance was conducted by Hanrahan and Vergeer (2001). Hanrahan and Vergeer studied imagery use with 11 professional modern dancers using open-ended question interviews. Hanrahan and Vergeer questioned the dancers about their methods, strategies, and techniques use to train themselves mentally and emotionally to improve their dancing. The results showed that modern dancers classified imagery into eight categories that were inspiration, atmospheric, specific movement, metaphysical, emptying out, filling up, projection, and imagery rehearsal. They concluded that the modern dancer uses imagery in a variety of ways for multiple purposes to integrate mind, body, and spirituality in training, performance, and general life. The study was meaningful in terms of exploring imagery use in-depth in professional modern dance and providing knowledge about how dancers use imagery. However, the individual ways in which dancers use imagery in general might be limitless, so classification into eight imagery categories might reflect the major types of imagery use that are common to professional modern dancers. The exploration of dancers' imagery use for a specific purpose or in a particular situation might provide more focused results for applying imagery as a psychological skill.

A similar study was conducted by Nordin and Cumming (2004, 2005b). Nordin and Cumming examined imagery use in terms of content, place, time, and function, using in-depth, semi-structured interviews with 14 professional dancers in a variety of dance forms. Both inductive and deductive content analyses were applied to analyse the transcribed verbatim themes. Nordin and Cumming used the 4 W's framework, that is, what, why, where, and when to examine imagery use in dance.

What refers to the contents of the dancers' imagery; why considers the reasons or the functions of the dancers' imagery use; where explores the place or places where the dancers used imagery; and when enquires about the period of time during which the dancers used imagery. Nordin and Cumming found that dancers used a variety of imagery types for a variety of functions. Especially, the findings were that dancers use execution images (i.e., skills, sequences, plans), metaphorical images (activities that illustrate a certain quality), context images (locations, people), body-related images (appearance, posture, feelings, sensations, character or role images (what to portray on stage), and irrelevant images (unrelated to dance). The reasons or functions of imagery use were for learning and improving, memorizing, planning, motivational drive, changing thoughts and feelings, choreographing and inspiration, enhancing movement quality, communicating with audience and developing character or role, rejuvenation and revitalization, preventing and helping injuries, pain management, spiritual reasons, and sometimes dancers used imagery, but had no reason. The final category "no reason" was triggered from actions and sensations (according to the respondents). Nordin and Cumming (2005b) concluded that dancers use imagery in similar ways to sport imagery functions, but dancers also use different types of imagery as well. Nordin and Cumming's study provided valuable wide-ranging information about the details of imagery use in dance; however, did not focus on the clarification of connections between imagery use and the outcome of imagery.

Based on qualitative interview, recently, Nordin and Cumming (2006b) developed a dance imagery questionnaire to measure the frequency of imagery use in dance. The Dance Imagery Questionnaire (DIQ) has 16 items with four subscales, which are execution imagery (i.e., skills, sequences, and plans), metaphorical imagery (i.e., activities that illustrate a certain quality), body-related imagery (i.e., appearance,

posture, feelings, and sensations), and character/ role imagery (i.e., what to portray on stage). Responses are recorded on a 7-point Likert scale ranging from 1 (*never*) to 7 (*very often*). The test-retest reliability showed acceptable levels from .80 and .87. The DIQ has not yet been used widely in research.

An interesting study was conducted by Nordin and Cumming (2005a), who examined dancers' imagery ability, using the revised MIQ with 95 professional dancers. The results were that these professional dancers had higher levels of visual imagery than kinaesthetic imagery. In addition, dancers who had high visual ability more frequently used imagery-related techniques and mastery imagery. This finding should be replicated among other samples, but it could be valuable in the development of imagery training programs. Further, given the importance that the kinaesthetic sense has during performance, when dancers cannot see themselves, it might be that training in kinaesthetic imagery would be especially productive among dancers.

There are very few studies in which imagery of dancers has been directly compared with imagery of other types of performers, such as athletes. One study examined imagery use in teachers of dance and sport. Overby, Hall, and Haslam (1997) compared imagery use between 18 dance teachers, 16 figure skating coaches, and 15 soccer coaches, using the Imagery Use Questionnaire (IUQ; Hall, Rodgers, & Barr, 1990), a precursor to the SIQ. The results showed that dance teachers used more kinaesthetic and metaphorical imagery compared to figure skating coaches and soccer coaches. However, imagery use among all three groups was unstructured and unregulated. Moreover, the reasons for imagery use were not just to achieve one specific goal, but for a variety of purposes.

In the only study identified in the literature in which imagery of dancers was compared to that of sports performers, Nordin and Cumming (2008) compared

imagery and self-confidence between 144 dancers and 124 aesthetic sport athletes, using the SIQ, the DIQ, and the TSCI. The results revealed that both dancers and aesthetic sport athletes had a high level of imagery use. Comparing dancers and athletes, the dancers more frequently used imagery than athletes in the DIQ and SIQ overall. Moreover, dancers who were involved in high-level performance and who were highly confident used imagery more frequently than low-level dancers. In particular, master imagery significantly related to self-confidence in dancers and athletes. This study concluded that the DIQ and SIQ are adequate measures for both dancers and aesthetic sport athletes in showing satisfactory internal consistency reliability, even though there were differences at the subscale level between DIQ and SIQ values. Based on the finding that higher levels of imagery were associated with higher levels of sport confidence, this study provides indirect support for the use of imagery to enhance self-confidence in the dance domain. This also has implications for the use of imagery to enhance flow, given the key role of confidence in flow, particularly reported in the sport research.

A noteworthy study investigating the relationship between imagery and psychological variables that are also related to the flow state was reported by Fish, Hall, and Cumming. Fish et al. (2004) studied the relationships among imagery use, self-confidence, and somatic and cognitive anxiety in 42 professional ballet dancers. They administered the CSAI-2 and the SIQ prior to performance. Fish et al. found support for the similarity between imagery use in dance and sport, in that dancers employed the five types of imagery use measured by the SIQ, which are cognitive general for learning sequences, cognitive specific for learning skills, motivational general-mastery for increasing self-confidence, motivational general-arousal for regulating anxiety, and motivational specific imagery for goal-setting and related

behaviours. Fish et al. found that among the five types of imagery use, cognitive general imagery was used most frequently, and motivational specific imagery was most rarely used by professional ballet dancers. Furthermore, with professional ballet dancers motivational general-mastery imagery positively predicted self-confidence, whereas cognitive specific imagery was related to somatic and cognitive anxiety. Even though this study had a relatively small sample size for correlations among the variables studied, Fish et al. provided a systematic approach for understanding relationships between imagery use, confidence, and anxiety. Again, the links shown between imagery of certain types and confidence or anxiety has promise for the use of imagery to enhance flow among dancers.

Monsma and Overby (2004) explored the relationship between imagery and competitive anxiety in 131 female auditioning ballet dancers. The CSAI-2 was used to measure competitive state anxiety and state self-confidence. The SIQ was employed to measure cognitive and motivational functions of imagery. The MIQ-R was administered to measure visual and kinaesthetic imagery ability. The results showed that these dancers experienced cognitive and somatic anxiety during an audition that was similar to that reported by athletes. Consistent with the study by Nordin and Cumming (2005a), the dancers reported higher levels of visual imagery ability than kinaesthetic imagery ability. A noteworthy finding was that dancers who used more MG-Mastery imagery and had previous success had higher levels of confidence compared to dancers who primarily use MG-Arousal imagery. This was the first study to systematically explore the relationship between imagery use and anxiety in auditioning ballet dancers.

The dance literature includes little expert guidance to sport psychology practitioners for the delivery of imagery training. Hanrahan (1995) suggested eight

steps of imagery training to construct images to enhance specific technical and energetic qualities of dance movements. First, she proposed that the dancer, teacher, and sport psychologist should analyse which parts of the body should be moving in which direction. Second, they should identify a positive and specific goal. Third, they should identify the desired movement qualities or dynamics. Fourth, the dancer, teacher, and sport psychologist should find an existing form of energy appropriate to the desired movement dynamics. Fifth, they should determine whether the image should be located inside or outside the body. Sixth, they should determine the desired direction of the flow of energy in the image. Seventh, the dancer, teacher, and sport psychologist should choose and adapt the image. Eighth, they should verify if the chosen image has any negative connotations or possible undesirable effects. Hanrahan (1995) further proposed that when they are doing imagery training, too much or too little information on imagery may cause dancers who are unable to simplify or extend the images to be confused or to block themselves. Indeed, the imagery training may induce undesired results. The dance psychology practitioner needs to undertake further examination on the variety of imagery intervention programs to identify the effectiveness of specific individual imagery training that is clear and appropriate for enhancing performance. To enhance effectiveness of imagery training, imagery in terms of focus, kinaesthetic and environmental awareness, imagery in verbal feedback, and visualizing techniques are important elements in developing imagery ability (Brodie & Lobel, 2008).

Imagery research in dance has been limited, but has developed recently based on substantial study by a small number of performance psychology researchers. This research demonstrates that dancers use a variety of imagery techniques to enhance performance through a range of aspects of dance conceptualisation and performance.



Some of these aspects of dance appear to link with the concept of flow, but no research has yet examined that. As the most promising signs from research are associated with the correlational studies that have shown positive connections between imagery, confidence, and performance, as well as the potential for imagery to help dancers manage their anxiety about training, auditions, and performance. Given the key role of senses of control in generation of the flow experience, shown in sport research, this research is encouraging. However, no studies have been found that have applied psychological skills, such as imagery to enhance flow in dance.

### The Present Thesis

Dance is a creative activity. Research on flow in a range of challenging skilled performance contexts suggest that exploring flow experience in dance might provide understanding of motivation, emotion, and behaviour in dance contexts. This could lead to increases in intrinsic motivation and enjoyment, as well as improved control of anxiety. Enhancing flow experience, which is a positive psychological state, dancers can improve the quality of their experience and might develop their creative thinking. Although many different aspects of flow state have been examined, empirical studies using a variety of interventions to enhance flow state are still limited. Using imagery techniques during practice and performance can make dancers more creative, enhance skills and their production, and lead to peak performance (Hanrahan et al., 1995; Krasnow et al., 1997; Vaccaro, 1997). Thus, the general aims of the current thesis were to focus on exploring the principal antecedents of flow in dance and then to apply imagery-based interventions to enhance flow in professional dancers. Specifically, first, the aim of the Study 1 was to use a questionnaire-based correlational approach to examine the relationship between imagery use and dispositional and state flow to identify specifically how and what kind of imagery

predicted the experience of state and dispositional flow during performance and training in professional dancers. Then, the aim of the Study 2 was to employ qualitative interview techniques to identify the main factors that influence the occurrence of flow state and to explore the use of imagery by dancers, in particular with reference to the use of imagery in relation to flow experience. Finally, the aim of the Study 3 was to examine the effects of an imagery intervention program, using aspects of imagery that most effectively influence the key dimensions of flow to enhance dancers' experience of flow during practice and performance.

## CHAPTER 3: RELATIONSHIP BETWEEN FLOW EXPERIENCE AND IMAGERY USE AMONG DANCERS

### Introduction

As reported in the literature review, dancers often experience feelings of entering a highly concentrated, hypnotic state or “automatic pilot”, which Csikszentmihalyi (1975) has termed flow state. In this state, dancers typically perform very well and gain great enjoyment from the experience. The feeling of flow or enjoyment of such peak experiences increases the motivation to dance. Thus, many dancers remain strongly involved in dance and desire to experience that state again, even though it is ephemeral, making it difficult to recapture intentionally. Moreover, the use of imagery techniques has been related to flow experience positively in the sport domain (Grove & Lewis, 1996). Based on the positive value of the flow experience and the suggestion from previous research that imagery can facilitate the experience of flow (Kohn, Morris, & Watt, 2006; Nicholls et al., 2005), the purposes of this study were to investigate the extent of the disposition to experience flow, the flow state experience, and imagery use; to examine the relationship between imagery use and dispositional and state flow; and to identify specifically how and what kind of imagery predicted the experience of state and dispositional flow during performance and training in professional dancers.

Thus, based on sufficient information from empirical studies in which CS and MG-M imageries were positively related to flow experience (Kohn et al., 2006; Nicholls et al., 2005) and in which theory has identified self-confidence and concentration among the core antecedents of flow (Cohn, 1991; Jackson, 2000), it is predicted that CS and MG-M imagery among the five types of imagery use might be

expected to relate to sense of control and concentration, as well as the balance between challenge and skills among the nine dimensions of flow.

## Method

### *Participants*

This study involved 89 dancers (Korean-style dancers = 66; ballet dancers = 23), who were professional performers of both genders (female = 74; male = 15), from seven different dance companies. The participants ranged in age from 20 to 38 years ( $M = 29.41$ ;  $SD = 4.03$ ). Participants had trained in dance for an average of 15 years ( $M = 15.6$ ;  $SD = 5.36$ ). Specifically, men's mean age was 26.04 ( $SD = 4.21$ ) and their mean experience in dance was 11.95 years ( $SD = 3.75$ ), while, women were aged 27.89 ( $SD = 3.88$ ) and their mean experience in dance was 16.89 years ( $SD = 5.25$ ). All the participants were volunteers. The participants were high-level performers, all being professional dancers, who worked in a dance company as a full-time job. The dancers practiced for six hours a day, five days per week. All participants had studied dance as a major at university for four years. Previous research has indicated that people involved in an activity for a long period of time and at high levels tend to experience flow more deeply than those involved for a short time and at beginner levels (Russell, 2001), so I aimed to study dancers who matched a long duration and high performance level profile.

### *Design*

Participants completed the Flow State Scale (FSS-2) and the Dispositional Flow Scale (DFS-2) to measure the transient state and more stable (disposition) aspects of flow separately, in the context of training and performance. Participants also completed the Sport Imagery Questionnaire (SIQ) to measure their use of

imagery. Patterns of imagery use were then correlated with global flow and with flow subscales for both dispositional and state flow.

### *Measures*

*Flow State Scale - 2* (FSS-2; Jackson & Eklund, 2002). The FSS-2 was used to assess flow state in dance, that is, the experience of flow during a specific training or performance activity. The FSS-2 consists of 36 items that assess nine dimensions of flow state, including challenge-skill balance, action-awareness, clear goals, unambiguous feedback, concentration on the task, sense of control, loss of self-consciousness, transformation of time, and autoletic experience. Each item is rated on a 5-point Likert scale from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). For example, an item assessing challenge-skill balance was “I was challenged, but I believed my skills would allow me to meet the challenge”. Cronbach’s alpha coefficients demonstrated satisfactory levels of internal reliability, ranging from .80 to .90 in the validation work of Jackson and Eklund (2002). Confirmatory factor analyses demonstrated a satisfactory fit of nine first-order factors and one higher-order factor, interpreted as a global flow factor, with a mean loading of .78, and a loading range of .53 to .89. The FSS-2 and its predecessor, the FSS, have been used in a range of research studies (Martin & Cutler, 2002; N. A Stavrou, 2001; Vlachopoulos, Karageorghis, & Terry, 2000; Wagner & Beier, 2005) (See Appendix C for this scale).

*Dispositional Flow Scale-2* (DFS-2; Jackson & Eklund, 2002). The DFS-2 was used to assess the frequency with which respondents reported experiencing flow in general during participation in dance practice and performance. The DFS-2 consists of 36 items, grouped into the same nine dimensions as the FSS-2. Global dispositional flow had an internal consistency of .85 and the subscales demonstrated internal

consistency (Cronbach's alpha) ranging from .81 to .90 (Jackson & Eklund, 2000). Confirmatory factor analyses demonstrated satisfactory fit of the model consisting of nine first-order factors and one higher-order factor, a global flow factor, with a mean loading of .77, and loadings in the range .59 to .86. Each item on the DFS-2 is rated on a 5-point Likert scale from 1 (*Never*) to 5 (*Always*). For example, one item assessing autotetic experience is "I make the correct movements without thinking about trying to do so". The DFS-2 and its predecessor, the DFS, have been used in a range of research studies (Jackson, Kimiecik, Ford, & Marsh, 1998; Herbert W. Marsh & Jackson, 1999; N. A Stavrou, 2001) (See Appendix D for this scale).

*Sport Imagery Questionnaire* (SIQ; Hall, Mack, Paivio, & Hausenblas, 1998).

The SIQ was used to examine athletes' imagery use in terms of cognitive and motivational functions of imagery in sports. The SIQ consists of 30 items, measuring imagery use on five imagery subscales: cognitive general (CG; e.g., imagining strategies of play), cognitive specific (CS; e.g., imagining perfectly executed skills), motivational general-mastery (MG-M; e.g., imagining performing successfully, mastering the task), motivational general-arousal (MG-A; e.g., imagining exciting aspects of performance to enhance actual performance), and motivational specific (MS; imagining specific goals and outcomes). Each item is rated on a 7-point Likert scale from 1 (*rarely*) to 7 (*often*). The SIQ has satisfactory internal consistency, ranging from .70 to .88 for its five subscales. I modified the SIQ items related to sport activities to reflect corresponding dance activities. For example, the SIQ item "I can consistently control the image of a physical skill" was modified to "I can consistently control the image of a dance move". The modified SIQ was successfully used by Fish, Hall, and Cumming to examine the use of imagery by professional ballet dancers. It also has been applied frequently in sport and is beginning to be used in

dance with modifications as described here (Callow & Hardy, 2001; Callow, Hardy, & Hall, 2001; Fish, Hall, & Cumming, 2004; Monsma & Overby, 2004; Vadocz, Hall, & Moritz, 1997) (See Appendix E for this scale).

### *Procedures*

#### *Translation Procedures*

A person who is qualified to translate text from English to Korean translated the three questionnaires from English to Korean. After that, an investigator, who speaks Korean and English, checked the contents of the translated text for meaning of items in comparison to the original English language version. Differences between the interpretations of the translator and the investigator were amended through discussion. Before administration in the study, the questionnaires were back-translated from Korean to English to compare the translated versions with the original questionnaires, again by someone qualified to translate from Korean to English, who was not involved in sport psychology. Use of the back-translation technique increased confidence in the translation. Back-translation technique was used in a number of studies (e.g., Heuze & Fontayne, 2002; Pelletier et al., 1995). Regarding the translation procedure, dancers did not mention any concerns about the FSS-2 and DFS-2.

#### *General Procedure*

I conducted this study with dancers from seven different national dance companies in Korea. Following ethics approval from the Victoria University Human Research Ethics Committee, I directly contacted the head of each dance company to explain the purpose of the study. After permission was granted, I decided scheduling in terms of the most suitable time for dancers to complete the questionnaires, because the dancers had systematic schedules related to performance, rehearsal, and practice. I

held an orientation session with potential participants, where they received detailed information about the study and then they asked questions about any aspect of the investigation before giving consent. I informed participants that they were free to withdraw at any time during the investigation, then they consented, if they were happy to participate. Participants completed the questionnaires in three sessions. Firstly, following receipt of information on the content and format of the questionnaires, the participants completed the Dispositional Flow Scale - 2 twice, once with reference to general practice and a second time in the context of performance. Finally, in this session, participants completed the Sport Imagery Questionnaire (SIQ). Secondly, immediately after practice on the next day, participants completed the Flow State Scale - 2 in relation to the practice they had just finished. Thirdly, immediately after a performance, participants again completed the FSS-2 with reference to their experience of flow during that performance. I then debriefed participants and thanked them for their participation in this study.

### *Analysis*

The data analyses proceeded in four stages. First, I calculated internal consistency estimates (Alpha Coefficient; Cronbach, 1951) and descriptive statistics for all study variables. Second, I used paired t-tests to look at the difference between training and performance for all FSS-2 and DFS-2 subscales. Third, I employed Pearson product-moment correlations to examine the relationship between the subscales of the FSS-2 and DFS-2 during performance and practice, and the DIQ. Finally, I conducted multiple regression analyses, with flow state scales or dispositional flow scales as the criterion variables and DIQ subscales as the predictor variables for those associations that had produced high correlations.



## Results

Flow experience and imagery use revealed high average scores in professional dancers. Moreover, relations between flow and imagery use were significant. Here, I present the results in five subsections that address internal consistency estimates for the DFS-2 and FSS-2 in training and performance, and the SIQ, descriptive statistics, t-tests between training and performance, correlations between flow scales and imagery, and regression analyses predicting flow from imagery use.

### *Internal Consistency Reliability*

The internal consistency estimates for DFS-2 and FSS-2 in performance and training are presented in Table 3.1. The subscales of the DFS-2 and FSS-2 during training and performance revealed acceptable Cronbach's alpha internal consistency values over .70, except that the internal consistency of the subscale merging of action and awareness fell below the recommended level for performance, especially for the DFS-2. The alpha values during performance for challenge-skill balance on the FSS-2 and concentration for the DFS-2 were also marginally low.

Table 3.1

*Internal Reliability (Cronbach's alpha coefficient) for DFS-2 and FSS-2 in Training and Performance*

Subscale	<u>Training</u>		<u>Performance</u>	
	DFS-2	FSS-2	DFS-2	FSS-2
Challenge-Skill Balance	.78	.80	.70	.67
Merging of Action and Awareness	.75	.80	.61	.67
Clear Goals	.84	.75	.83	.83
Unambiguous Feedback	.85	.81	.83	.84
Concentration on the Task at Hand	.77	.78	.64	.71
Sense of Control	.80	.85	.82	.72
Loss of Self-Consciousness	.83	.86	.85	.84
Transformation of Time	.82	.83	.79	.73
Autotelic Experience	.85	.86	.74	.89
Global Flow	.93	.95	.91	.92

Alpha coefficients for the SIQ subscales are presented in Table 3.2. The subscales of the SIQ revealed acceptable Cronbach's alpha internal consistency values over .70, except for motivational general-arousal.

Table 3.2

*Internal Reliability (Cronbach's alpha coefficient) for the Sport Imagery*

*Questionnaire (SIQ) Subscales*

Subscale	Alpha
Cognitive-general	.82
Cognitive-specific	.84
Motivational general-mastery	.79
Motivational general-arousal	.57
Motivational-specific	.86
Overall Imagery Use	.92

*Descriptive Statistics* The descriptive statistics for dispositional flow for performance and training are presented in Table 3.3. The global dispositional flow score for training showed higher flow scores compared with those for performance. Among the subscales, autotelic experience was revealed to be the most strongly involved in dancers' flow experience, whereas the loss of self-consciousness subscale was lowest in both training and performance. The effect sizes were calculated by *d*. The effect size is interpreted as small = .2 or .3, medium = .5, and large = .7 or .8.

Table 3.3

*Means, Standard Deviations, t-, p-, and d-values for Dispositional Flow in Training and Performance for Dancers*

Subscale	<u>Training</u>		<u>Performance</u>		<i>t</i>	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Challenge-Skill Balance	3.46	.61	3.36	.56	-2.26	.03	.24
Merging of Action and Awareness	3.08	.69	2.96	.59	-2.80	.01	.30
Clear Goals	3.58	.67	3.66	.66	1.70	.09	.18
Unambiguous Feedback	3.53	.68	3.49	.65	-1.01	.31	.11
Concentration on the Task at Hand	3.39	.64	3.38	.58	-.26	.80	.03
Sense of Control	3.42	.58	3.38	.58	-.85	.40	.09
Loss of Self-Consciousness	2.85	.81	2.76	.76	-2.08	.04	.22
Transformation of Time	3.50	.69	3.60	.66	1.82	.07	.19
Autotelic Experience	3.94	.71	4.07	.59	2.66	.01	.28
Global dispositional flow	3.42	.47	3.40	.40	-.48	.64	.05

For dispositional flow (frequency), significant differences between training and performance, with medium effect sizes, were observed in paired t-tests for challenge-skill balance, merging of action and awareness, and loss of self-consciousness, with higher flow reported for training. For autotelic experience, on the other hand, paired t-tests showed that flow was higher during performance. Global dispositional flow showed very little difference between training and performance with a small effect size.

The descriptive statistics for the flow state (FSS-2) subscales for performance and training are presented in Table 3.4. The global score for state flow (intensity) for

performance showed higher flow score compared with the level of global state flow for training. Among the subscales, autotelic experience was, again, revealed to be the most strongly involved in flow state, whereas loss of self-consciousness was the lowest scoring subscale in training and performance, as it was for dispositional flow (frequency).

Table 3.4

*Means, Standard Deviations, t-, p-, and d-values for State Flow in Training and Performance for Dancers*

Subscale	<u>Training</u>		<u>Performance</u>		<i>t</i>	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Challenge-Skill Balance	3.47	.66	3.58	.55	1.88	.06	.20
Merging of Action and Awareness	3.28	.69	3.28	.69	.00	1.00	.03
Clear Goals	3.78	.55	3.81	.64	.76	.45	.08
Unambiguous Feedback	3.62	.62	3.71	.64	1.61	.11	.17
Concentration on the Task at Hand	3.41	.69	3.69	.65	3.33	.00	.35
Sense of Control	3.50	.69	3.65	.57	2.09	.04	.22
Loss of Self-Consciousness	3.09	.85	2.93	.88	-1.57	.12	.17
Transformation of Time	3.55	.73	3.69	.65	1.76	.08	.19
Autotelic Experience	3.87	.73	4.07	.74	2.19	.03	.23
Global state flow	3.51	.48	3.60	.44	2.18	.03	.21

For state flow (intensity), paired t-tests showed significant differences, with medium to large effect sizes, for concentration on the task at hand, sense of control, and autotelic experience, and for global flow, with flow state higher during performance in all cases.

The descriptive statistics for the SIQ subscales are presented in Table 3.5. The overall mean scores for the SIQ were high, on a scale from 1 to 7, with four of the five subscales and global SIQ above 5 among the professional dancers in this study.

Among the subscales, the motivational general-mastery subscale was the most strongly involved in dancers' imagery use, whereas the contribution of motivational general-arousal was the lowest.

Table 3.5

*Descriptive Statistics for Sport Imagery Questionnaire (n = 89)*

Subscale	<i>M</i>	<i>SD</i>
Cognitive-general	4.85	0.97
Cognitive-specific	5.00	0.99
Motivational general-mastery	5.21	0.94
Motivational general-arousal	4.64	0.71
Motivational-specific	5.16	1.22
Overall Imagery	4.96	0.85

Flow and imagery use levels varied from moderate to high, presenting an average score of 3.48 (*SD* = 0.45) on a 5-point scale for flow and 4.96 (*SD* = 0.85) on a 7-point scale for imagery use. Thus, scores both for global flow and imagery were around 70% of maximum values. We did not use the Bonferroni correction for multiple comparisons, because it is conservative and this study was exploratory.

#### *Correlations between Flow and Imagery*

Pearson product-moment correlations were computed to examine the relationships between flow experience and imagery. First, correlations between the global DFS-2 and FSS-2 scores and the SIQ subscale scores for training and

performance were calculated (see Table 3. 6). Second, correlations between the overall SIQ scores and DFS-2 and FSS-2 subscale scores for training and performance are presented (see Table 3.7).

Table 3.6

*Pearson's Product Moment Correlation for Five Imagery Subscales and Global Flow in Training and Performance*

Subscale	<u>Training</u>		<u>Performance</u>	
	DFS-2	FSS-2	DFS-2	FSS-2
Cognitive-general	.52**	.47**	.45**	.37**
Cognitive-specific	.55**	.41**	.50**	.37**
Motivational general-mastery	.52**	.42**	.41**	.35**
Motivational general-arousal	.35**	.25*	.25*	.14
Motivational-specific	.30**	.30**	.28**	.21*
Overall imagery use	.51**	.43**	.44**	.34**

*Note.*  $N = 89$ ; \*  $p < .05$ , \*\*  $p < .01$  (2-tailed).

Table 3.6 indicates that there were significant correlations between flow experience and imagery use subscales in all cases, except between motivational general-arousal and global FSS-2 for performance. The most strongly correlated subscales of imagery, for performance, were cognitive-specific and cognitive-general with both the DFS-2 and FSS-2. For training, however, cognitive-specific imagery for DFS-2 and cognitive-general imagery for FSS-2 were most strongly correlated, whereas motivational general-mastery imagery also significantly correlated with both DFS-2 and FSS-2. There are three quite clear and relevant patterns. First, flow-imagery correlation values are somewhat larger for training than for performance. Second, values are larger for DFS-2 than for corresponding FSS-2 imagery subscale

correlations. Third, values in all cases are larger for cognitive-specific, cognitive-general, and motivational general-mastery than for motivational general-arousal and motivational-specific. Table 3.7 presents the correlations for flow subscales, that is, the nine subscales on DFS-2 and FSS-2, in training and performance, and global imagery scores.

Table 3.7

*Pearson's Product Moment Correlations for Nine Flow Subscales and Overall Imagery for DFS-2 and FSS-2 in Training and Performance*

Flow Subscales	Imagery			
	<u>Training</u>		<u>Performance</u>	
	DFS-2	FSS-2	DFS-2	FSS-2
Challenge-skill balance	.65**	.44**	.43**	.42**
Merging of action and awareness	.39**	.23*	.32**	.23*
Clear goals	.49**	.51**	.40**	.39**
Unambiguous feedback	.36**	.38**	.29**	.38**
Concentration on the task at hand	.39**	.35**	.43**	.32**
Sense of control	.42**	.46**	.35**	.24*
Loss of self-consciousness	-.09	.01	-.20	-.17
Transformation of time	.21	.05	.18	.09
Autotelic experience	.48**	.39**	.44**	.27**
Global Flow	.51**	.43**	.44**	.34**

*Note.*  $N = 89$ ; \*  $p < .05$ , \*\*  $p < .01$  (2-tailed).

Table 3.7 indicates that there were significant correlations between flow experience and imagery use in all cases, except loss of self-consciousness and transformation of time. For training, challenge-skill balance and clear goals, for DFS-



2, and clear goals and sense of control, for FSS-2, were most strongly correlated with global imagery. For performance, the most strongly correlated flow subscales with global imagery were concentration on the task at hand and autotelic experience for DFS-2 and challenge-skill balance and clear goals for FSS-2. There is quite a clear and relevant pattern. The values in all cases are smaller for loss of self-consciousness and transformation of time than for other subscales of flow.

### *Regression*

I checked for outliers and found there were no noteworthy extreme cases, so the regression went ahead. I conducted multiple regression analyses, in which the DFS-2 and FSS-2 training, and DFS-2 and FSS-2 performance scores, respectively, were criterion variables. In each analysis, I used the five imagery use sub-scales as predictor variables. In addition, I looked at the collinearity and found no problems. The results of analyses for dispositional flow in training are presented in Table 3.8.

Table 3.8

*Summary of Regression Analyses for Variables Predicting Dispositional Flow with Imagery Use as Predictor in Training with Dancers (N = 89)*

DFS-2, Training				
Dependent Variables	Predictor variables	B	SE B	BETA
Challenge-skill	Cognitive-specific	.22	.10	.35*
$R^2 = .48$	Motivational general-mastery	.23	.10	.36*
Clear goals	Cognitive-specific	.34	.12	.29**
$R^2 = .42$	Motivational general-mastery	.42	.12	.59***
	Motivational-specific	-.16	.09	-.30*
Concentration	Cognitive-specific	.33	.13	.50*
$R^2 = .27$				
Sense of control	Motivational general-mastery	.23	.11	.37*
$R^2 = .28$	Motivational-specific	-.16	.07	-.34*
Autotelic experience	Motivational general-mastery	.37	.13	.49**
$R^2 = .33$	Cognitive- general	.30	.14	.41*
Global DFS-2	Motivational general-mastery	.21	.09	.43*
$R^2 = .37$	Motivational-specific	-.12	.06	-.32*

Note. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

In training, imagery explained 37% of the variance in the global DFS-2. In particular, the motivational general-mastery subscale was a significant predictor of challenge-skill balance, clear goals, sense of control, autotelic experience, and global DFS-2. The cognitive-specific subscale was a significant predictor of challenge-skill balance, clear goals, and concentration on the task at hand, whereas the motivational-

specific subscale was a significant negative predictor of clear goals, sense of control, and global DFS-2 in training.

For performance, the DFS-2 revealed different significant predictor variables. The results of analyses on flow state are presented in Table 3.9.

Table 3.9

*Summary of Regression Analyses for Variables Predicting Dispositional Flow with Imagery Use as Predictor in Performance with Dancers (N = 89)*

DFS-2, Performance				
Dependent Variables	Predictor variables	B	SE B	BETA
Challenge-skill balance	Cognitive-specific	.29	.12	.50**
$R^2 = .24$				
Clear goals	Cognitive-specific	.28	.13	.41*
$R^2 = .27$				
Unambiguous Feedback	Cognitive-specific	.32	.14	.48*
$R^2 = .21$				
	Motivational general-arousal	-.27	.12	-.30*
Concentration	Cognitive-specific	.38	.12	.63**
$R^2 = .28$				
Global DFS-2	Cognitive-specific	.16	.08	.39*
$R^2 = .26$				

Note. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

In performance, imagery explained 26% of the variance in the global DFS-2. The only imagery subscale that was also a predictor of flow was cognitive-specific imagery predicting challenge-skill balance, clear goals, unambiguous feedback, concentration, and global DFS-2.

For training, the FSS-2 revealed a set of different significant predictor variables. The results of these analyses on flow state are presented in Table 3.10.

Table 3.10

*Summary of Regression Analyses for Variables Predicting State Flow with Imagery Use as Predictor in Training with Dancers (N = 89)*

FSS-2, Training				
Dependent Variables	Predictor variables	B	SE B	BETA
Clear goals	Motivational General-Mastery	.23	.10	.39*
$R^2 = .32$				
Unambiguous feedback	Cognitive-specific	.27	.13	.43*
$R^2 = .23$				
Sense of control	Motivational General-Mastery	.32	.14	.43*
$R^2 = .27$				
Transformation of time	Cognitive-general	.37	.17	.50*
$R^2 = .07$				
Autotelic experience	Cognitive-general	.56	.15	.76***
$R^2 = .27$				
Global FSS-2	Cognitive-general	.23	.10	.47*
$R^2 = .25$				

Note. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

In training, the imagery subscales explained 25% of the variance in global FSS-2. The motivational general-mastery subscale was a significant predictor of clear goals and sense of control. The cognitive-general subscale was a significant predictor of transformation of time, autotelic experience, and global FSS-2.

For performance, the FSS-2 revealed different significant predictor variables.

The results of these analyses on flow state are presented in Table 3.11.

Table 3.11

*Summary of Regression Analyses for Variables Predicting State Flow with Imagery Use as Predictor in Performance with Dancers (N = 89)*

FSS-2, Performance				
Dependent Variables	Predictor variables	B	SE B	BETA
Challenge-skill balance	Cognitive-specific	.30	.11	.52**
$R^2 = .26$	Motivational General-Arousal	-.21	.10	-.27*
Clear goals	Motivational General-Mastery	.32	.12	.48*
$R^2 = .27$				
Unambiguous Feedback	Motivational General-Arousal	-.29	.12	-.32*
$R^2 = .21$				
Concentration	Motivational General-Mastery	.30	.13	.44*
$R^2 = .27$	Motivational-specific	-.24	.09	-.47**
Loss of self-consciousness	Motivational-specific	-.27	.13	-.38*
$R^2 = .08$				
Autotelic experience	Motivational-specific	.22	.10	.37*
$R^2 = .15$				

Note. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

In performance, imagery explained 19% of the variance in the FSS-2, but there was no significant imagery predictor of global FSS-2. The motivational general-mastery subscale was a significant predictor of clear goals and concentration on the task at hand. The cognitive-specific subscale was a significant predictor of challenge-skill

balance, and the motivational-specific subscale was a significant predictor for autotelic experience. The motivational general-arousal subscale, however, was a significant negative predictor of challenge-skill balance and unambiguous feedback. The motivational-specific subscale was a significant negative predictor of concentration on the task at hand and loss of self-consciousness.

## Discussion

The purpose of this study was to examine the relationship between flow experience and imagery use to predict the experience of state and dispositional flow during performance and training in dancers. I predicted that CS and MG-M imagery among the five imageries might be expected to relate to sense of control, concentration, and balance between challenge and skills among the nine dimensions of flow.

The discussion of the results is divided into five sections. First, I talk about the internal consistency and reliability of flow and imagery in questionnaire subscales. Second, I discuss the experience of flow and imagery as well as correlation between flow and imagery. Third, I argue the results of regression analysis for variables that predicts flow. Finally, I discuss methodological issues and future research.

### *Internal Consistency Reliability of Flow and Imagery in Questionnaire Subscales*

Overall, the internal consistency of the flow and imagery subscales in the Korean translations of the FSS-2, DFS-2, and SIQ were acceptable for this sample of high-level dancers from Korea. Nonetheless, a number of noteworthy issues were raised by the internal consistency analyses. As shown in the Results section, the reliability of the FSS-2 and DFS-2 in training was sound, whereas, in performance,

two subscales, namely challenge-skills balance and merging of action and awareness, did not attain the conventional .7 alpha coefficient level (Nunally, 1978).

In performance, the marginal reliability for the challenge-skills balance subscale may be an effect of some differences between sport and dance in terms of performance characteristics. To look at items specifically on performance, if item 1 in the FSS-2, that is “I was challenged, but I believed my skills would allow me to meet the challenge”, is excluded, the alpha coefficient increases from .67 to .73. One might suggest that, in sport, game outcome or score can be a highly salient indication of challenge for athletes in terms of the result of their performance, compared to dancers, whose performance is typically judged more subjectively. Thus, athletes might have an opportunity to establish new performance goals that they were never close to previously achieving. In dance, however, performance means some kind of show, presentation, or self-exploration for which the dancers have been prepared, without recording any score. Hence, dancers may have less readily identifiable challenge compared to athletes. Dancers may judge themselves through subjective indicators, such as audiences’ positive response or their own enjoyment of or satisfaction with their performance, including flow experience. To determine whether this distinction is correct it is necessary to conduct research comparing perceptions of performance between dance and sport.

The merging of the action and awareness dimension is an important element associated with flow experience. The items on merging of action and awareness tend to emphasize automatic involvement in an activity without the usual experience of separately being aware of one’s own behaviour as it occurs. Dance movements are complex, involve endless change, and require varied body movements with constant control in terms of techniques and of comprehensively exploring the feeling of

movement of the body. Thus, dancers may need to consider continually their focus on the music and the routines of each movement during performance and, finally, at some point during the whole performance, dancers experience merging of action and awareness. In dance, it may be that thinking about movement and the effort needed to dance are antecedents of the action and awareness merging stage.

In training, this study demonstrated that the flow experiences showed high internal reliability ranging from .75 to .85 (global alpha = .93) for the DFS-2 and from .75 to .86 (global alpha = .95) for the FSS-2. This is similar to previous research in sport (Jackson & Eklund, 2004). One argument could be that training processes are similarly linked to performance in dance and sport, in terms of managing the mind and body to enhance performance and achieve goals (Vaccaro, 1997). The different results, however, found for flow experience between the performance and the training in dance, might suggest that variations between the performance environments of sport and dance probably have different effects on performers' subjective experience, although these activities have many common components.

With regard to imagery use, most subscales showed high scores for internal reliability and the global alpha coefficient was .94. The exception was the motivational general-arousal subscale, for which the alpha coefficient was .57. Imagery theories have been developed in sports and exercise (Hall, 2001; Murphy & Martin, 2002). In dance, however, no systematic model exists. Thus, previous research regarding measurement of imagery use with models in dance has been adapted from sports with minor changes, such as developing the modified SIQ from the SIQ by making minimal changes to wording of items to reflect differences between contexts. Perhaps dancers experience arousal in dance training and performance differently to the role and experience of arousal in sport, influencing the



way in which imagery is used in relation to arousal control. This might make the motivation general-arousal items generated in sport less meaningful to dancers, affecting the internal consistency of the MG-A subscale. Nevertheless, the present results demonstrated that the MG-A subscale of the SIQ questionnaire, adapted from sport to dance, might not be appropriate for the dance domain. The SIQ showed low internal reliability. Therefore, the development of an imagery model and questionnaire in the dance domain could be necessary to fully understand and expand knowledge of imagery use in dance and apply it in a variety of ways.

### *Description of Flow and Imagery*

Flow levels varied from moderate to high. Among the subscales, the autotelic experience was the most strongly involved in dancers' flow experience, whereas the loss of self-consciousness during the experience of flow during performance and training was reported to be relatively low. Previous studies have presented similar results reporting low mean scores on loss of self-consciousness among subscales of flow with dancers and athletes (Jackson & Eklund, 2002). Even though the loss of self-consciousness is an important characteristic of flow in dancers (Hays, 2005), to be in the stage of loss of self-consciousness might be a challenge for dancers. The reason is that dancers generally depend on other people's subjective evaluations about the appearance of their performance, rather than feedback from objective measurements through their dance career (Sharp, 2005). Thus, dancers are often more conscious of others' views, such as peers, teachers, and choreographers, making them more likely to overly develop their self-consciousness about themselves during their dance career, compared to athletes. The excessive self-consciousness experienced by dancers is likely to be one of the main disruptions to their concentration on the task at hand. Moreover, in the advanced flow model, loss of self-consciousness is at the high-

level of achievement among the nine characteristics of flow (Sugiyama & Inomata, 2005). As shown by the highest flow score being on autotelic experience in training and performance, dance activity is a highly rewarding experience, that is, it facilitates high levels of intrinsic motivation.

In addition, comparing the context of performance and training, the results showed that these professional dancers found it easier to attain flow in training than performance (frequency; DFS-2). In tennis, Young (2000) argued that this is because there are fewer obstacles to the experience of flow during training than in competition. Thus, dancers might find it easier to meet the balance between perceived skills and challenge, the merging of action and awareness, and loss of self-consciousness. On the other hand, when dancers experience flow during performance, typically, it is more intense (FSS-2) than it is in training. Specifically, during performance dancers experienced deep concentration and sense of control more intensely compared to training. One reason might be the uniqueness of performance on stage. During performance, even though dancers might be required to concentrate on managing or controlling unexpected situations, such as responses from the audience, harmony with other dancers, lights, costumes, and the quality of the floor on the stage, it is a special environment and each performance on stage is unique for dancers. Although right from the original work of Csikszentmihalyi (1975) researchers have studied flow in dance, some of the questions raised by the results reported here suggest that there is still a need for in-depth study of the experience of flow in highly-skilled dance performers.

#### *Correlations between Flow and Imagery*

The overall subscales of imagery were strongly correlated with the nine subscales of dispositional and state flow in training and performance situations.

Related to the results of correlations between flow experience and imagery use, this study suggested that dancers who often use imagery techniques also engage frequently and intensively with the flow experience.

In particular, the strongest correlation was between global dispositional flow and imagery use in training situations. This result is not surprising, because the mean scores for flow experience indicated that dancers frequently experience flow in training. To look at the subscale level, the CS, CG, MG-M, and MS imagery subscales were strongly correlated to challenge-skills balance, clear goals, unambiguous feedback, sense of control, and autotelic experience in dance. Typically, relationships were significant, except for the correlations between MG-A imagery and the flow dimensions of loss of self-consciousness and time transformation, which also showed the lowest mean score. Among the subscales of imagery, the cognitive functions of imagery were the most strongly related to flow experience. This result was consistent with a study by Overby (1990), who found that dancers use imagery related to cognitive function (e.g., specific kinaesthetic sensations associated with movement or visualizing one's skills for improving or mastering one's dance movements). From the descriptive results, it can be seen that the flow subscales that strongly correlated with imagery use were also the main contributors to flow experience in dance.

According to Cohn (1991) and Jackson (2000), the core antecedents of flow are self-confidence and concentration on performance. Specifically, confidence about performance has been reported to be a key facilitator for the occurrence of flow in a range of studies (Catley & Duda, 1997; Jackson, 1995; Russell, 2001; Stein, Kimiecik, Daniels, & Jackson, 1995). In addition, research on the correlation between psychological variables, such as motivation, goal orientation, anxiety, and perceived

ability, and flow (Jackson, Kimiecik, Ford, & Marsh, 1998), and factors that disturb flow (Jackson, 1992b), has indicated that anxiety, which is closely associated with poor sense of control, significantly negatively correlated with the flow experience. In substantial previous research, imagery has been used to enhance confidence (Callow & Hardy, 2001) and reduce anxiety on the basis of minimizing negative or disturbing thoughts in sport (Morris, Spittle, & Watt, 2005). Furthermore, Aragon (2002) reported that imagery use was not only effective for enhancing self-confidence, it was also valuable for developing concentration skills. Therefore, it is no wonder that there was a strong positive relationship between flow experience and imagery use in dance.

An initially puzzling finding, however, was that the subscales of loss of self-consciousness and transformation of time had the smallest correlations with imagery compared to other subscales of flow. One reason for this might be because of the low mean scores for loss of self-consciousness and transformation of time. Similar results reported by Jackson et al. (1998) on those two subscales of flow also revealed low correlation values in relation to the other psychological variables, such as perceived sport ability and intrinsic motivation to experience stimulation. If respondents score uniformly low on flow subscales like loss of self-consciousness and transformation of time, then bivariate correlations with other variables will be small, because moderate to high correlations, whether positive or negative, depend on respondents scoring across the range on both variables (Tabachnik & Fidell, 1996).

#### *Regression Analysis for Variables Predicting Flow*

As shown by the strong correlation between flow and imagery use, largely, imagery predicted flow experience in professional dancers during performance and training, especially during training. For global dispositional flow, MG-M imagery was

a strong predictor in training and CS imagery was a strong predictor in performance, whereas, for global state flow, CG imagery was a strong predictor in training.

An interesting finding was that MS imagery (e.g., imagining being congratulated by other people) and MG-A imagery (e.g., imagining the stress and anxiety associated with performance) were negative predictors for a few subscales of flow. MS imagery typically focuses on specific goals that relate either to the process of performance or to its outcome. In either case, the focus of MS imagery on specific aspects of performance is contrary to the essence of flow, where attention is not focused on elements of performance. Thus, it is possible that substantial use of MS imagery might reduce the probability that dancers will experience flow, producing negative correlations with some dimensions of flow. MG-A imagery is about imaging the stress and anxiety associated with performance. MG-A imagery might be related to one's stress and anxiety. The Vadocz, Hall, and Moritz (1997) study also demonstrated that athletes who use MG-A imagery reported high cognitive anxiety and athletes who used MG-M imagery had high levels of self-confidence. MG-M imagery is about imagining oneself appearing self-confident, being focused, being in control, and staying positive. Thus, frequent use of MG-M imagery would be expected to predict flow experience by facilitating the development of confidence, which is one of the important facilitators for flow to occur. CS imagery is about imagining the specific dance skills focus on visualising the correct movements. Generally, dancers are used to imagining when they learn new movement skills, using the movement image for mastering dance, which involves complicated elements, such as movement feelings, and complicated movement techniques, so dancers require external and internal views of their movements to see whether their movements contain all of the elements and essences. A specific movement skill itself contains the

moods or feelings about the movement (or dance). Thus, imagining the specific movement skills means that dancers might be helped to explore or express the full gamut of movement feelings, as well as the quality of dynamic movement skills, which might lead to increased probability of experiencing flow. Furthermore, another explanation why CS imagery use might enhance flow experience is that athletics use CS imagery (e.g., imagining successful specific skills) for avoiding disturbing thoughts and reducing anxiety prior to competition (Hanton, Mellalieu, & Hall, 2004). Thus, dancers might use CS imagery to enhance flow by reducing anxiety regarding performance. This proposition is supported by previous research. Fish, Hall, and Cumming (2004) reported that professional ballet dancers used MG-M imagery for self-confidence and CS for reducing anxiety.

Considering the subscales, in training, MG-M and CS imagery significantly predicted challenge-skill balance, clear goals, concentration, sense of control, and autotelic experience, whereas, CG imagery only predicted one subscale of dispositional flow, autotelic experience. A similar finding was reported in a study that looked at the relationship between dispositional flow and imagery use in tennis players. Koehn, Morris, and Watt (2006) found that the MG-M and CS imagery strongly predicted challenge-skill balance, clear goals, concentration, and sense of control in tennis play. This result indicates that there were similarities in the pattern of flow experience and imagery relationship between tennis and dance.

In summary, CG, MS, and MG-A did not attain significance in the regression, so this study suggests that they are not predictors of flow. MG-M and CS imagery were significant predictors of dispositional flow in dance compared to the MS, MG-A, and CG imagery during training and performance. Imagery use, such as MG-M imagery (e.g., visualising successful performance) and CS imagery (e.g., visualising

specific dance skills, such as specific single turning, jumping, and kicking movements) for confidence and improving movement skills, might provide a rich opportunity to become involved in the flow experience for dancers. In particular, dancers should be encouraged to use MG-M imagery in training and CS imagery in performance to enhance the flow experience frequently and intensely.

### *Methodological Issues and Future Research*

This study looked at different situations, namely performance and training, because different environments influence the flow experience differently (Stein, Kimiecik, Daniels, & Jackson, 1995). Therefore, this approach provides more information based on understanding the two principal situations of performance and training. Moreover, seeing the differences between dispositional and state flow might help us to understand the mechanisms by which flow is generated and maintained in dance.

A limitation of this study was that there was a small number of male participants involved compared to females. Thus, the conclusions of this study may be influenced by the female perspective. Previous research, however, has demonstrated no differences in flow experience based on gender (Russell, 2001).

There was a concern with low internal reliability for certain subscales measuring flow. It is possible to modify subscales based on items that enhance internal consistency (increase alpha) when removed, but I was reluctant to adopt this strategy with well-validated measures. Further studies should be conducted to examine the status of items that were affected in this study.

Another methodological concern was that the imagery questionnaire was administered away from performance, but dancers may use imagery differently between performance and training environments. Moreover, using an imagery

questionnaire that was adapted from sport might have limitations for the dance field. The differences between dance and sport characteristics could have influenced the interpretation of the results. Thus, the development of questionnaires in the context of dance, based on understanding the variety of flow characteristics, imagery use, and functions of imagery, is necessary for future studies. Moreover, Korean versions of questionnaires need to be developed for research, because there might be cultural differences. Furthermore, variable range of imagery techniques should be introduced to dancers and dancers educated in their use. Therefore, experience of flow might be enhanced on the basis of examination of imagery and flow in dance in different contexts and cultures.

Based on the finding of this study, certain types of imagery were strongly correlated to and predicted flow experience, particularly related to specific dimensions of flow state and dispositional flow. Considering the potentially powerful connections between flow and imagery further investigation is needed to acquire more in-depth information related to imagery use and flow experience among dancers.



## CHAPTER 4: FLOW EXPERIENCES AND IMAGERY USE AMONG KOREAN DANCERS

### Introduction

In Study 1 of this thesis, I found that highly-skilled, professional dancers experience flow frequently and intensively, especially reporting strong autotelic experience and clear goals among the nine characteristics of flow. The responses of dancers were similar to those found by researchers in other high performance contexts, such as sport (e.g., Jackson, 1992a, 1995; Young, 2000; Jackson & Eklund, 2002). In addition, responses to the Sport Imagery Questionnaire (SIQ) indicated that dancers use imagery quite extensively, particularly cognitive specific imagery and motivation general-mastery imagery. Also, there were significant correlations between some characteristics of flow experience and imagery use in professional Korean dancers, suggesting that imagery of certain types could facilitate the experience of flow in dance. There still remain many questions about the kind of flow experience, use of imagery, and the relationship between flow and imagery use in dance. These include how to facilitate the optimal, positive flow experience and how to use imagery effectively to enhance the flow experience, in dance. In-depth qualitative exploration might help to develop our understanding of the flow experience and how imagery might be used to enhance flow.

Based on qualitative studies of flow experience and imagery use in the fields of sport and dance (e.g., Holmes & Collins, 2001; Jackson, 1992; Jackson & Eklund, 2002; Nordin and Cumming, 2004, 2005b), to explore flow experience in dance, a description of the experience of peak or optimal states during dance would be a valuable way to start. Then, knowing the meaning of the experience of flow as a professional dancer would help to understand the flow experience in dance in greater

depth. Furthermore, knowing the facilitators of flow in dance would be valuable for enhancing flow experience. Further, based on the exploration of imagery use in dance, identifying the connection between imagery use and flow experience in high-level dancers would be valuable for developing intervention programs to facilitate flow experience in dancers.

Thus, the purpose of this study was to explore dancers' flow experience and to identify key factors that influence the occurrence of flow states in dance. A second aim was to explore the use of imagery by dancers, in particular with reference to the use of imagery in relation to flow experience.

## Method

### *Participants*

Participants were 20 professional Korean dancers of both genders (female = 17; male = 3), aged 22 to 32 years ( $M = 27.0$ ;  $SD = 2.0$ ), who had all trained as dancers for more than nine years ( $M = 16.35$ ;  $SD = 4.24$ ). All participants were advanced level dancers and they were professional performers, who were working in dance companies as a full-time job. All participants had studied dance as a major in university for four years. Professional dancers were selected because it was expected that they could convey rich information about flow experience. This is based on previous research, which has shown that the challenge-skill balance, where both challenge and skill are high, is more likely to be associated with experience of flow (Csikszentmihalyi, 1990).

## *Measures*

### *Interview*

The interview was semi-structured, with open-ended format, to obtain rich information on the main factors associated with the occurrence of flow among dancers, the principal strategies used by dancers to engage flow states, and dancers' imagery use related to flow experience. After asking for a brief description of participants' dance history to help them feel comfortable talking and to encourage them to describe their true thoughts and feelings, I gave them a definition of flow (See Appendix F for this interview guide). Then, in the interview, I asked questions to discover each dancer's experience of the flow state and the variables that dancers considered enhanced, or were associated with, the experience of flow. The questions on flow were: (a) Describe your experience of flow (or enjoyment and exhilaration) during dance training and performance. (b) What are the major factors influencing your experience? Where it appeared that dancers could provide more detailed information in responding to a question, I encouraged them to expand by asking more specific follow-up questions, such as "Can you tell me some more about...[aspect of their previous response]?" (elaboration probe). If dancers' responses contained information I did not understand, I asked them to clarify the specific point by asking follow-up questions, such as "Can you explain what you meant by...[specific aspect]?" (clarification probe). After that I gave a definition of imagery (See Appendix F for this interview guide). Then I asked dancers these questions about imagery use: (a) Do you use imagery techniques? (b) What kinds of imagery do you use and what for? Again, I used clarification and elaboration probes as necessary. Next, I explored ways in which the dancers used imagery to become deeply absorbed in their training and performance so that they facilitated the occurrence of flow. Once

more, I used clarification and elaboration probes as appropriate. Finally, I asked participants to comment on their experience of the interview overall. Where dancers expressed lack of understanding of the definitions or questions, I paraphrased them, so I was confident that the dancers understood the concepts of flow and imagery and the questions I asked about flow, imagery, and their relationship.

### *Procedure*

I gained access to professional dancers through their dance companies. I contacted individual dancers by phone and explained the purpose of this study. After dancers agreed to meet me, I made an appointment for the interview with them. I conducted all the interviews in a quiet place with a warm atmosphere. I used standard consent procedures. I asked for permission to record the interview on audiotape. Interviews ranged from 30 to 110 minutes (mean time = 62.0 mins). Finally, I debriefed the dancers and thanked them for participating.

### *Analysis*

I transcribed the interviews verbatim and then I examined the text using deductive content analysis to see whether the interviews reflected the characteristics of flow that have been proposed by Csikszentmihalyi (1990) and supported in sport by Jackson (1996). I examined the text using inductive content analysis to explore factors that facilitated flow and imagery related to flow experience. Inductive content analysis involves identifying coherent and important examples, themes, and patterns in the data, using open coding (Patton, 2002). This technique allows for the identification of themes from the raw data with the central purpose being to open inquiry widely (Patton, 2002). First, I analysed the data, following standard inductive content analysis procedures. I read and reread the verbatim transcripts until I was very familiar with the content. I then grouped the participants' own words into raw data

themes and then categorized those raw data themes into first-order themes. Several noteworthy statements contained very similar wording, so I eliminated repetitions. I then organized first-order themes, that is, meaningful and interpretable categories of raw data themes, into second-order themes, each comprising first-order themes with commonality at a more general level. Finally, I clustered those themes into general dimensions, which were broad categories grouping second-order themes with similar meaning at that most general level. If judged that there were clear distinctions among first-order themes, so no further grouping was appropriate, I grouped the first-order themes directly into general dimensions. When a theme is identified at the first order level and does not group with other themes to form second or higher order themes, it is the usual practice for the name of the theme to stay the same at all levels. I conducted separate thematic analyses for the sections of the interviews related to the flow experience, factors that facilitated flow, and use of imagery related to flow. The deductive and inductive content analysis processes were carried out in Korean and then the final analysis was translated into English. The translation was checked by a bilingual colleague not familiar with the concepts of flow and imagery.

Regarding data analysis, in attributing raw data themes to first-order themes I had to make fine distinctions. Sometimes, one raw data theme could reasonably be assigned to several first-order themes. For example, the raw-data theme “imagine being satisfied with one’s appearance” could be related to confidence, motivation, or positive thoughts. Being satisfied with one’s appearance influences or affects individuals differently. Thus, some dancers feel confident when they are satisfied with their appearance, whereas other dancers may motivate themselves by being satisfied with their appearance during dance. While categorising the raw-data themes into first- and second-order themes and then into general dimensions, I found it difficult to

distinguish and to divide the themes into general dimensions. Establishing general dimensions is useful, but the richest information can be derived from examination of the raw-data themes provided by the participants. Furthermore, the dimensions overlap and are related to each other; thus, each dimension related to imagery use and facilitation of flow might be significant for enhancing flow experience in dance.

Krane, Andersen, and Streat (1997) proposed that outcome themes that account for a small percentage of participants' statements might be as meaningful as, or even more meaningful than, themes mentioned by a large percentage of participants. Thus, although the percentage of mentions by dancers provides some information about the breadth of relevance of an issue, the strength of statements and the emotion associated with comments made by participants is equally important in interpreting qualitative data. In the present study, there were examples of strongly felt concerns that emerged from the way dancers talked about issues, rather than the number of dancers who referred to an issue. I had to be alert and sensitive at all times to pick up on these nuances of emotion. For example, loss of self-consciousness was mentioned by 3 (15%) dancers among 20. However, loss of self-consciousness was one of the indications of experiencing a high level of flow. Csikszentmihalyi (1975) explained that some activities provide stronger intensity of intrinsic rewards than others. Intensity of flow experience can be distinguished as macro-flow for a high level of flow and micro-flow for low level of flow.

To enhance trustworthiness of the analysis process, I used a triangulation of analyses approach (Patton, 2002). After I had analysed all the themes, I asked two experts in dance and flow, to read all the analysed themes until they were familiar with the analysis. Then through several discussion sessions, the three of us arrived at consensus about the groupings and the meanings of the categories. Moreover, I used

an independent external audit to check the analysis, to evaluate the findings, and to triangulate the results. Through several discussion sessions, the external auditor and I agreed upon the results of groupings and the meanings of the categories. The consensual analyses are reported here.

## Results

In the results section, I present the deductive and inductive content analyses of the experience of flow and imagery use in dance. Firstly, I report characteristics of flow that the dancers discussed. Then, I present flow facilitators that they talked about. Finally, I describe the dancers' views concerning imagery use related to flow experience, based on the analysis of the interviews.

### *Experience of Flow*

I present flow data in two sections, namely characteristics of flow and facilitators of flow, based on responses to interview questions, which addressed these two aspects of flow. I present the results of characteristics of flow in Table 4.1.

Table 4.1

*Characteristics of Flow*

Raw Data Themes	1 <sup>ST</sup> Order Themes	General Dimensions
Total immersion in music, feeling, and dance	Total concentration	Total concentration 17(85%)
No worldly thoughts; just concentrate to dance at that moment		
Automatically absorbed in dance		
Total concentration		
Feel it is real life; Forget stage, audiences, and that it is performance		
Uniting everything such as music, lighting, movements, and story of performance	Uniting with music, feelings and movements	Merging of action and awareness 10(50%)
Uniting with music and feel like playing music through body movement		
Breath, dancing, and music becoming one and uniting		
Filled with positive thoughts	Experience positive thoughts	Positive feelings 10(50%)
Energy or catalyst for life	Energy for life	
Self-contentment (satisfaction)	Self-satisfaction	
Removal of stress and feeling relieved	Feel relieved or refreshed	
Feeling refreshed		
Just happiness or enjoyment because moving	Autotelic experience	Autotelic experience 10(50%)
Happiness because dancing		
Delight and enjoy		
Feeling “up” and happy		
Feel spine-tingling	Remarkable experience	
Feel eerie		
Feel like taking drug		
Experience an ecstatic state	Ecstatic state	
Feeling like reaching performance climax		
Everything going well	Everything going well	Sense of control 8(40%)
Freedom of movement, music, feeling, and body	Freedom of music, feeling, and movement	
Expressing one’s feelings well through dance	Expressing one’s feelings	
Everything is correct while dancing	Kinesthetic awareness	Unambiguous feedback 5(25%)
Positive response from audience	Positive response from audience, teacher, peers	
Positive clear feedback from teacher		
Positive feedback from peer		
No consciousness of others	No consciousness of others	Loss of self-consciousness 4(20%)
Freedom from negative judgment of self		
The absence of time realization (losing track of time)	The absence of time realization	Time transformation 2(10%)



I identified eight general dimensions related to the experience of flow in dance, which are: (1) Total concentration, (2) Merging of action and awareness, (3) Positive feelings, (4) Autotelic experience, (5) Sense of control, (6) Unambiguous feedback, (7) Loss of self-consciousness, and (8) Time transformation. The general dimensions emerged directly from the first-order themes in this analysis. In Table 4.1, numbers in parentheses at the end of each first-order theme and general dimension represent the number of dancers who referred to that category and the percentage of the sample represented in that category. These numbers do not represent the strength of feeling that dancers expressed about their experiences. Both frequency of reference and strength of reaction should be taken into account in interpreting qualitative data.

*General Dimension 1: Total Concentration*

The first general dimension was ‘total concentration’. I defined total concentration as a personal psychological state in which a person is involved in or focuses deeply on dance. This dimension was the one most frequently mentioned among the characteristics of flow experienced by the dancers in this study, being cited by 17 (85%) dancers. There was one first-order theme: (a) total concentration. This was the same as the general dimension.

*Total concentration.* The first-order theme of total concentration comprised five raw data themes. For example, two statements related to this dimension were:

I feel great when I immerse totally into performance. I totally concentrate on music and followed the flow of sound, then, everything automatically unites as one. It is great experience. (Dancer 20)

When I danced my first performance, which was about a sad love story in the theater, the light just shone on me on the stage. At that time, the audiences

remained unseen and I couldn't see anyone. I felt that I existed alone in the world. I could feel tears because I was totally concentrating on the performance. (Dancer 16)

During flow experience, dancers concentrate totally on the music and the role of their performance. As a consequence of the concentration on dance, dancers more easily interpret or explore the music and the role of performance without losing their focus or energy to avoid disturbing thoughts and things around dance environments, internally and externally. Thus, dancers who have the psychological skill of strong concentration are more likely to perform well and experience flow. This is because there are unpredictable and uncontrollable situations that exist in each real performance. From this study, deep concentration emerged as the most common phenomenon of the flow experience in dance.

#### *General Dimension 2: Merging of Action and Awareness*

The second general dimension is merging of action and awareness. Merging of action and awareness refers to a sense of uniting or being one with performance. Many dancers (10, 50%) mentioned that there is a sense of uniting of the body movements, music, and one's feelings during flow experience in dance. This general dimension was extracted from one first-order theme, which was (a) uniting with music, one's feelings and movements.

*Uniting with music, one's feelings and movements.* Uniting with music, one's feelings and movements means that during flow experience, dancers become one with the dance performance, and they feel the sense of oneness or harmonizing with performance. There were three raw data themes in this first-order theme: these were "uniting everything, such as music, lighting, movement, and story of performance",

“uniting with music and feeling like playing music through body movement”, and “breath, dancing, and music becoming one and uniting”. Explanations related to this dimension that dancers presented were:

During dancing, there is the time when the music comes to and meets my body. There is a moment of everything united with music and my movements. When there is the same feeling, mood, or biorhythm, from that moment, it becomes total immersion into dance. (Dancer 11)

The moment that the feeling of music and movement are exactly matched. (Dancer 12)

The experience of a sense of uniting with music, feelings, movements, and the story of the performance naturally might lead to feeling like playing music through the body movement. There is no purpose and effort to do so and it just automatically occurs during flow state. The merging of action and awareness was the second dimension of the flow experience in dance.

### *General Dimension 3: Positive Feelings*

The third general dimension was positive feelings. I defined positive feelings as a positive mood state or feeling of an individual’s psychological state during flow experience in dance. This dimension was mentioned by 10 dancers (50%). The positive feelings of the general dimension comprised four first-order themes, which are (a) experience positive thoughts, (b) energy for life, (c) self-satisfaction, and (d) feel relieved or refreshed.

*Experiencing positive thoughts.* Experiencing positive thoughts means that dancers change from negative or complicated thoughts to positive thoughts in terms of

their mind during flow experience. There was one raw data theme “filled with positive thoughts”. One professional dancer explained that:

During dance, my mood state is getting better... My thoughts could be even more positive and developed (Dancer 12)

Dancers’ minds are in a positive state during flow experience. The positive state might influence the development of individual thoughts.

*Energy for life.* The first-order theme of the energy for life refers to the fact that during flow experiences dancers feel great energy and that energy is transported to their general life. It comes from one raw data theme that is, energy or a catalyst for life, being cited by 2 (10%) dancers. A dancer described it as:

This is my destiny; to be a dancer. I wasn’t a person who believes that dance is the only way to live for them and there is no other different way to live. I didn’t try to push myself to seek the way to survive as a professional dancer, but dance is always naturally connected with me, close with me, because, doing dance is a real shot in the arm for my life. (Dancer 4)

The flow experience provides energy for dancers’ lives. Thus, dancers who experience this energy remain involved in dance for a long period of time because of the positive energy.

*Self-satisfaction.* The first-order theme of self-satisfaction refers to dancing that satisfies dancers. I derived it from the raw data theme of self-contentment or satisfaction. Seven dancers (35%) mentioned the sense of satisfaction they experienced while dancing. For example, statements related to this first-order theme were:

People in general do something for purposes, such as certification for the future. But I just dance for self-contentment, rather than for having a reliable purpose for the future of my life. I am dancing for this self-contentment.

Because of liking ... because I love dance (Dancer 5)

Just doing dance is self-satisfaction for dancers. There does not need to be any other consideration or motivation for dancing because of the special flow experience.

*Feel relieved or refreshed.* To feel relieved or refreshed means that people change their condition. This first-order theme contained two raw data themes, being cited by 7 (35%) dancers: these were “removal of stress and feeling relieved” and “feeling refreshed”. Three typical statements were:

I blow off my stress during dance. (Dancer 4)

My case is that it is consolation for some things in my actual life. Life is different from dance. Sometimes life doesn't go well. When I have real life difficulties, I dance the Sa-Pu-Le Dance [a kind of traditional Korean dance, especially one which expresses the sadness and pain of life]. Such a dance has a power for relieving something, which is difficult in my life. (Dancer 11)

When there are some difficulties in my life, I forget while dancing. I dance with this heaviness of feelings, when there is a very hard thing in my life, and then I feel that it is much defused or sometimes, when I become more deeply involved with sadness it becomes lighter than before. It doesn't matter what other people think ... that's why I am dancing until now. I am very happy at that moment of dance, rather than after finishing dancing despite feeling refreshed. (Dancer 11)

When dancers are in flow state during dance, they are in a state in which they experience positive thoughts, energizing, self-satisfaction and feeling relieved or refreshed. The third dimension of the positive feelings theme (feeling relieved or refreshed) was common for many dancers when they experienced flow in dance. Thus, dancers might be motivated to continue dancing because of these positive feelings.

#### *General Dimension 4: Autotelic Experience*

The fourth general dimension was autotelic experience. I defined autotelic experience as a rewarding positive psychological experience from doing the dance itself, instead of for other extrinsic reasons. Related to this dimension, 10 (50%) dancers made comments. The autotelic experience comprised three first-order themes, which were: (a) autotelic experience, (b) remarkable experience, and (c) ecstatic state.

*Autotelic experience.* The first-order theme autotelic experience was elicited from four raw data themes: these were “just happiness or enjoyment because moving”, “happiness because dancing”, “delight and enjoyment”, and “feeling up and happy”. For example, dancers stated that:

I am happy as a dancer because the dance is what I want to do. Not for money or other reason to dance. (Dancer 16)

I just love dancing, there is no reason... (Dancer 8)

Dancers mentioned that the reason to do dancing is happiness and enjoyable experience and there is no other reason to do dancing because dancing itself is intrinsically rewarding.

*Remarkable experience.* The first-order theme remarkable experience was defined as a positive, intensive personal experience, that is not forgettable, because it

is special and an unusual experience in the dancer's life. Among the respondents in this study, 9 (45%) dancers made comments related to this experience. This first-order theme contained three raw data themes that were presented as: "feeling spine-tingling", "feeling eerie", and "feeling like taking a drug". Three dancers' statements were:

Feel spine-tingling... such a hair-raising moment (harrowing, shocking), this is such a personal experience away from audience. (Dancer 8)

Do you know? People say that the stage is a drug. Since I started to dance on stage, it is such a state of intense joy.... (Dancer 15)

When I was in university, I danced a three minutes solo performance for competition. At that time, I received the medal, but when I was dancing I felt the feeling of eeriness, not when I received the medal. It is the best. (Dancer 16)

Flow experience was explained as an intense and strong special experience in dancers. Thus, the experience is remarkable for dancers.

*Ecstatic state.* The third first-order theme in the autotelic experience general dimension was ecstatic state, which is defined as a psychological state of feeling very great happiness during dance. The ecstatic state first-order theme contained two raw data themes that were "experiencing an ecstatic state" and "feeling like reaching performance climax". Examples of statements by dancers were:

The moment of dancing I become in a state of complete absence of ego, a perfect impersonal beatitude like pure ecstasy. (Dancer 7)

Most performances have a moment of climax in their totality. Feeling also has the best moment. When I had total absorption in dance I would feel the best moment. But it does not always happen. (Dancer 20)

The autotelic experience in dance was described as an intensive and special experience compared with the dancers' ordinary life. Dancers mentioned that they could not give up dancing even though they may face difficulties during their dancing career, because of this special, remarkable experience. Dancers stated that this unforgettable experience is meaningful and valuable for their lives. Thus, their goal as a dancer, basically, is to attain the flow experience as often as they can.

#### *General Dimension 5: Sense of Control*

The fifth general dimension was sense of control. I referred to sense of control as a feeling of controlling movements and the situations related to the dance performance without any effort. Also, sense of control means emotional control linked positively to calmness and negatively to anxiety. It is automatic and occurs during dancing. This dimension was reported by 40% (8) of dancers. There were three first-order themes (a) everything going well, (b) freedom of music, feeling, and movement, and (c) expressing one's feelings well.

*Everything going well.* From dancers' comments, I proposed that everything going well meant that, during dancing, dancers sensed or knew how well they were progressing and therefore felt in control of the whole performance. It has one raw data theme, which is the same as the first-order theme, "everything going well". The explanation by one dancer in relation to this dimension was presented as:

A moment of something that one is unable to do one can become able to do.  
(Dancer 8)



When I immerse deeply into performance, at that moment I can control my movements from top to toe. This is a great experience. I feel I can do everything. (Dancer20)

One of the great experiences is that dancers can feel their movements go well and sense that they are in control of each movement during flow state.

*Freedom of music, feeling, and movement.* My interpretation of the first-order theme of the freedom of music, feeling, and movements is that it refers to a state in which dancers are controlling the music, feelings, and movement during dancing. There was just one raw data theme that was “freedom of movement, music, feeling, and body”. For example, one quote from a participant was:

I sometimes feel the music comes through my body; when the music and I are harmonized and in one united body. (Dancer 5)

Dancers experienced the moment when everything unites and they feel in control, with a free of flow of music through body movements.

*Expressing one's feelings well.* Expressing one's feelings well, the final first-order theme in the sense of control general dimension, refers to comments that dancers control their feelings in relation to the performance in which they want to explore those feelings. It has one raw data theme that is “expressing one's feeling well through dance”. This is the same as the first-order theme. A statement that exemplifies this was:

There is some level of high point in dance. In that situation, it is necessary to express well the feeling of performance. When I express the feeling well through my body movement, it is a moment, which is supreme, because I am a

creative dancer. When that moment comes, I feel it. Maybe it depends on people and performance, but I feel it each time when it is done. (Dancer 13)

The sense of control dimension has also been found to be a common characteristic in the sport context, where sense of control was reported to be one of the indications of flow experience among athletes (Jackson & Csikszentmihalyi, 1999). The sense of control was described by dancers in the present study as feeling confident without worrying about mistakes.

#### *General Dimension 6: Unambiguous Feedback*

The sixth general dimension was unambiguous feedback. Unambiguous feedback refers to immediate, clear feedback of what is going on at that moment in relation to kinaesthetic awareness and outcome information. This dimension was presented by 25% (5) of dancers. There were two first-order themes, which are: (a) kinaesthetic awareness and (b) positive response from audience, teacher, and peers.

*Kinaesthetic awareness.* The first-order theme kinesthetic awareness refers to receiving sensory information about one's internal physical awareness. It was drawn from a raw data theme, "everything is correct while dancing". Two dancers' statements reflecting this are:

While dancing, I feel how much my arms and legs are light and move smoothly. I become more absorbed in my dance and everything is correct from start to end of the dance. (Dancer 1)

I feel, through my movements, the space of the stage; clearly it is a different feeling. (Dancer 10)

As mentioned previously, dancers feel clear, kinaesthetic, positive awareness about their dance during flow state.

*Positive response from audience, teacher, and peers.* Dancers interpreted positive responses from the audience, their teacher, and their peers to be a kind of information on their performance, which dancers received from outside sources. There were three raw data themes “positive response from audience”, “positive feedback from teacher”, and “positive feedback from peers”. Two sample quotations were:

When I performed in outdoor theatre, there was clear response from the audience. A man who was in the audience followed my dance while watching the whole performance. I was inspired deeply during dancing. (Dancer 8)

When I was in high school my dance teacher gave immediate, positive feedback during dance and I felt great energy and focused on my dance. Those days I couldn't sleep because of being very excited by this. I was so happy. (Dancer 16)

Dancers described how they received clear kinaesthetic awareness as feedback about their movement and how they felt the space of the stage through their body. Furthermore, when they were in a flow state, dancers also received clear feedback from audiences, teachers, and other dancers.

#### *General Dimension 7: Loss of Self-Consciousness*

The seventh general dimension was loss of self-consciousness, which refers to freedom from self-judgment. Such freedom is usually positive, because the whole self-judgment process is just switched off, while one is immersed in flow. This

dimension was presented by four (20%) of the dancers. There was one first-order theme: (a) loss of self-consciousness. This was the same as the general dimension.

*Loss of self-consciousness.* This first-order theme of loss of self-consciousness included two raw data themes “no consciousness of others” and “freedom from negative judgment of self”. For example, one dancer stated that:

I remember a day that was the audition for entering a dance company; I danced very well. Before preparing and waiting for the audition, I was so anxious and worried about it, but when I stood in front of the judges I was so charmed. I wasn't conscious of myself before the judges and I thought they are just looking at me. So I didn't need to think about what they would think of my dance, having no consciousness of other people. (Dancer 5)

I forget everything on the stage... it looks like my real life. It doesn't feel that it is stage, audience, and performance. (Dancer 7)

When I was a new member in the Dance Company, I thought that I could look or feel better only when I danced in the center of the stage during group dance. The teacher, though, told me that it doesn't matter whether I dance in the side, corner, or end of the stage in the dance group. If I dance well, I will be shown to the audience. It is really true. Dancing is self-satisfaction. Now, even when I am dancing in a position of corner in a group, I am satisfied doing dance. So it doesn't matter where my position is on the stage. (Dancer 9)

Many dancers seem to be self-concerned. One reason is that dance itself requires dancers to see their movements externally. Other people's views about their dance are important for them. There is no standard measurement to determine which is the best

performance. Thus, as professional dancers, the judgment or comments of other people is the main way to know about their performance. Consequently, dancers usually consider others' views, rather than their own experience. This is likely to lead to self-consciousness, which can negatively affect performance (e.g., Mesagno, Marchant, & Morris, 2009).

#### *General Dimension 8: Time Transformation*

The eighth general dimension I identified was time transformation, which refers to the report by dancers in this study that, during dance, time often felt different to normal time. For example, time seemed to go fast or go slow. The only first-order theme was: (a) the absence of time realization.

*The absence of time realization.* The single raw data theme was the same as “the absence of time realization”. This dimension was represented in comments made by two (10%) of the dancers. The dancers explained time transformation as the following:

I forget that time is flowing during dance. It seems to feel like just a few minutes of dancing, but it is actually a three-hour performance. (Dancer 16)

After I start the dance lesson, I don't know how much time has passed and, at that moment, I forget everything during the dance. (Dancer 7)

Both dancers who mentioned the characteristic of time transformation showed that time actually went faster than their perception of it, that is, what seemed like a few minutes to them, was actually an hour or more. The transformation of time could be closely related to deep concentration on the task at hand. The experience of time transformation during flow in dance showed similarities with reports from highly-

skilled performers in other areas, such as sport, surgery, writing, and playing music (Csikszentmihalyi, 1975).

### *Facilitators of Flow*

The results of the inductive content analysis for facilitators of flow are presented in Table 4.2.

Table 4.2

#### *Facilitators of flow*

Raw Data Themes	1 <sup>st</sup> Order Themes	2 <sup>nd</sup> Order Theme	General Dimension
Mastered technique	High physical skills	Well-mastered technique	Well-mastered technique
Enough practice and knowing performance well			
Strong basic foundation with correct posture and techniques			
Keep balance between techniques and feelings	Attunement of performance		
Uniting of music, lighting, costume, make-up, and story of performance			
Satisfied with one’s appearance	Being satisfied with one’s appearance	Positive thinking	
Well dressed, hair style, and using perfume to feel “up” or stimulated	Positive thoughts		
Positive thoughts			
Hope			
No negative judgment of themselves	Self-confidence	Confidence	Confidence
Self-confidence			
Confidence about the dance movements			
No anxiety	Absence of negative feelings	Confidence	
No burdens			
No worry			
Deep breathing and keep calm			
Familiarity of dance location	Concentration on performance	Concentrate on performance	Total concentration
Concentration on dance			
Immersion in performance			
From now on I am not me			
No consciousness about other people			
Practice alone	Knowing the performance music well	Concentrate on music	
Absorbed in one’s feelings			
Listen to music			
Analyse music			
Attune with music			
Memorize music inside head			

Immersion in music	Immersion in music		
Concentrate on music			
Dancing with feelings	Freedom to explore inner feelings	Freedom to explore inner feelings	Explore feelings and sensibilities in artistic performance
Express true feelings through dance			
Put strong emotion into dance	Practising to feel empathy	Practising to feel empathy	
Make one’s feelings the same as the dance image			
Try out different feelings for same dance every day			
Lots of imagination and thoughts to express feelings			
Mobilize all senses in dance			
Practice to feel empathy through performance			
Wild experience needed to interpret roles			
Try variety of approaches to dancing			
Practice expressing feelings of performance			
Well-prepared body (warm-up) and mind	Optimal pre-dance condition	Optimal pre-dance condition	Optimal pre-dance condition
Appropriate arousal			
Watching other’s performance to stimulate to dance	Motivation from outside source	Motivation	Motivation
Talking with other people			
Keep motivation to practice			
Enjoy the dancing	Intrinsic motivation		
Love dancing			
Passion and zeal for dancing			
Need achievable goals	Achievable clear goals		
Clear goals			
Do one’s best	Best effort with Willingness		
Constantly study dance			
Effort with endurance			
Willing to dancing			
Hard work			
Mind control, such as high commitment through having right purpose	Mind control		
Control mind			
Accepting mind (often mind)			
Make mind empty (generously) and everything starts from mind			
Positive response from audience	Positive feedback from audience	Positive Feedback	Positive feedback
Communication with audience			
Audience and dancers share experience			
Eye contact with audience			
Other dancers feel “up”	Positive feedback from other dancers and teachers		
Positive comment from teachers			

I identified seven general dimensions in the analysis of facilitators of flow: well-mastered technique, exploration of feelings and sensibilities in artistic performance, optimal pre-dance condition, positive feedback, confidence and absence of anxiety, total concentration, and motivation.

*General Dimension 1: Well-Mastered Technique*

The first general dimension was well-mastered technique, which refers to an advanced stage of development of the skills and techniques needed for a specific dance performance. Each dance requires certain skills to be danced by professional dancers. Dancers commented that having appropriate skills is an important factor for flow state to occur. Many dancers (15, 75%) referred to this dimension. There was one second-order theme: well-mastered technique. This was the same as the general dimension. There were two first-order themes: (a) high physical skills and (b) attunement of performance.

*High physical skills.* The high physical skills theme was related to dancers' movement skills for performance. There were three raw data themes in high physical skills, which were "mastered technique", "enough practice and knowing the performance well", and "strong basic foundation with correct posture and techniques". The following quotations are related to the first-order theme high physical skills:

It [optimal experience] does not occur every time I practice. "Optimal experience" happens when I have mastered a particular stage in performance and I am close to the day of performance. (Dancer 13)

Every movement expresses a different feeling and the dancer must get each movement exactly right, as audiences are knowledgeable judges. When I have



mastery of both basic skills and advanced techniques and I dance the movement perfectly, I experience flow. (Dancer 13)

When I learned dance my teacher forced training on students until we almost died... and then, at that moment, the teacher also made us dance one more time. At that movement, I had extreme disaffection for the teacher, but after that when I was dancing, I had a feeling of refreshment or a special feeling of pleasure, even if the movements are not perfect enough, but the body feels differently. Also, the teacher told me the more you train in dance, the more you would feel it (optimal experience). (Dancer 8)

For a well-mastered dance technique, dancers need to develop their skills related to basic foundations of posture and techniques. Without knowing the performance well, it is difficult to become totally immersed into the dance performance. Without immersion the flow experience might not occur. Those factors are contributors to a high quality of performance, so that dancers who have high skills in dance are more likely to experience flow.

*Attunement of performance.* The next first-order theme of attunement of performance was about harmonies in performance. There were two raw data themes in this first-order theme, which were “keeping a balance between techniques and feelings” and “uniting of music, lighting, costume, make-up, and story of performance”. Related to this, a dancer explained that:

Primarily I know well the performance based on practice. So I just follow... and feelings of music sound different, when I perform on the stage. There are special sounds, lights, customs, and make-up for a performance. Everything fills in that performance environment. The music, lighting, and my movements,

everything combines into one, uniting as one in the story of dance. At that moment, as a dancer, I experience flow. (Dancer 1)

Keeping a balance between techniques and feelings or emotions is one of the abilities or skills to control a variety of psychological and physical reactions that occur during performance. Moreover, when there is a perfect match in performance, such as uniting of music, lighting, costume, make-up, and the story of that performance, this leads dancers to be in flow state.

### *General Dimension 2: Explore Feelings and Sensibilities in Artistic Performance*

The general dimension exploring feelings and sensibilities in artistic performance is related to acting through expressing feelings and interpreting the role of performance in dance. This dimension was mentioned by 13 (65%) dancers. There was two second-order themes in this dimension which were: practising to feel empathy with themes of dance and freedom to explore inner feelings. The second-order theme of practising to feel empathy with themes of dance was related to specific practice about how to express and to interpret artistic characteristics of performance, through body movements, based on understanding the feelings of the role in performance. The first-order theme practising to feel empathy with themes of dance was the same as the second-order theme.

*Practising to feel empathy.* This first-order theme was comprised of eight raw data themes: “make one’s feelings the same as the dance image”, “try out different feelings for the same dance every day”, “lots of imaging and thoughts to express feelings”, “mobilize all senses in dance”, “practice to feel empathy through performance”, “wide experience needed to interpret roles”, “try variety of approaches

to dancing” and “the practice of expressing feelings of performance”. Dancers explained that:

I receive a new character with each role and I try to do each character well. I devote much thought to exploring the personality of the character. I try to feel empathy with the character and to become the character just like an actor tries to become the person he is playing. “If I was that person, how would I feel?” “If I was in that situation, how would I express my feelings?” While practising I am continually thinking about the character and I become immersed in performance. (Dancer 11)

Expressiveness does not come immediately with the first practice. There is much work required before I can express the role of a character correctly. I need to experiment with a number of different approaches. Even in the same scene, I will try different methods until eventually I am satisfied. (Dancer 9)

When I try to express the feelings and personality of the character, I naturally become immersed in the performance. (Dancer 11)

Sometimes the dance performance is a way of storytelling. Dancers need to explore the feelings or story through body movements. When dancers fully express their feelings of movements with deep concentration in performance they experience flow. The important thing is that dancers need to know how to express the feelings or moods of the performance fully based on practising to feel empathy with themes of the dance.

The next second-order theme was freedom to explore inner feelings. The single first-order theme was the same.

*Freedom to explore inner feelings.* The freedom to explore inner feelings was about expressing one's own feelings freely. This is a very high level of expressing feelings. There were three raw data themes in this first-order theme, which were: "dancing with feelings of performance", "expressing true feelings through dance", and "strong emotion into dance". The following statements made by dancers were related to this first-order theme:

When I perform on the stage, I don't think about such things as how to make a perfect tiptoe point. Instead, I dance with feelings of performance. I notice that when I touch the other dancers, it seems different when I do it with feelings, than when I do it without feelings. The feeling aspect of dance is very important. (Dancer 7)

I loved a man deeply but we broke up.... if there was no dance, it would be very difficult. At that time, I went to the beach alone and came back and I danced with these feelings for a sad story of performance; after that, my dance was deep and improved. At that time, I didn't like this, but such experiences are helpful. If I get a chance to choreograph, I want to make a dance about that experience. Dance is good because I can dance to cope with the past sad experiences and dance can explore these things. In dance there is sadness and happiness. If these feelings are not in your heart, you can't dance and you can't convey the impression to audiences. (Dancer 8)

To explore the feelings, dancers need to focus on the task at hand, rather than allowing disruptive thoughts, such as considering themselves or others' views, to enter their thoughts. Moreover, strong emotion or true feelings based on freedom into performance was one of important facilitators to experience flow in dancers.

### *General Dimension 3: Optimal Pre-Dance Condition*

Optimal pre-dance condition reflects the experience of physical and psychological readiness prior to performance in relation to flow experience. This dimension was presented by 5 (25%) dancers. Optimal pre-dance condition was a second- and first-order theme.

*Optimal pre-dance condition.* Optimal pre-dance condition came from two raw data themes, which were “well-prepared body (warm-up) and mind”, and “appropriate arousal”. Related to this first-order theme, dancers explained that:

Before entering the stage, I prepare beside the stage at least before the previous scene for continuing the mood of the performance and optimal arousal. During that time, I am warming up my body and I am thinking how I will perform on stage through imagery and committing myself. (Dancer 9)

I tend to warm-up a lot and I have to do 110 % during rehearsal. If there isn't enough warming-up, it is very hard. After doing enough warming-up, then I add the feeling of the movements. Every time I dance [performance and practice] is the same and ought to involve 110 % warming-up, such as stretching for a difficult movement, which is not going smoothly. I continually have to repeat it to keep the sense of movement. I really need to do enough warming-up beside the stage before entering the stage, otherwise I feel so nervous. (Dancer 10)

These dancers reported that the optimal pre-dance condition, attained by such methods, namely a well-prepared body (enough warming up) and mind, and appropriate arousal level, is one of the factors that facilitates the flow state. Dancers

might need to keep their attention focused during the performance as well as enough body warming up to achieve flow state.

#### *General Dimension 4: Positive Feedback*

The fourth general dimension was positive feedback, which refers to the positive interaction between dancers and audience. This was mentioned by 5 (25%) dancers. In sport, this is explained as clear feedback of performance from the coach, audience, or others. There was one second-order theme, positive feedback. This was the same as the general dimension. Positive feedback was comprised of two first-order themes: (a) positive feedback from the audience and (b) positive feedback from other dancers and teachers.

*Positive feedback from the audience.* There were four raw data themes in the first-order theme positive feedback from the audience: “positive response from the audience”, “communication with the audience”, “audience and dancers share experiences”, and “eye contact with the audience”. Dancers suggested that positive feedback from the audience stimulates or influences dancers’ feelings or moods during dancing. One of the dancers stated that:

When the audience becomes immersed in my performance, the audience follows the music and each of my movements, sitting attentively on their chairs like this [straightening upper body] unconsciously instead of sitting like this [settles back on the chair]. I felt it during the dance. As a professional dancer, this experience accumulates and stimulates me. (Dancer 1)

*Positive feedback from other dancers and teachers.* Positive feedback from other dancers and teachers involved two raw data themes “other dancers feel ‘up’” and “positive comment from teachers”. Related to this a dancer mentioned:

My teacher pointed out one incorrect movement. So, I practiced it a lot and the next day the teacher showed my dance and told me that I made the movement perfectly. The teacher praised me. Also, after practice, the other dancers' statement, "you danced very well today" made me so happy. (Dancer 1)

You know... when the other dancers lose their role as well as the music in the group dance, this blocks the flow of performance. I just lose my mind as well and have to try to match with them. But when other dancers feel up everything goes smoothly. It influences me feeling up and I also feel easy to immerse into performance. (Dancer 2)

The audiences, teachers, and peers are situational factors that can disrupt the flow experience and can also facilitate flow experience. Kimiecik and Stein (1992) explored facilitators in terms of situational factors, such as, coaches' feedback, and teammate interaction and behavior in sport. Kimiecik and Stein stated that situational factors underlie flow experience as well as personal factors. For example, dancers might receive an immediate, clear response from the audiences, teachers, and peers related to their performance. Clearly knowing what is going on in terms of their performance also motivates dancers to continue to practice and perform, and that condition might provide more opportunities to experience flow. Moreover, in dance, the positive interaction between dancers is also an influence that can harmonize the performance in group dances.

#### *General Dimension 5: Confidence*

The fifth general dimension was confidence. This dimension was related to a psychological calmness and stability in specific dance situations or environments. This was mentioned by 15 (75%) dancers. Being confident might lead dancers to

perform freely at their best. This general dimension contained two second-order themes: positive thinking, and confidence. Positive thinking was related to individuals' positive perception of dance performance, as well as of themselves. There were two first-order themes in this second-order theme: (a) being satisfied with one's appearance and (b) positive thoughts.

*Being satisfied with one's appearance.* Being satisfied with one's appearance was about a dancer's positive perception of their appearance or body image. There were two raw data themes in this first-order theme: "being satisfied with one's appearance" and "being well dressed, hairstyle, and using perfume to feel "up" or stimulated". One explanation about this theme was as follows:

Before starting dancing it is different, as usual. Because, I "made myself up", such as I put on lipstick, tied up my hair, and wore more colorful or beautiful dance clothes, which normally I didn't do, but during dancing I wanted to feel more special and satisfied with my appearance. It influences my feelings during dance (Dancer 1)

The body is the instrument for dancers. Their appearance might influence dancers' emotion as well. Dancers might consider their appearance internally and externally. Thus, dancers who have a positive perspective on their appearance, due to their own perceptions or from feedback received from other dancers, teachers, or the audience, would feel more positive stimulation that would be beneficial for their experience of dance and for their mood state.

*Positive thoughts.* The next first-order theme was positive thoughts, which were related to positive thoughts or mind in general. There were three raw data themes in this first-order theme: "positive thoughts", "hope", and "no negative



judgment of self”. For example, two dancers explained this first order-theme as follows:

During dancing, I always keep the hope or dream in my mind. Someday I can give an outstanding performance... even though the teacher says negative things to me or that it is not comfortable for me. (Dancer 11)

To totally explore the feelings of my movement I need to ignore the others’ view. Maybe other dancers or teachers say something negative about my performance, but it doesn’t matter. Just focus on the performance. (Dancer 10)

The next second-order theme was confidence. Professional dancers tend to experience more self-doubt compared with other people (Hamilton, 1998) and consider the approval of peers to be important (Hamilton, Hamilton, Meltzer, Marshall, & Molnar, 1989). Thus, finding ways to overcome negative thoughts, such as self-doubt and always depending on approval from other people, is an important element for dancers’ positive experience of their dance, as well as their well-being.

Confidence refers to freedom from anxiety based on having strong self-confidence about one’s performance. There were two first-order themes in this second-order theme: (a) self-confidence and (b) absence of negative feelings.

*Self-confidence.* The first-order theme of self-confidence was about confidence in general and confidence about specific dance performance. This was elicited from two raw data themes “self-confidence” and “confidence about the dance movements”. In relation to this theme, one dancer explained:

Whatever I hear, primarily I try to keep the self-confidence that I can do it.  
(Dancer 10)

Dancers at a professional level require strong confidence in terms of their performance for presenting and translating their feelings and mood into their performance, which is very challenging for them. Dancers need to control themselves to be confident.

*Absence of negative feelings.* The next first-order theme of absence of negative feelings was related to having no negative thoughts about one's individual performance. There were five raw data themes, which were "no anxiety", "no burdens", "no worry", "deep breathing and keeping calm", and "familiarity of dance location". Three statements that exemplify this theme are:

When I took one audition, my mind was so charmed and peaceful. That day the dance was very good. I was satisfied about my dance, so the result didn't matter to me. Even if the result might be not good, I would not be disappointed with it, because I didn't think that I must be perfect to enter that dance company. There was no burden. (Dancer 5)

Before I enter the stage, I am normally very nervous. I tend to pray a lot. Just before entering the stage I talk to God, praying that I will dance very well. There is no way to fail the performance. I inspire myself to be self-confident. Also, I need to have some quiet time. I don't talk much with other people during the performance. There is noise in the dressing room, so I stay outside the room for a long time before the performance. I walk about a lot on the stage before the performance for confidence. (Dancer 10)

The practice is really important. Even practicing enough to feel no need for recrimination there still exists anxiety on stage, so if I do not do enough

practice how much more anxiety exists! When I practice fully, there is less anxiety on stage. (Dancer 14)

Dancers' anxiety directly influences performance in terms of physical and psychological factors. When dancers have anxiety or burdens related to dancing, it is difficult for them to fully concentrate on their performance.

#### *General Dimension 6: Total Concentration*

The sixth general dimension was total concentration. This dimension reflected involvement in the task. It is a psychological skill similar to focusing deeply for one moment. This was presented by 17 (85%) of the dancers. There were two second-order themes: concentration on performance and immersion in music. The theme concentration on performance was about focusing on dance. The second-order theme concentration on performance comprised one first-order theme, which was the same as the second-order theme: concentration on performance.

*Concentration on performance.* The first-order theme, concentration on performance, was about trying to focus or concentrate on performance without any other thoughts. There were six raw data themes in this first-order theme: "concentration on dance", "immersion in performance", "from now on I am not me", "no consciousness about other people", "practice alone", and "absorbed in one's feelings". Here are examples from dancers:

I will not leave from the performance till I finish the performance [referring to the public duration of a show]. After that, I can leave from the performance. I am always thinking of the performance. So, I become sensitive because of the up-coming performance. All my focus goes to the performance and I will never let go of the string that ties my focus to this performance. Sometimes, I

overreact to things, which are not important, which are different from on a normal day. (Dancer 11)

I need to practice immersion into performance while dancing, because if I don't try, it won't suddenly occur on the stage on performance day. To be unconscious of other things requires self-discipline. Don't be shy... just express what I have to do. It is difficult, and if the other people disappear...it is good. I need to remove those thoughts from my mind. (Dancer 10)

I like it when there is nobody around when I am dancing, because I need to practice for immersion into dance. If somebody stays with me, my attention often goes there. When I dance at the starting stage, I really need to concentrate... I like to dance alone. (Dancer 4)

The immersion in performance was related to uniting with the performance based on deep concentration. Also, based on qualitative studies in sport (Jackson, 1995, 1996), concentration on performance is one of the key facilitators of the flow experience.

The second-order theme, immersion in music, was specifically related to becoming absorbed in the music. There were two first-order themes in immersion in music: (a) knowing the music well and (b) immersion in music.

*Knowing the music well.* Knowing the performance music well was about the step that precedes immersion into music. Dancers need to know the music to focus on the music. There were four raw data themes in this first-order theme: "listen to music", "analyse music", "attune with music", and "memorize music inside your head". An example was:

Always, when I start a new dance, I try to analyse the music. I put in a lot of effort ... I always listen to the music, not just during the dance. I know if I listen too much, maybe I will get fed up with that music, but I have to listen at the beginning of the practice stage. Each piece of music includes the introduction, development, turn, and conclusion. Sometimes the music goes to a climax or comes down. So, if the music goes to a climax, the movements and my feelings also need to go to a climax. If the performance is to go well or shine, it has to come together. (Dancer 11)

*Immersion in music.* The immersion in music first-order theme explains the deepest involvement with music. There were two raw data themes in this first order theme: “immersion in music” and “concentration on music”. Related to this, a quote was:

Before I enter the stage, I try to immerse myself into the performance by listening to the music, because, if I am not in the same mood as the performance, it is very hard to express the feeling of that performance on stage. The best way to immerse oneself into the performance is to immerse oneself into the music. I am inspired by music very quickly. (Dancer 10)

Music inspires people’s emotion and influences performance. Dancers need to concentrate on performance to facilitate flow experience especially by totally immersing themselves in the music and expressing the mood of music. This is one of ways to unite with the whole performance.

#### *General Dimension 7: Motivation*

The seventh general dimension was motivation, which refers to being stimulated or having a desire to initiate and persist with dance. This was mentioned by

10 (50%) dancers. There was one second-order theme, motivation. It had the same title as the general dimension. The second-order theme of motivation was extracted from five first-order themes (a) motivation from outside sources, (b) intrinsic motivation, (c) achievable clear goals, (d) best effort with willingness, and (e) mind control.

*Motivation from outside sources.* The first-order theme of motivation from outside sources involved external stimulation for enhancing motivation. There were two raw-data themes in this extrinsic motivation first-order theme “watching others’ performance to stimulate self to dance”, and “talking with other people”. Related to these themes is the followed statement:

After watching an inspiring dance performance that was performed by senior dancers, I really wanted to dance like them, it motivated me to practice every day constantly around one or two hours extra dancing. Sometimes, I practice early in the morning before the other dancers come into the dance hall or, after finishing, I remain for self-practice. During that time, I often experience flow, which I never forget in my mind. (Dancer 9)

Dancers explained that to continue dancing for long periods of time at a professional level, dancers need to deal with a variety of issues, such as fatigue, boredom, their relationship with peers and directors, and injuries (Taylor & Taylor, 1995). Thus, motivation is one of the important factors that help dancers to continue dancing to improve their performance skills and enhance flow experience. Observing other dancers’ performance might stimulate dancers’ motivation and give them the chance to analyze movement skills for improving dance performance as professional dancers. Moreover, talking with other people is an interaction that might provide an

opportunity to share some ideas for developing dancers' motivation to keep practicing and performing dance.

*Intrinsic motivation.* The second first-order theme of intrinsic motivation comes from the dancers' own thoughts, such as finding dance a self-rewarding experience. There were three raw data themes in intrinsic motivation, which were "enjoy the dancing", "love dancing", and "passion and zeal for dancing". A dancer explained, relating to this theme:

There is a great satisfaction after I give a good performance, even if I have that experience just one time. If there is no such experience, maybe it is very difficult to continue dancing for a long time. Then I keep the hope or expectation continuing till next time. Yes, even though I didn't have it [great satisfaction] this time... yes, next time I will be good. I will dance zealously and cheer myself. (Dancer 11)

As mentioned by this dancer, dance activity itself provides the special rewarding experience that is flow experience. Previous optimal flow experience might lead dancers to seek that experience again, motivated by the hope to receive again the special experience someday.

*Achievable clear goals.* The third first-order theme of achievable clear goals was about goal setting, which is about appropriate goals for dancers to achieve. There were two raw data themes, which were "achievable goals" and "clear goals". Citations by dancers were that:

People can deal with an upsetting environment in two ways. Some people tend to hold on to the bad feelings during dance, while others can get rid of the stress through dance. It depends on the person. I use both methods. But, it

depends on my goal. For example, if my goal is to enter a good Dance Company, I will try to let go of the “down” feeling. I try to “pick” my feelings and think positive thoughts. In order to change my mood, I need to have a clear goal, especially an achievable goal. (Dancer 1)

When I was young, I danced with zeal and pure mind, so I could concentrate on dance, but now I have been dancing for a long time in the Dance Company. Passing a year and two years in there [Dance Company], my passion for dance becomes low; maybe I lose my motivation. I have got a lot of worldly thoughts in my mind. It seems to be controlled if, however, there is a change of environment or having a new goal. (Dancer 15)

During involvement for a long period of time in one area of performance, dancers are confronted with a variety of difficulties, such as the unchangeable environment, boredom, and idleness. Having achievable clear goals helps dancers to focus on and to motivate themselves to practice and perform dance for a long time. It also provides more chance to experience flow.

*Best effort with willingness.* The fourth first-order theme of best effort with willingness refers to doing one’s best and being willing to dance actively, based on individual choice, focusing on a physical aspect, even if there is a hard task to do. There were five raw data themes, which were: “do one’s best effort”, “constantly study dance”, “effort with endurance”, “willing to dancing”, and “hard work”. Related to this theme dancers’ statements were:

There may be someone who has intrinsic or basic talent in dance, but they do not normally work hard. Also, a person doesn’t know how they can dance but tries to do one’s best. All dancers in the dance company have one or other



individual talents, such as a person who is outstanding on exploring feelings, who is intrinsically talented in dance techniques, one who is clever, and one who makes the best effort to dance, or this person may put much effort into dance with a sensation of excruciating pain. But the final best winner or continuing dance for a long time having great experience of dance is the person who puts their best effort into dance, not a person intrinsically talented or a clever one (dancer 16 p.8).

Effort constantly with strong beliefs...sometimes I don't want to dance, at that moment I need endurance like being willing to dancing with endurance.

(Dancer 11)

As a dancer, enough practice is the most important after that it is a matter of time to absorb in performance. (Dancer 1)

Constantly producing one's best effort with endurance is the basic concept to overcome a variety of difficulties and to achieve personal goals. Dance at professional level requires high physical training consistently. Thus, looking to continue dance with one's best effort for a long period of time, dancers need willingness to dance as well.

*Mind control.* The fifth first-order theme was mind control, which refers to a variety of mental set that focuses on a psychological aspect, such as high commitment through having the right purpose and controlled mind. Mind control came from four raw data themes, "mind control, such as high commitment through having right purpose", "control mind", "accepting mind (often mind)", "making the mind empty (generously) and everything starts from the mind". A typical citation related to this dimension was:

As a professional dancer, I suffer from an obsession with the desire to be a perfect dancer. I want to dance well on the stage, but the best way is being free from the dance. Of course there is blood, sweat, and tears to practice dance, but the important thing is mind. The mind leads to dance. (Dancer 10)

Mind control with high commitment through having the right purpose could apply in general life as well. In particular, professional dancers tend to be more emotional and sensitive compared to other people (Hamilton, 1998). Thus, mind control would be valuable for their quality of life, based on frequent and intensive optimal experience, because everything starts from the mind.

The seven facilitators of flow experience, which are: well-mastered technique, explore feelings and sensibilities in artistic performance, optimal pre-dance condition, positive feedback, confidence and absence of anxiety, total concentration, and motivation in dance were strongly connected to each other and influenced each other. Thus, it might be difficult to clearly divide one from another and identify which facilitators are most influential in the enhancement of flow experience.

### *Imagery Use to Enhance Flow Experience*

I asked imagery questions not specifically related to imagery as a way to enhance flow. I generally focused on the what, how, why, and when of imagery. The aim was for the use of imagery to enhance flow to emerge from dancers' experiences of imagery, rather than for instructions to force dancers to make links between imagery and flow. Dancers responded to the interview questions that focused on imagery with statements showing that they used imagery for a variety of individual purposes, which could enhance flow experience. The results are presented in Table 4.3. Four general dimensions emerged, related to imagery to enhance flow experience:

imagery to improve performance, imagery to develop confidence and reduce anxiety, imagery to absorb into performance, and imagery to control optimal arousal and motivation.

Table 4.3

*Imagery to enhance flow experience*

Raw Data Themes	First-Order Themes	General Dimensions
Specific movements Routine of body movements	Improving movement skills	Imagery to improve performance
Creating (new) movements Choreographic dance	Creating dance	
Imagine as a hero and star Rehearse the dance routines in mind Imagine when performance dance it is practice Before entering the stage imagine the scene of performance	Developing confidence and reduce anxiety	Imagery to develop confidence and reduce anxiety
The character in the story of the performance Imagine role of performance Story of performance	Explaining performance and the role in performance	Imagery to absorb into performance
Feeling of the movement Mood of the performance Mood of music	Exploring feelings	
What I want to express; feeling Past experience	Evoking all senses	
Somebody looks at me Dancing on stage as a real performance during practice	Optimal Arousal	Imagery to control optimal arousal and motivation
Receiving applause from audience, director, peer, or lover A solo dance	Motivation	

*General Dimension 1: Imagery to Improve Performance*

The first general dimension was imagery to improve performance, which was particularly related to movement skills and creativity in dance. The majority of dancers (15, 75%) mentioned this dimension. In this general dimension, two first-

order themes were revealed, namely (a) improving movement skills and (b) creating dance.

*Improving movement skills.* The first-order theme of imagery to improve movement skills refers to the mental practice or rehearsal of one's movements. There were two raw data themes, which were "specific movements" and "routine of body movement" in this first-order theme. Related to these themes, dancers stated that:

During practice, I draw the picture of my movement in my mind and dance it through my body and keep trying repeatedly the same movements with imagery. It is a process of making the same movement as imagery. (Dancer 19)

I feel that a dancer's eyes are very important. When I look at a movement I need to know whether it is right or wrong. If I know the right movement, I don't need to practice the wrong movement 100 times. When the teacher demonstrates a movement, I watch carefully. I retain the image in my head, so that I can evoke that image and match it in my movements... For example, first look through eyes... and each of the movements has rhythms. So I try matching the imagery to the rhythm of the movements. Making a long story short, it is like taking a video. Using my eyes I take a video. I do not just keep the taken video; it goes to imagery and then is saved into my head. Whenever I need it, I image it and fit it to my body the same as the imagery. So I think... the head works as a computer. (Dancer 1)

When I learn new movements from the teacher, who might just say, "walk past from here to there", or a teacher, who might say "walk like on a cloud in the sky", I find that learning with something that was given to me to imagine is better... it affects something I express or experience in dance. (Dancer 4)

Dancers reported that they used imagery to help them learn movement skills and express the mood of dance. They stated that imagery helped them to correct specific movement skills through evoking a mental blueprint of the correct movements.

*Creating dance.* The second first-order theme was imagery to create dance, which means that the dancers said they used imagery for creating the link between thinking and movements of the body in their dance routines. Creating dance was comprised of two raw data themes, “creating (new) movements” and “choreographic dance”. A statement by a dancer was:

It takes time to move from home to workplace. I am always imaging while taking the bus, train, or driving for chorographic movements, such as imaging the way of my movement and other people’s movements...For creating new movements, firstly, I imagine the movement in my head. Then I try for linking between thinking and movement because it is different between imagining and moving. It helps a lot. (Dancer 13)

In terms of creativeness as an artist, creative movements are a very important factor for professional dancers to use to help them create their movement expressions and performance. Imagery may facilitate or inspire dancers’ quality of creative movements through the use of various imagery techniques.

#### *General Dimension 2: Imagery to Develop Confidence and Reduce Anxiety*

The second general dimension was using imagery to develop confidence and reduce anxiety. This was mentioned by 12 (60%) dancers. The first-order theme imagery to develop confidence and reduce anxiety was the same as the general dimension. There were three raw data themes in this first-order theme, namely “when performing a dance, imagine it is practice”, “before entering the stage, imagine the

scene of performance”, and “rehearse the dance routines in the mind”. Three statements related to these themes by dancers were that:

I imagine when performing a dance that it is a practice. The imagery is important ... Before I enter the stage I imagine how my dance will go on the stage, so that even though it didn't go well everything is the same as I imagined it, closely. Dancers need to imagine. (Dancer 14)

Nerves... to avoid anxiety I try to immerse myself into each moment of feeling and scene of the performance. I imagine it. (Dancer 1)

Before entering the stage I try to rehearse the dance routines in my mind as well as practice movements. (Dancer 17)

Professional dancers need to stand in front of audiences on stage to show their performance. Without self-confidence in performance dancers might face difficulties of presenting the performance fully. Thus, before entering the stage for performance, dancers use images, such as the scene of performance, and rehearse the dance routines in their mind to focus on performance in order to reduce stage anxiety and to enhance their confidence.

### *General Dimension 3: Imagery to Absorb into Performance*

The third general dimension was imagery to absorb into performance, which means that dancers stated that they used images related to emotions or feelings to immerse into a performance. This dimension was presented by 14 (70%) of the dancers in their interviews. There were three first-order themes in this general dimension, (a) explaining performance and the role in performance, (b) exploring feelings, and (c) evoking all senses.

*Explaining performance and the role in performance.* The first-order theme explaining performance and the role in performance means that dancers were using imagery to facilitate exploring their performance positively, in the same way that actors use imagery to facilitate acting. There were three raw data themes, “the characters in the story of the performance”, “imagine role of performance”, and “story of performance”. Related to this theme, dancers stated that:

Always imagining the role of performance on the way back home, in subways, at home, imagining once during sleeping, driving in a car, during getting up to enhance my performance. (Dancer 18)

Whilst imagining the characteristics of a role once I tried to look at the expression of my face in the mirror. At this moment, I am Sim-Chong (a principal character’s name in the performance). Yes, I am imagining that I am Sim-Chong. I think it is the same for dancers dancing on the stage as it is for actors acting in a movie. They are both telling a story, only the environments are different. Whether it is communicated by speech or expression with the body, the feelings are the same, but the tools are different. The aim is immersion. If there is total immersion I feel joy and ecstasy. (Dancer 1)

During dance I am imaging the story of performance, because, at least what I have got in my mind I can do or express like that or explore the feeling of that performance. People say that if I think I feel harder and harder, the body becomes more tired, but if I think my body is floating, in my mind, it (body) becomes lighter like ... jumping lighter. (Dancer 13)

Deep concentration into the character, role, and story of performance may lead dancers to immerse themselves fully into performance, an important aspect of flow.

Dancers need to practice to understand the character or story of performance clearly to explore the performance.

*Explore feelings through evoking all senses.* The next first-order theme was imagery to explore feelings through evoking all senses, which focused on the mood needed for the performance and dancers' emotions. There were five raw data themes in this first-order theme, "feeling of the movement", "mood of the performance", "mood of music", "what I want to express; feeling" and "past experience". Related to this higher-order theme were the following comments by dancers:

Just when I hear the music, the mood of music... such as when I feel empathetic in music... I just follow the feeling of music. (Dancer 4)

During a high jump, I imagine the feeling of jumping like a kangaroo. (Dancer 19)

Dance needs all of the five senses, such as sight, hearing, smell, taste and touch. When I dance to express feelings, I need to act as if it is real. For example, as if I have to get my mobile phone, but in reality I don't have one to get... [It's a simulation]. I need to practice.... imagining as I see or hear it, but actually I am not really doing it, but I need to present it. That's why I must have 100 % of imagery. (Dancer 1)

I watch films and search the information for specific characteristics for evoking all senses of imagery. (Dancer 18)

For expressing a sad scene, I imagine the saddest things from my past experience. Also, when I dance about love, I imagine my lover looking at me in front of me. If there is a person who I love among lots of people watching I have to dance beautifully before them. I am dancing with imagining such things. (Dancer 5)



Dancers in this study used imagery to explore the feelings of movements, music, and performance. Based on using all of the senses to imagine, dancers freely experienced and explored the desired feelings for their performance.

*General Dimension 4: Imagery to Promote Optimal Arousal and Motivation*

The fourth general dimension was imagery to promote optimal arousal and motivation. This dimension means that dancers used imagery in relation to arousal or motivation to dance. This was mentioned by 9 (45%) of the dancers. There were two first-order themes, (a) optimal arousal and (b) motivation.

*Optimal arousal.* The first-order theme was optimal arousal. There were two raw data themes in this higher-order theme, “somebody looks at me” and “dancing on stage as a real performance”. Related to these themes three dancers stated that:

During practice I imagine that it is a real performance and that a lot of people are looking at me. This means that I am careful with all movements of my body, even the tip of my finger. Even if it is just a normal lesson, I dance as if I am on the real stage. Frankly speaking, somebody watching us would just see a group in the general practice room, but in my mind I am dancing on the stage. Every movement is special to me. (Dancer 1)

A person, who I like, looks at me, beside me... I feel the eyes and imagine. (Dancer 8)

I imagine myself dancing as a principal dancer... I feel great and satisfied. I want to show my inspiring dance. During rehearsal, I imagine myself as a soloist even if I dance in a group; this is for optimal arousal and conditioning myself. (Dancer 9)

While frequently repeating the same routine of movements, dancers might feel bored, so it is important to control their arousal level to be optimal. Thus, some dancers used

imagery to consider each practice as a special performance in an effort to increase arousal during practice so that it more closely simulated performance.

*Motivation.* The next first-order theme was motivation for dancers to sustain practice and performance of dance over a long period of time. There were three raw data themes, “receiving applause from audience, director, or peer”, “imagine as a hero and star” and “a solo dance”. For these themes dancers mentioned that:

On stage, if I make just one of the audience feel inspired by my dance, it is the same as inspiring all the audience. So, when I stand in front of an audience, I choose one member of the audience whether I can see them or not, and set a goal that I will make that person into my fan, so I express and dance for the person with imagery. (Dancer 14)

I always imagine someday I will become a famous star or hero, so, after I have finished performance, the audience gives a big hand and applauds me. (Dancer 11)

Dancers used positive and clear imagery to motivate and stimulate themselves to sustain practice and performance of dance. Dancers said they used internal and external imagery for improving their specific movement skills and connection of movement routines as vividly as they could.

To summarize from the results, dancers reported that when they are in flow state, it is like total concentration, merging of action and awareness, positive feelings, autotelic experience, sense of control, unambiguous feedback, loss of self-consciousness, and time transformation. Specifically, dancers explained that well-mastered technique, exploration of feelings and sensibilities in artistic performance, optimal pre-dance condition, positive feedback, confidence and the absence of anxiety,

total concentration, and motivation are facilitators to enhance flow experience. Furthermore, dancers used imagery in many contexts during dancing and away from dance, replaying images in their mind, as if watching video. Generally, imagery was used to help them learn and practice techniques to improve performance, to help them be more creative, to manage their emotions, and to optimize arousal and motivation. Imagery was used by the dancers to absorb into performance, to explore their feelings, to create the link between thinking and movement of the body, and to connect the stream of performance in each scene. The results showed that dancers used imagery for a variety of purposes at different places and times. Using imagery seems to be an important element in the process of practice to prepare for performance, in readying dancers for performance, and for enhancing the quality of the experience in dance.

### Discussion

The purpose of this study was to explore the flow experience and imagery use for enhancing flow experience in dancers. The discussion of the results is divided into two sections. Firstly, I discuss the analyses related to the experience of flow, comparing dancers' reports of flow experiences with previous research in the sport domain, in order to understand the specific phenomenon of flow experience in the context of dance. Secondly, I discuss the facilitators of flow in dance. Specifically, I focus on imagery use among the facilitators of flow for enhancing flow experience in performance.

#### *Experience of Flow*

Professional dancers reported that they experienced flow state, which included total concentration, autotelic experience, merging of action and awareness, positive feelings, sense of control, unambiguous feedback, loss of self-consciousness, and time

transformation. Specifically, the dancers reported that the experience of a high level of flow, which particularly occurred when they were exploring and expressing their feelings and mood through their body, was associated with a powerful sense of happiness and enjoyment, supporting the claim that flow is a positive optimal experience.

When they were in the flow state, dancers felt their body movements were united with the music to which they were dancing, everything went well during the performance, and there were no disturbing thoughts in the mind. Dancers concentrated with total involvement and strong self-confidence on their performance in dance. This result supported Hefferon and Ollis' (2006) qualitative study. Hefferon and Ollis presented three flow characteristics in dancers, which were autotelic experience, challenge and skill balance, and absorption in the task. The study by Hefferon and Ollis is one of few qualitative flow studies in dance; however, they did not fully explore the various aspects of flow. Hefferon and Ollis presented an interpretive view of flow characteristics that was too simple and general. To explore flow experience in dance, a more specific and inclusive approach is needed.

The present study with professional dancers in Korea showed similar results to qualitative flow research in athletes (Csikszentmihalyi, 1990; Jackson, 1992a, 1995, 1996; Russell, 2001), and supported the model of flow proposed in sport. I identified the main characteristics of flow experience as concentration, merging of action and awareness, positive feelings, autotelic experience, sense of control, unambiguous feedback, loss of self-consciousness, and time transformation. It can be seen, however, there was little explicit report of clear goals and the balance between challenge and skills for dancers that have typically been experienced in sport. Instead, positive

feelings were a common experience of these professional dancers. One reason for this might be seen in the revised flow model (Voelkl, Ellis, & Walker, 2003). In the revised flow model, Voelkl et al. divided flow into three parts, which were the conditions, characteristics, and outcomes of flow. First, the conditions for flow to emerge were clarity of goals, immediacy of feedback, and balance of challenge and skills. Second, the characteristics of flow experience were concentration or absorption, sense of control, loss of self consciousness, merging of action and awareness, and transformation of time. Third, outcomes of flow experience were positive affect and self affirmation. Thus, clear goals and balance of challenge and skills might be conditions required to enter the flow state in dancers, so these characteristics or dimensions are not so readily elicited by interview questions that refer to the experience of flow and might be more closely associated with questions about what facilitates flow. The phenomenon of flow experience in professional dancers was similar to that observed in sport (Jackson, 1996; Sugiyama & Inomata, 2005; Young, 2000) and in general (Csikszentmihalyi & Csikszentmihalyi, 2000). From the results of this study, it could be concluded that the well-researched definition and characteristics of flow experience in the sport and recreation domain might also be applied to the dance discipline. Moreover, the nine characteristics of flow influence each other. Some characteristics resulted from the other characteristics. For example, loss of self-consciousness during dancing may enhance total concentration.

#### *Facilitators of Flow and Imagery Use Related to Flow Experience*

The facilitators of flow experience for professional dancers were revealed as having a well-mastered technique, exploration of feelings and sensibilities in artistic performance, optimal pre-dance condition, positive feedback, being confident, total

concentration, and motivation. In addition, the present study showed that the most important factors facilitating flow experience were concentration and confidence based on optimal mental and physical preparation. Concentration has also been presented in the sport literature as a factor that particularly engages the flow experience (Jackson & Csikszentmihalyi, 1999). This result also supports the Catley and Duda (1997) study which concluded that confidence and a sense of readiness were the most important pre-performance factors for flow experience. Jackson and Csikszentmihalyi (1999) stated that athletes with high levels of physical skill tend to experience flow more intensively and frequently. This might explain why dancers at a stage where they have mastered the skills or techniques well are likely to experience flow more frequently compared to less skilled dancers. Moreover, professional dancers require high-level techniques to maintain their capacity and further promote their career. Dancers reported that well-mastered techniques in dance also helped them to be confident in their performance. Thus, based on strong confidence through sufficient practice, dancers can focus on the dance, freely express their potential, and will know what they are going to do on stage.

Dancers indicated that key components of dance performance, which they considered to be tools of dance, including the music, lights, customs, and story of performance in environments and situations during dance, influenced feelings or emotions in dancers. This result is consistent with the study of Hefferon and Ollis (2006) that presented music, choreography, costumes, and make-up influence flow experience in professional dancers. Previous research in sport has demonstrated that music has a role in enhancing flow state through inspiring feelings and improving performance (Pates, Karageorghis, Fryer, & Maynard, 2003). Thus, when the varieties of ingredients were harmonized, dancers experienced flow and often perceived that

they performed well. Looking at the similar area of sport, listening to music during performance was an intervention that enhanced performance as well as flow experience (Pates, Karageorghis, Fryer, & Maynard, 2003). Thus, how to concentrate on performance and immerse oneself in the music was an important issue related to the experience of flow among dancers.

The facilitator of optimal pre-dance condition involves psychological and physical preparedness for performance. For example, dancers may require an appropriate arousal level and body and mind warm-up before performance, so that they may perform in the optimal way, which may provide an opportunity to experience flow (Galan & Maguire, 2000; Young & Pain, 2005). Vergeer and Hanrahan (1998) also reported that pre-performance activities, such as imaging from an external perspective, using filling up imagery, and using inspiration imagery, led dancers to a sense of stability, confidence, mind-body unity, and focus on the present and the task. These are also related to qualities of optimal or peak performance state in professional modern dancers.

Furthermore, while dancing the same routine of movement repeatedly for a long period of time, dancers need to manage their mind to motivate themselves to dance consistently. Having a clear appropriate goal is one of the elements that motivate dancers to continue dancing by guiding their actions, controlling their emotions, and ordering the output of effort. Clarity of goals encourages learning new ways to improve (Taylor & Taylor, 1995). To enhance dancers' motivation, setting achievable goals might be beneficial. Having enough practice with clear goals or hope (which is that someday they will become heroes or stars) and a positive attitude, such as self-confidence, may lead dancers to develop their performance skills and to enhance the quality of their dance experience.

In their qualitative study, Hefferon and Ollis (2006) reported results that are consistent with findings in the present study, namely that confidence, music and choreography, pre-performance routine, costumes and make-up, stage setting, and relationship with others influence flow experience in professional dancers. In addition, the results in the present study endorsed the study by Jackson (1992a) that explored confidence, positive mental attitude, motivation to perform, achieving optimal arousal level before competition, and pre-competitive and competitive plans as facilitators of flow in sport. Jackson derived similar facilitators of flow in professional dancers to the facilitators identified in the present research.

Imagery can be used to enhance those facilitators of flow. The professional dancers reported using imagery across a wide range of contexts and for many purposes, such as to improve performance, develop confidence, absorb themselves into performance, and control optimal arousal and motivation. Nordin and Cumming's (2005) study demonstrated that use of skill-based cognitive specific and confidence-based motivational general-mastery imagery had positive effects on self-efficacy and performance. Also, Smith (1990) supported the idea that dance imagery could enhance dancers' learning skills and performance. The use of both internal and external imagery has been claimed to be beneficial for individuals to increase their quality of experience as well as performance (Taylor & Taylor, 1995). For example, dancers imagined their performance as making good impressions and assessed their appearance as great. Dancers tried to have a fine sensibility through using a variety of images, such as external, internal, and emotional imagery. Immediately before the beginning of the performance, dancers imagined the mood required for that performance, using all their senses to express that emotion and to become absorbed in the performance. Moreover, the dancers in this study used imagery to explore feelings



and sensibilities in artistic performance. This is one of the goals to be achieved by professional dancers, because flow occurs when they fully express their feelings or the mood of performance. Thus, the present study indicated that dancers used imagery to enhance optimal experience, or flow, more frequently and intensively during practice and performance.

The dancers' previous flow experience and maturity were important factors helping them to facilitate flow experience, as these factors helped them to overcome disturbing thoughts and unproductive situations. These results are consistent with those revealed in Jackson's (1995) qualitative study. In a variety of sports studied that included track and field, rowing, swimming, cycling, triathlon, rugby, and field hockey, Jackson mentioned that the facilitators of flow were motivation to perform, achievement of optimal arousal level before completion, pre-competition and competition plans and preparation, optimal environmental and situational conditions, feeling good, focus, confidence and positive attitude, positive team play and interaction, and experience factors. So, in the management of dancers' minds to have a positive attitude, imagery interventions may help build more confidence and help dancers to absorb themselves in dance.

### *Methodological Issues*

I conducted pilot interviews with dancers by telephone. I identified problems regarding phone interviews with Korean dancers. I found it very difficult to build trustworthiness and rapport with the dancers in this disembodied process. Dancers proved to be sensitive about explaining their experience over the phone without an established personal relationship. I considered that this was likely to affect the quality of the results of the interviews. Thus, I changed the interview method from phone interviews to face-to-face interviews, which meant visiting several cities where

participants' dance companies were based. The face-to-face interviews provided rich information and more understanding of the dancers' thoughts and feelings, based on developing a relationship with the dancers. It was already known that using face-to-face interviews allows for the development of rapport and the building of trust (Kvale, 1996). What was particularly interesting was the extent of the difference in responses of Korean dancers to being interviewed by telephone compared to face-to-face interviews. It is possible that the personal relationship is particularly important for effective in-depth interviewing in some cultures.

Another methodological issue was that at the start of the interview study, dancers were unfamiliar with the terms "flow" and "imagery technique", even though they sometimes encouraged the flow state intentionally and used imagery automatically, that is without any training. In this study, providing explanations of the terms flow and imagery technique to dancers, and ensuring that they understood the terms, was an important issue. Moreover, in the interview, I asked general imagery questions, not explicitly related to the use of imagery as a way to enhance flow, but rather more generally focused on what kinds of imagery dancers experienced, as well as how, why, and when they experienced that imagery. Thus, the general nature of the imagery questions was designed to allow links with flow to emerge, rather than force dancers to make links between imagery and flow.

One other important comment that dancers made during their interviews was that evoking the optimal flow experience of dancing just once made dancers feel positive and stimulated them to sustain their motivation to dance. For example, realising how they loved dance through remembering their own past positive experience of dance made them even more motivated to keep dancing. Dancers felt this increased their happiness and motivation to dance as well. It was a chance to

think deeply and clearly about their experience in dance and the meaning or value of dancing in their life. This is because dancers themselves did not usually think deeply and clearly about their experience in dance and the meaning or value of dancing in their life, focusing instead on the immediate requirements of practice and performance. At the end of the interview dancers thanked me for giving them the opportunity to be involved in this study. Thus, just being participants in this study was valuable for many of the dancers involved, stimulating them to reflect on a highly positive aspect of their dance experience.

### *Future Research*

In this study, dancers claimed that they believed that well-mastered technique, optimal pre-dance condition, motivation, positive feedback, confidence, concentration, well-expressed artistic feelings and sensibilities were facilitators of flow. In contrast specifically, anxiety arising from negative and disturbing thoughts prevented the flow experience. Thus, future research should focus on those aspects to develop intervention programs for enhancing optimal flow experience and performance. For instance, researchers could investigate how to improve dancers' optimal pre-dance condition, motivation, confidence, concentration, artistic expression, and sensibilities in dance. Then they could determine the impact this has on flow and performance.

Imagery was extensively used to improve performance, develop confidence, reduce anxiety, absorb into performance, and to control arousal and motivation, which all related to flow experience in dancers. Thus, future research should investigate the effectiveness of imagery rehearsal of those aspects, such as imagery of confidence, management of anxiety, and motivation in dancers to increase the experience of flow, in terms of intensity and frequency. The results would provide valuable information about the potential use of imagery in dance.

During the interviews, the professional dancers were very emotional, even showing tears when they explained past experiences and confronted difficulties through life, which they overcame through engaging in dance. Dancers expressed how they really love dancing because just doing it is a pleasure to them, which reflects autotelic experience. It was clear that dancing provides intentional optimal positive flow experiences in their life. Dancers require talent, technique, nerve, and determination to become a professional dancer (Hanlon, 2006). However, dancers, when compared to athletes, have a lack of psychological coping skills to deal with and prevent negative or disturbing thoughts, stress, and injury (Noh, 2005). These coping skills are useful in enhancing ones' optimal performance as well as positive experience. Particularly, professional dancers confront many auditions and might experience feelings of rejection and disappointment. Even though professional dancers experience flow during dancing, dancers need to manage their psychological skills to be positive and persistent in their whole life experience during their career, as well as in their qualitative experience of flow when they are dancing. To further enhance the optimal quality of the flow experience for dancers' quality of life and well-being, it is necessary to develop intervention programs based on understanding, through systematic research, the phenomenon of positive experience and its characteristics and facilitators in dance. Thus, intervention programs should be designed to help dancers enhance their psychological and physical strength for flow and performance.

Descriptions of the experience of dance vary among researchers, as individuals are different. Thus, terms employed by researchers should be used more systematically and consistently to develop and understand the dance field. To understand the experience of flow clearly, researchers need to explore, in depth, the

experience of flow in dance and the application of imagery techniques, ensuring that their respondents have a shared understanding of the key concepts, especially flow itself. This should contribute to research and practice in the professional dance field and increase the understanding of flow and imagery more generally.

The 20 professional dancers I interviewed stated that, as well as being an optimal experience, flow was often associated with peak performance in dance. Thus, researchers should examine the relationship between flow and performance systemically and practically. It would be interesting to more fully understand the relationship between flow experience and performance, as well as expanding knowledge of the experience of flow in dance.

Overall, it is likely that targeted imagery interventions will enhance the flow experience of high-level dancers, potentially leading to enhanced intrinsic motivation and performance. Future research to examine whether imagery interventions enhance flow would be valuable for practitioners. I propose that examining such interventions is a valuable direction for future research.

### *Implications for Practice*

Dancers experience optimal and remarkable psychological states that motivates them to keep dancing and even to increase their commitment and effort. However, dancers also need to deal with varied requirements mentally and physically. For instance, anxiety involved in performance directly influences performance in terms of physical and psychological aspects. Specifically, when dancers have anxiety or burdens related to dancing, it is difficult to fully concentrate on the performance. However, dancers who have positive thoughts and task goals, rather than negative thoughts and ego goals, seem to be more confident and free from anxiety (Nektarios A. Stavrou & Zervas, 2004). Thus, those who help dancers to attain the optimal

condition for exceptional performance should use techniques that encourage dancers to have positive thoughts related to dancing, such as satisfaction of their appearance or performance without worries. From the present study, I concluded that Korean professional dancers experienced a high-level of flow during training and performance; however, the dancers seemed to be challenged to maintain confidence during their dance performance. Fay (1997) stated that, even when they are established at the professional level, dancers tend to lack self-confidence. This is, because, there tends to be a culture of criticism and threatening of dancers' dignity in dance classes. An interesting point made by Fay was that dance teachers also often lack self-confidence in their teaching abilities. This is proposed to be because teachers, as well as dancers, have been in the same unsafe environment of dance classes, which is often based on an oppressive, stress-laden culture in professional dance. Thus, it is necessary to develop dancers' confidence through the dance environment. This requires a change of culture in the practice environment, which should be driven by teachers. This will facilitate dancers' confidence about their performance. Moreover, confidence without worry and anxiety strongly influences the flow experience.

Teachers and dancers should also realise the potential of achieving optimal arousal level mentally and physically prior to performance. In addition, teachers and dancers should provide the freedom to explore inner feelings and one's role in the performance; that might be a door to enter flow state through deep concentration. Dancers also need to concentrate on the music to unite movement and music during dance. In addition, dancers should be encouraged to enhance their optimal positive psychological state for extending their dance career as well as the quality of their life.

Dancers used imagery as a tool to deal with the requirements of dance environments. Hanrahan and Vergeer (2001) also recommended imagery use for

building confidence, calming down, preparing for performance, and choreographing. Thus, teachers should encourage dancers to develop their imagery skills to manage the psychological and physical aspects of dance. Specifically, this study showed that imagery could be used by dancers to retrieve bodily sensations, become absorbed in the performance, explore the feeling of movements, connect to the stream of performance in each scene, and to create links between thinking and movement of the body.

In summary, all the results in this study provided support for the potential of imagery to enhance flow among dancers. Based on the results of Study 2, it would be valuable to test the efficacy of imagery interventions designed to enhance flow state in dancers.

## CHAPTER 5: IMAGERY INTERVENTION FOR ENHANCEMENT OF FLOW EXPERIENCE IN DANCERS

### Introduction

Flow has been studied in sport to understand factors that affect its occurrence, with the aim of facilitating the experience of flow in elite athletes (Jackson & Csikszentmihalyi, 1999; Sugijama & Inomata, 2005; Young & Pain, 2005). In reviewing the literature, however, I have not located any studies that have examined the efficacy of interventions to enhance flow in dance, although researchers have studied the aesthetic performance aspect of dance in an effort to understand peak or optimal experience (Bannon & Sanderson, 2000; Oliver, 2000; Stinson, 1997).

Based on the developing understanding of flow, there have been some intervention studies in sport, using techniques, such as hypnosis and imagery, to enhance performance and flow experience (Pates, Cummings, & Maynard, 2002; Pates & Maynard, 2000; Pates, Maynard, & Westbury, 2001; Pates, Oliver, & Maynard, 2001, Nicholls, Polman, Holt, 2005). The use of imagery techniques to enhance flow in dance seems to have great potential, given the ease with which imagery skills can be developed and used by dancers (Hanrahan & Vergeer, 2001). Imagery is a technique that has been employed successfully in sport to enhance performance, reduce anxiety, increase confidence, increase motivation, and increase concentration (Murphy & Martin, 2002). According to Jackson and Csikszentmihalyi (1999), flow is a psychological state, which has nine dimensions: balance between skills and challenge, merging of action and awareness, clear goals, unambiguous feedback, total concentration on the task at hand, sense of control, loss of self-consciousness, time transformation, and autotelic experience. Imagery can be used to enhance most of the key dimensions of flow by guiding dancers to imagine, for



example, achieving the goals of their dance performance (clear goals), concentrating effectively on the dance routines (total concentration on the task at hand), feeling calm and in control during performance of the dance routine (sense of control), and feeling like they are part of the dance and the movements are happening without any effort on their part (loss of self-consciousness and autotelic experience). Enhancing these dimensions of flow by applying imagery in an effective targeted manner, dancers have the potential to increase their experience of flow.

In Study 1 (questionnaire) of this thesis, I found that (personal style) questionnaire responses indicated that the cognitive specific, cognitive general, and motivational general mastery types of imagery were strongly correlated with challenge-skill balance, clear goals, concentration on the task at hand, sense of control, and autotelic experience. In the interviews with professional dancers in Study 2, I found that dancers did experience flow states and they referred to many of the nine antecedents of flow. I also determined that dancers used imagery to retrieve bodily sensations, to become absorbed in the performance, to explore the feeling of movements, to connect to the stream of performance in each scene, and to create links between thinking and movement of the body. In addition, I found that the facilitators of flow were achieving optimal arousal level, self-confidence, satisfying oneself, motivating oneself, exploring the dance and one's role in the performance, uniting of movement and music, positive thoughts, and communication with the audiences based on their positive response. All the results in the first two studies provided support for the potential for imagery to enhance flow among dancers. Based on the results of these two studies, I devised the third study in this thesis to test the efficacy of interventions designed to enhance flow state in dancers by using imagery during dance practice. This study tested whether flow state could be enhanced over an 8-

week period, using an imagery intervention. The flow imagery intervention was compared to a relaxation imagery intervention, which acted as an attention control condition.

The purpose of this study was to examine the effects of imagery intervention programs, focusing on flow imagery and relaxation imagery, respectively, for enhancing dancers' motivation and dancers' self-confidence, which are key components of flow state. Thus, I predicted that the flow imagery intervention would enhance the flow experiences of dancers, reduce anxiety, and improve performance, whereas the relaxation imagery intervention, largely considered to be an attention placebo condition, would not influence flow state or disposition, or performance, but would reduce anxiety.

### Method

Based on the relationship between various kinds of imagery and flow and interviews that identified the experience of flow and related imagery in dance (Study 1 and Study 2), in Study 3, I examined the influence of an imagery intervention designed to enhance the flow experience in performing dancers, compared to an attention control, relaxation imagery program.

### *Participants*

The sample comprised 64 dancers, of both genders, but predominantly female (female = 57; male = 7), who ranged in age from 17 to 28 years ( $M = 20$ ;  $SD = 2.46$ ). All participants were Korean dancers, who performed at high skill levels that ranged from dance academy to professional level. I selected participants primarily based on the criterion that they reported relatively low levels of experience of flow state. Based on the statistics reported in Study 1, I determined low scores to be below 3.33 on the FSS-2 and 3.28 on the DFS-2, that is, below the 40th percentile. To participate,

dancers also had to report an imagery use score above 4.30 on the SIQ, indicating that they used a variety of imagery, as required by the interventions. A cohort of 69 participants started the study with 64 completions, and five withdrawals due to personal reasons. I assigned all the participants randomly to the flow imagery condition ( $n = 33$ ), or the relaxation imagery placebo control condition ( $n = 31$ ). Based on past research on imagery use in sport (Koehn, 2005; Nicholls et al., 2005; Pates et al., 2003), I anticipated a medium effect. Thus, with the size of the sample ( $N = 64$ ), the power of the study to detect significant effects was estimated at .78 (Aron & Aron, 1999), which is equivalent to Cohen's (1988) recommendation of .80 as a suitable power for social science research.

### *Experimental Design*

In this study, I employed a pre-test, post-test, follow-up design as follows:

#### 1) Pre-test

Flow state and anxiety state were measured soon after training and trait anxiety and dispositional flow were measured away from training. Dance ratings, self-rating by dancers, and rating by dance teacher(s) were measured after training.

#### 2) Intervention programs for 8 weeks

I then introduced two intervention conditions, which were the Flow Imagery Condition and Attention Control Relaxation Imagery Condition. Dancers completed an imagery log for every imagery session. The imagery log was intended to motivate dancers to use imagery frequently.

#### 3) Post-test

After the 8-week intervention phase, I measured flow state and anxiety state again soon after training, and I assessed dispositional flow and trait anxiety away

from training. For dance performance in training, I measured dancers' self-rating and rating by dance teachers(s).

#### 4) Practice for 8 weeks

After the post-test, I encouraged dancers to use imagery in regular training for the next eight weeks.

#### 5) Follow up-test

Finally, I measured flow state and anxiety state once more directly after training and I assessed trait anxiety and dispositional flow away from training. For the final assessment of dance performance in training, I measured self-rating and rating by dance teachers(s).

### *Measures*

*Flow State.* I used the 36-item Flow State Scale-2 (FSS-2; Jackson & Eklund, 2004) modified to assess flow state in dance by changing references to sport, so they referred to dance. Each item is rated on a 5-point Likert scale from 1(*strongly disagree*) to 5 (*strongly agree*). The FSS-2 assesses nine dimensions, including challenge-skill, action-awareness, clear goals, unambiguous feedback, concentration on the task at hand, sense of control, loss of self-consciousness, transformation of time, and autotelic experience. (See Appendix C for this scale.)

*Flow Disposition.* I used the 36-item Dispositional Flow Scale-2 (DFS-2; Jackson & Eklund, 2004) modified, in the same way as the FSS-2 was changed, to assess the frequency with which respondents reported experiencing flow in general, during participation in dance. Each item is rated on a 5-point Likert scale from 1(*never*) to 5(*always*). The DFS-2 assesses nine dimensions, which are the same as for the FSS-2. The FSS-2 and DFS-2 have high internal reliability and validity (Jackson & Eklund, 2002). (See Appendix D for this scale.)

*Imagery use.* I used the 30-item Sport Imagery Questionnaire (SIQ; Hall, Mack, Paivio, & Hausenblas, 1998) to explore what kinds of imagery use to enhance practice, rehearsal, and performance in sports. The Sport Imagery Questionnaire (SIQ) has been widely used to measure imagery in sport settings. Each item is rated on a 7-point Likert scale from 1 (*rarely*) to 7 (*often*). I adapted the SIQ by changing words related to sport skills to refer to the dance context. For instance, “I can consistently control the image of a dance move” was originally “I can consistently control the image of a physical skill”. (See Appendix E for this scale.) Fish, Hall, and Cumming (2004) also used the adapted SIQ successfully to examine the use of imagery by professional ballet dancers in the UK. The DFS-2, FSS-2, and SIQ were used successfully with Korean dancers in Study 1 of this thesis.

*Anxiety.* I used the State-Trait Anxiety Inventory (STAI-Form Y; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) to assess state and trait anxiety in dance. The STAI has 40 items, of which the first 20 items measure state anxiety and items 21 to 40 measure trait anxiety. Each item is rated on a 4-point Likert scale from 1 (*not at all*) to 4 (*very much so*). The STAI-Form Y has high internal reliability and validity and has been used extensively in prior research in clinical, educational, and sport settings (Capinski, Brownell, & Marianne, 2003; Cox, Tomas, Hinton, & Donahue, 2006). (See Appendix O & P for this scale.)

*Dance Rating Scale.* I asked dancers to rate their own performance at the beginning of the study, after the intervention, and at the final, follow-up stage. I asked dance teachers to rate students’ performance on the same scale. I used the Dance Rating Scale as a measure to see whether dancers had improved their performance after doing the imagery interventions and whether any change was sustained over the follow-up period. The Dance Rating Scale is a 10 cm analogue scale, devised for this

study. Participants place a cross on the 10-cm line, between the anchors “My (“Dancer’s” for teachers) worst performance” and “My (Dancer’s) best performance”. The midpoint of the scale is marked by the descriptor “My (Dancer’s) typical performance” as an additional guide. The scale is scored by measuring the location of the line in millimetres from the left (worst performance) end, so a score of 0 reflects worst performance, 50 reflects typical performance, and 100 represents best performance. Self-referenced ratings of performance have been shown to be meaningful, especially for subjective performance contexts (Terry, 2004). Analogue scales typically are sensitive to small fluctuations in variables (Morris, 1984). (See Appendix R & S for this scale.)

### *Interventions*

To examine the effect of an imagery intervention designed specifically to enhance flow, I assigned 33 dancers to a flow imagery training intervention, based on findings from Studies 1 and 2, and I assigned 31 dancers to an relaxation imagery training, attention control condition, based on standard principles for relaxation imagery to reduce anxiety. To develop the imagery intervention that was designed to enhance flow experience in dance, I used elements from different theories, such as VMBR and the applied model of imagery use. For example, regarding Visuo-Motor Behaviour Rehearsal (VMBR; Suinn, 1984), firstly participants use progressive muscular relaxation to induce a relaxed state. Secondly, participants imagine typical targets and the demands of dance performance. Thirdly, participants focus on specific skills and elements of the performance. Finally, participants use relaxation activity to become aware of the real environment and their own body. During the entire imagery section, participants were asked to imagine their performance as vividly and lively as possible, using all their senses. Based on the applied model of imagery use,

participants use five types of imagery. For instance, participants imagine specific dance skills (CS imagery) and imagine being mentally confident, and focused during dance performance (MG-M imagery). Different theories include aspects that could be helpful in the development of effective imagery programs to promote the experience of flow. The general imagery instructions were provided to participants about how to use imagery, but not formally trained (See Appendix M for flow imagery condition and Appendix N for relaxation imagery condition).

*Flow imagery condition.* I designed the flow imagery script to evoke the flow experience focused on balance between challenge and skills, clear goals, concentration on the task, sense of control, loss of self-consciousness, transformation of the time, and the autotelic experience, using cognitive specific and motivation general mastery imagery, which were significant predictors of flow in Study 1. Specifically, for dancers this imagery intervention addressed facilitators of flow, which I elicited from Study 2. The facilitators referred to achieving optimal arousal level, self-confidence, satisfying oneself, motivating oneself, exploring the dance and one's role in the performance, uniting of movement and music, positive thoughts, and communication with the audiences based on their positive response. For example, for optimal arousal level, I stated in the imagery script content, "Imagine you are in a waiting room and outside there is an audience, who will love your dance and are waiting to cheer you on. A special person who you love (sits in audience) comes to see the performance". For confidence, I devised the following script content "Imagine you have done a lot of practice, so that every single movement has become automatic, so it is a total routine of performance. Now you do the warm-up for the performance. You feel that your body is getting more and more flexible and light. " For concentration and having a clear goal, I designed the imagery script as follows, "Your

concentration is focused on your performance and you know clearly what you want to do.” For satisfying oneself, as well as motivation, I designed the following imagery script content, “Your mind is full of excitement, looking forward to the performance. In the room around you, you see the other dancers preparing for their performances. There are some aromas like cosmetics or sweet perfume filling the room. Your perfume is so nice and outstanding. You are wearing a beautiful costume. You feel that the cloth is very light and smooth. You look closely at yourself in the mirror and you look fantastic and everything, including your makeup, hairstyle, and clothes, is very comfortable and suitable to the performance.” For well-preparedness and confidence and challenge-skill balance, I drafted the following imagery script material, “You are in optimal condition and ready to perform. Your performance is not easy, but you know clearly what is required and you can perform well, because you have had lots of practice and you are very skilful.” For optimal arousal and confidence, I created the following script material, “You are confident in your performance. You are ready to dance, waiting beside the main stage, where it is a little bit dark. You see the hard flat stage. You are so calm and confident. Imagine your best performance as vividly as possible. Your imagination goes further to the specific moves with music in your performance. You can really feel the mood conveyed by the music in combination with your single movement and the total routines of the dance.” For deep concentration, I wrote the following imagery script content, “Also your respiration is united with each of your movements. Your feelings involve you more deeply in the performance. Perhaps it is love, happiness, and excitement, or sadness, depression, or anger. You really feel the atmosphere surrounding the performance. Now your mood is totally the same as the performance that you are currently involved with.” For a sense of control, I devised the imagery following script, “Now, the music is starting



and you enter the stage. The lighting glimmers on the stage and changes you into the role of an actor in performance. You are now the performer you want to be. You concentrate on each of your body movements and you control your head, hands, feet, hips, spine, chest, shoulders, and legs very well. You move slowly and you are aware of the space and air. Imagine when you move your body that you feel your energy flow to the ends of your fingers, feet, and head. The energy makes your movements feel controlled and effortless.” For exploring dance, I developed the following imagery script, “Your movements explore all your senses. Imagine when you move each step on stage you feel that your energy goes from your feet to endless floor, and also from your head to endless ceiling. Imagine you are jumping with accuracy, and rebound across the floor and your movement explores the energy and beauty of the dance.” For uniting of movement and autotelic experience, I designed this imagery script, “Your breathing is deep and rich. There is just your movements and music. You explore your inner true heart that is really you. You feel the energy comes from deep within you and connects you with the universe. Even when you stop moving, your energy is continually flowing beyond your body to the cosmos. You feel that each movement is connected perfectly to the next one and flows smoothly into it. Your dance is harmonized totally with the music, with dynamic, calm, and peaceful movements. It feels tingling and great.” For sense of control, I created the following imagery script, “The routines of movements just flow automatically without any effort. Even your finest movements are free and controlled.” For concentration on the music, I developed the imagery script that follows, “You concentrate on each sound of every instrument and listen to the music through your heart and body. You move through the music. When the music sounds sad your movements also have sad expressions, and when the music is peaceful your movement is peaceful too. The

music and your movements are in tune and it feels like music comes from within your body. Imagine your body movements are perfectly united with the music and everything flows smoothly while you are dancing.” For positive thoughts and confidence, I prepared this imagery script, “Positive thoughts fill your mind. You are totally involved in the dance and you have great confidence in your performance.” For loss of self-consciousness, I designed the following imagery script, “You are totally immersed in the performance. Now you are free in movement, music, and feeling. Your concentration is deep. As you become deeply immersed in the dance, the audience, stage, and time disappear and you become one with the character. You are dancing with your true heart and expressing emotions well. Your movements flow following the way that your body wants to.” For communication with the audience and autotelic experience, I developed the following imagery script, “Imagine, the audience following your feeling and sharing your thoughts and emotions. This is a beautiful communication with the audience. You feel energised and fresh.” For positive response from the audience and motivation, I developed the following imagery script material, “The dance finishes and the audience applauds loudly and with great approval. There are several curtain calls, because the audience was so impressed by your performance.” For transformation of time, I devised the following imagery script, “You return to the waiting area just elated and gratified by your performance. You feel the time passed differently from usual during performance.” For autotelic experience, I developed this imagery script material, “You love the experience of being in the dance, so that you really want to experience this feeling again.”, and for confidence, I created the following imagery script content, “You feel really confident that you will perform this dance very well next time.”

*Relaxation imagery condition.* I designed this script to help dancers relax their mind and body. The script was based on pleasant place imagery. Dancers were instructed to think of a very pleasant, warm relaxing environment in the outdoors, on a warm, sunny day with blue sky. They imagined being in a beautiful place with lush green grass and slowly running water. This was a place where there was no stress. In the relaxation imagery script, there was no content that related to flow or to dance performance. This imagery training script is an enhancement tool for relaxation. For example, for body relaxation, I stated in the imagery script content, “focus on your body, relax first slowly the top to your head... face... neck... shoulders... then your arms..., and fingers. The feeling of relaxation spreads down to your hips, legs and feet. The muscles in your body become limp and you are feeling more relaxed. You continue to become more and more deeply relaxed. You feel yourself sinking down into the grass and your body is heavier and heavier. You are completely relaxed from the top of your head to the tips of your toes. For example, for mind relaxation, I stated in the imagery script content, “Now your mind is open and you feel confident and calm. Your body is totally relaxed and you are at one with nature like the air or trees.”

*Imagery log list.* To motivate imagery use, I asked all participants in the flow imagery condition and the relaxation imagery condition to log their imagery use during the first 8 weeks of practice. The imagery log list included information regarding the time, date, and place of each imagery session the dancer conducted (see Appendix Q for the imagery log).

Dancers used the scripts prior to, during, or after training for three sessions a week for 8 weeks, and each session took approximately 10 minutes to complete. I asked the participants to note their experience of the imagery and regular training sessions in the log. The two scripts are attached in Appendices M and N. Scripts were

piloted informally with Korean dancers, as well as being shown to imagery and flow researchers for their expert comments.

### *Procedure*

The dancers who took part in this study were volunteers recruited through dance companies and academies. After reading a written information statement (see Attachment I and K), I asked dancers who showed interest in the study to give consent on a standard consent form (see Attachment J and L). To identify participants who matched the selection criteria, I assessed 176 dancers, using the Flow State Scale-2 (FSS; Jackson & Eklund, 2004) soon after training, and the Disposition Flow Scale-2 (DFS; Jackson & Eklund, 2004) and Sport Imagery Questionnaire (SIQ; Hall, Mack, Paivio, & Hausenblas, 1998) away from training, until I found a sufficient number of eligible participants with low scores on flow experience and acceptable self-reported imagery use for the intervention study. From 176 dancers tested, 69 dancers were eligible. These scores represented pre-intervention scores. I then examined state anxiety after training and trait anxiety away from training for the 69 dancers, and the dancers rated their own performance level and their teacher(s) rated the performance level of each dancer on the Dance Rating Scale. I randomly assigned participants to the flow imagery condition or the relaxation imagery condition. I asked participants in the flow imagery condition ( $n = 35$ ) to train three times a week for 8 weeks, using flow imagery training, which was consistent with previous intervention studies in sport (Hinshaw, 1991). I asked participants in the relaxation imagery condition ( $n = 34$ ) to train using relaxation imagery three times a week for 8 weeks. I asked all participants to maintain their regular dance practice schedule for 8 weeks. At the end of the 8-week training period, I measured flow state and anxiety state again soon after training, and dispositional flow and trait anxiety again away from training. Also,

dancers and their teacher(s) rated dance performance on the Dance Rating Scale. I encouraged participants to use their imagery script for another 8 weeks and then asked them to complete the four questionnaires and the dance ratings again. Finally, 33 participants from the 35 who started the flow imagery condition and 31 participants from the 34 who started the relaxation imagery condition completed all the study requirements. Two participants in the flow imagery condition and three participants in the relaxation imagery condition dropped out from the intervention study for personal reasons, such as illness, important family events, and holiday. I debriefed all participants to explore their reactions to the interventions and to address any concerns they had about their experience in the study. Once, I had resolved concerns, participants were thanked for their participation.

#### *Data Analysis*

For the intervention study, I first calculated internal consistency estimates (Alpha Coefficient; Cronbach, 1951) for DFS-2 and FSS-2. Second, I calculated descriptive statistics for all study variables. Next, I analysed pre-test, post-test, and follow-up test scores on the DFS-2, FSS-2, trait and state anxiety, teachers' ratings of performance, and dancers' ratings of performance separately for the two conditions, to examine whether the intervention conditions enhanced the flow experience, using repeated measures ANOVA. When there was a significant effect, I ran post-hoc tests to examine 1) main effect of treatment difference between flow and relaxation imagery conditions overall, 2) main effect of occasion difference between any of pre- vs. post-test, pre- vs. follow-up test, and post- vs. follow-up test overall, and 3) interaction differences between flow and relaxation imagery conditions for pre- vs. post-test, pre- vs. follow-up test, and post- vs. follow-up test.

## Results

In this Results section, first, I present descriptive statistics and then I present inferential tests for main and interaction effects, using 2 (treatment versus control group)  $\times$  3 (pre-, post-, follow-up test) mixed design analysis of variance (ANOVA). The internal consistency reliability estimates for DFS-2 and FSS-2, at pre-test, post-test, and follow-up test were all well above the acceptable level of .70 (Nunally, 1978), ranging from .80 to .96.

### *Dispositional and State Flow*

The descriptive statistics for dispositional flow and state flow in the flow imagery and relaxation imagery conditions are presented in Table 5.1.

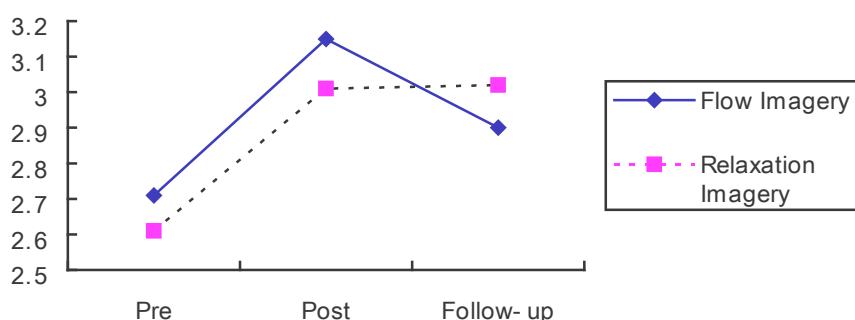
Table 5.1

*Means and Standard Deviations for Dispositional Flow and State Flow in the Flow Imagery Condition and the Relaxation Imagery Condition*

	Flow imagery ( <i>n</i> =33)		Relaxation imagery ( <i>n</i> =31)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
DFS-2				
Pre-test	2.71	.29	2.61	.26
Post-test	3.15	.65	3.01	.46
Follow-up test	2.90	.59	3.02	.35
FSS-2				
Pre-test	2.74	.27	2.89	.29
Post-test	3.11	.50	3.16	.44
Follow-up test	2.98	.45	3.09	.32

The results showed that the mean scores for both the flow imagery condition and the relaxation imagery condition increased from pre-test to post-test for dispositional and state flow. Mean flow decreased from post-test to follow-up for both conditions and for state and dispositional flow, except that the increase for dispositional flow for the relaxation imagery condition was sustained at follow-up. In all cases the follow-up scores were notably higher than the pre-test scores.

The ANOVA for dispositional flow showed no main effect of conditions, with a negligible effect size,  $F(1, 62) = 0.22$ ,  $p > .05$ ,  $\eta^2 = .00$ , whereas there was a significant main effect for occasions, with a very large effect size,  $F(2, 124) = 17.63$ ,  $p < .01$ ,  $\eta^2 = .22$ . The interaction effect was not significant at the .05 level.

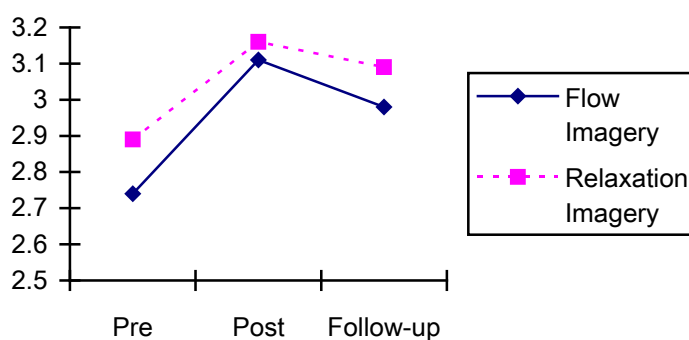


*Figure 5.1.* Means of Pre-, Post-, and Follow-up Tests for Dispositional Flow in the Flow Imagery Condition and Relaxation Imagery Condition

The means of pre-, post-, and follow-up test for dispositional flow in the flow imagery condition and the relaxation imagery condition are presented in Figure 5.1. Results show a significant increase in dispositional flow from pre-test to post-test for both conditions, as well as a larger decrease in dispositional flow for the flow imagery condition than the relaxation imagery condition from post-test to follow-up. Figure

5.1 shows a disordinal interaction between flow imagery and relaxation imagery from post-test to follow-up. The ANOVA indicated that this was not significant.

For state flow, a similar pattern was observed, with no main effect of conditions, with a small effect size,  $F(1, 62) = 2.22, p > .05, \eta^2 = .04$ , but a significant main effect for occasions, with a large effect size,  $F(2, 124) = 14.56, p < .01, \eta^2 = .19$ . The interaction effect was not significant at the .05 level.



*Figure 5.2.* Means of Pre-, Post-, and Follow-up Tests for State Flow in the Flow Imagery Condition and the Relaxation Imagery Condition

The means for state flow for pre-test, post-test and follow-up for the flow imagery and relaxation imagery conditions are illustrated in Figure 5.2. State flow increased for both conditions from pre-test to post-test, with a bigger increase for the flow imagery condition. From post-test to follow-up both conditions decreased, with a slightly larger drop for the flow imagery condition. No interaction effects are illustrated in Figure 5.2.

#### *Trait and State Anxiety*

The descriptive statistics for trait and state anxiety in the flow imagery and the relaxation imagery conditions are presented in Table 5.2. For trait anxiety, changes in



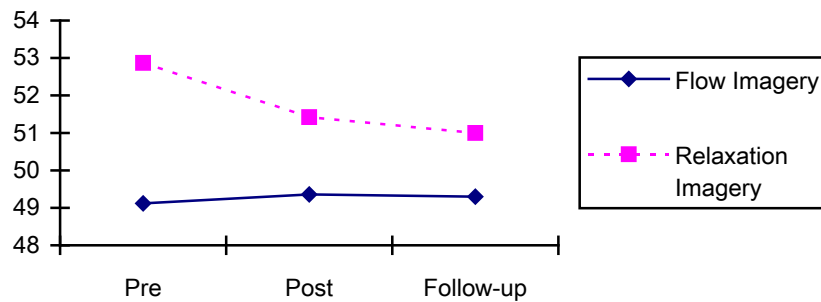
mean anxiety from pre-test to post-test, and from post-test to follow-up were minimal for the flow and relaxation imagery conditions. Levels of trait anxiety were a little higher for the relaxation imagery condition at the start and remained somewhat higher. For state anxiety, mean anxiety scores for the flow imagery condition and the relaxation imagery condition decreased from pre-test to post-test, and showed little change from post-test to follow-up. Mean anxiety was a little higher for the relaxation imagery condition at pre-test, but decreased more at post-test and follow-up than mean anxiety for the flow imagery condition.

Table 5.2

*Means and Standard Deviations for Anxiety Trait and Anxiety State in the Flow Imagery Condition and the Relaxation Imagery Condition*

	<i>Flow imagery</i> ( <i>n</i> =33)		<i>Relaxation imagery</i> ( <i>n</i> =31)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Trait Anxiety</i>				
Pre-test	49.12	9.30	52.87	7.60
Post-test	49.36	8.38	51.42	8.35
Follow-up test	49.30	7.31	51.00	6.15
<i>State Anxiety</i>				
Pre-test	53.67	9.14	56.35	7.05
Post-test	50.48	9.47	52.61	8.55
Follow-up test	50.88	7.05	51.81	6.56

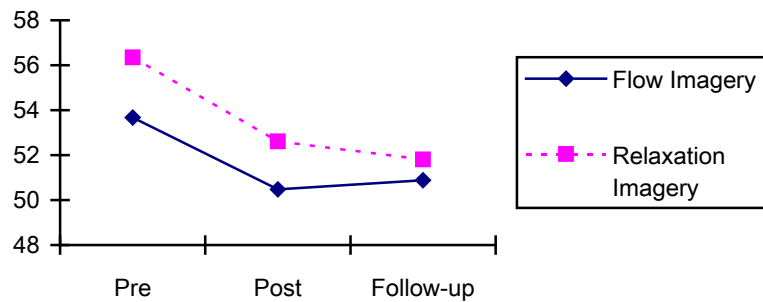
The ANOVA for trait anxiety revealed no main effect of conditions, with a small effect size,  $F(1, 62) = 2.55$ ,  $p > .05$ ,  $\eta^2 = .04$ . Moreover, there was no significant main effect for occasions, with negligible effect size,  $F(2, 124) = .35$ ,  $p > .05$ ,  $\eta^2 = .01$ . The interaction effect was not significant at the .05 level.



*Figure 5.3.* Means of Pre-, Post-, and Follow-up test for Trait Anxiety in Flow Imagery Condition and Relaxation Imagery Condition

The means of pre-, post-, and follow-up test for trait anxiety in flow imagery and relaxation imagery conditions are presented in Figure 5.3. The figure shows that trait anxiety was lower for the flow imagery condition than for the relaxation imagery condition throughout the study. Trait anxiety for flow imagery showed no change from pre-test to post-test or from post-test to follow-up, so it was the same at the end of the study as it was at the beginning. Trait anxiety for the relaxation imagery condition reduced somewhat from pre-test to post-test, and reduced a little further from post-test to follow-up, but these reductions were not significant.

The ANOVA for state anxiety revealed no significant main effect of conditions, with a negligible effect size,  $F(1, 62) = 1.24$ ,  $p > .05$ ,  $\eta^2 = .02$ , whereas, there was a significant main effect for occasions, with a large effect size,  $F(2, 124) = 10.20$ ,  $p > .01$ ,  $\eta^2 = .14$ . The interaction effect was not significant at the .05 level.



*Figure 5.4.* Means of Pre-, Post-, and Follow-up test for State Anxiety in Flow Imagery Condition and Relaxation Imagery Condition

The means of pre-, post-, and follow-up tests for state anxiety in the flow imagery condition and relaxation imagery condition are displayed in Figure 5.4. The figure shows the substantial decrease in state anxiety from pre-test to post-test for both conditions, followed by no change from post-test to follow-up, so state anxiety remained lower at follow-up than it was at pre-test in both conditions.

### *Performance*

The descriptive statistics for dancers' and dance teachers' ratings of performance in the flow imagery condition and the relaxation imagery condition are displayed in Table 5.3. For performance enhancement, there were two measures, which were the ratings by dancers' teacher(s) and the ratings made by dancers themselves. The results showed that the dance teachers' ratings and dancers' ratings of performance scores for the flow imagery condition and the relaxation imagery condition increased from pre-test to post-test, and from post-test to follow-up, except for the dancers' ratings in the relaxation imagery condition and teachers' ratings in the flow imagery condition from post-test to follow-up.

Table 5.3

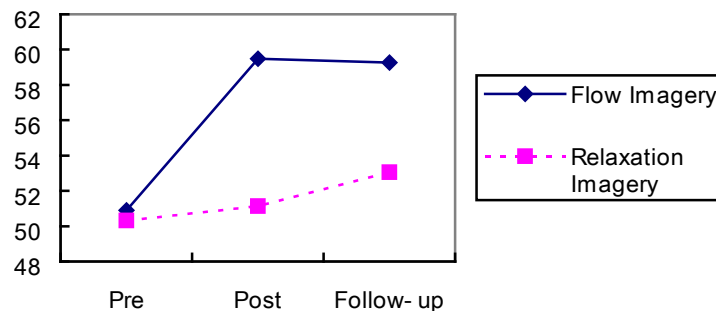
*Means and Standard Deviations for Dancers' and Dance Teachers' Ratings of Performance in the Flow Imagery Condition and the Relaxation Imagery Condition*

	<i>Flow imagery</i> ( <i>n</i> = 33)		<i>Relaxation imagery</i> ( <i>n</i> = 31)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Dance Teachers' Ratings of Performance</i>				
Pre-test	50.89	24.61	50.32	14.63
Post-test	59.48	22.55	51.13	11.90
Follow-up test	57.27	25.43	53.06	20.37
<i>Dancers' Ratings of Performance</i>				
Pre-test	53.48	24.01	56.97	20.22
Post-test	55.52	22.88	54.48	19.01
Follow-up test	55.94	25.29	56.93	20.22

The results showed that the mean scores for dance teachers' ratings of performance increased from the pre- to post-test for both conditions, whereas, only the mean score for the relaxation imagery condition increased from post-test to follow-up test, while the flow imagery condition showed a small decrease. However, the increase from pre-test to post-test was much larger for dance teachers' ratings of performance for dancers in the flow imagery condition. Thus, even after the small decrease at follow-up, the flow imagery condition ratings showed a much bigger increase in performance as rated by the dance teachers. On the other hand, for dancers' ratings of performance, the mean scores for the relaxation imagery condition

decreased a little from pre-test to post-test, then increased by approximately the same amount from post-test to follow-up test. For the flow imagery condition, the mean scores increased a little from pre-test to post-test, then remained stable from post-test to follow-up test.

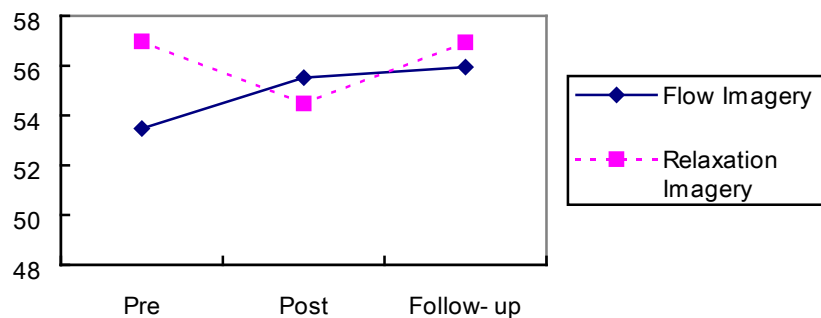
The ANOVA for dance teachers' ratings of performance showed no main effect of conditions,  $F(1,62) = 1.01$ ,  $p > .05$ ,  $\eta^2 = .02$ , or occasions,  $F(2,124) = 2.44$ ,  $p > .05$ ,  $\eta^2 = .04$ , with negligible effect sizes. The interaction was not significant at the .05 level.



*Figure 5.5.* Means of Pre-, Post-, and Follow-up Tests for Dance Teachers' Ratings of Performance in the Flow Imagery Condition and the Relaxation Imagery Condition

The means of pre-, post-, and follow-up tests for dance teachers' ratings of performance in the flow imagery condition and the relaxation imagery condition are presented in Figure 5.5. Visually, the figure shows a notable difference between the conditions. The dance teachers' ratings of performance for the flow imagery condition increased substantially from pre-test to post-test, then declined a little, but remained much higher than at pre-test, whereas the ratings for the relaxation imagery condition increased very little from pre-test to post-test, then increased a little more from post-test to follow-up, but the values at post-test and follow-up were well below those for the ratings of performance in the flow imagery condition at post-test and follow-up.

For dancers' ratings of performance, similar statistics emerged, with no main effect of conditions,  $F(1,62) = 0.06$ ,  $p > .05$ ,  $\eta^2 = .00$ , or occasions,  $F(2,124) = .17$ ,  $p > .05$ ,  $\eta^2 = .00$ , with negligible effect size. The interaction effect was not significant at the .05 level.



*Figure 5.6.* Means of Pre-, Post-, and Follow-up Tests for Dancers' Ratings of Performance in the Flow Imagery Condition and the Relaxation Imagery Condition

The means of pre-, post-, and follow-up tests for dancers' ratings of performance in the flow imagery condition and the relaxation imagery condition are illustrated in Figure 5.6. The figure shows that means for the flow imagery condition showed a small increase from pre-test to post-test, which was sustained at follow-up, whereas means for the relaxation imagery condition showed a decrease from pre-test to post-test, followed by a comparable increase from post-test to follow-up, so they were back where they started.

To summarise these results, both the flow imagery condition and the relaxation imagery condition showed similar patterns of positive effectiveness in Korean dancers. Dispositional and state flow were enhanced for both conditions. Moreover, state anxiety was reduced in the two imagery interventions, whereas trait anxiety was unchanged. There was no effect of condition on dancers' ratings of performance. For dance teachers' ratings of performance, the flow imagery

intervention was associated with a substantial increase in performance rating from pre- to post-test, which was largely sustained at follow-up. Although these differences did not reach significance, there was a medium effect size from pre- to post-test. There was no increase from pre- to post-test for relaxation imagery, although, there was a small increase from post-test to follow-up, that was not significant and the effect size was small.

### Discussion

The purpose of this study was to examine the effects of a flow imagery intervention, which was designed on the basis of Studies 1 and 2. I predicted that the flow imagery intervention would enhance several of the major dimensions of flow, reduce trait and state anxiety, and improve performance among dancers. I predicted that a relaxation imagery intervention, which was intended to be an attention placebo control condition, would have no effect on flow and performance, but would reduce state anxiety.

In Study 3, I found that the flow imagery intervention enhanced the intensity (state) and frequency (disposition) of the flow experience in dancers. Surprisingly, however, the relaxation imagery intervention, which was not designed to enhance flow, also increased flow. In fact, this intervention appeared to be marginally more effective, so I could not support the prediction that there would be no effect of relaxation imagery on state or dispositional flow. Although this result was unexpected, it could be accounted for by the characteristics of the sample.

The Korean dancers had little experience of monitoring flow and they were equally inexperienced in the systematic use of imagery. It is possible that the detail in the flow imagery intervention was too complex for them in this early stage of imagery use for flow enhancement, so that they could not imagine the range of aspects of flow

effectively. They might even have been confused by all the components of the flow imagery program, given to them at one time. Perhaps I would have found a longer intervention, including more steps in the introduction of flow imagery to be more effective. Hanrahan (1995) mentioned that some dancers might become confused when there is too much information in imagery training because of the difficulty in simplifying the imagery. Nicholls et al. (2011) also supported the proposition that specific individualised MG-M and CS imagery have a positive effect on flow experience as well as performance.

At the same time, a key dimension of flow is sense of control, which relates to managing arousal level. The relaxation imagery program was a standard, simple, pleasant place imagery intervention, which could have reduced stress in the dancers, leading to enhanced flow, due to the dancers feeling a greater sense of control. In particular, Noh, Morris, and Andersen (2009) reported that professional Korean dancers typically have high stress levels related to their relationship with their peers and dance directors, and have low coping skills to deal with those stresses. The relatively simple relaxation imagery intervention I employed in the present study might have helped reduce stress and control dancers' arousal level, leading to an increase in dancers' sense of control. This could have led the dancers in that condition to experience increased flow state on specific occasions. Further, the development of anxiety-related coping skills, that is, having learned to use pleasant place imagery to manage anxiety, could have influenced dispositional flow in dance.

In the present study, I also showed that large increases in dispositional and state flow observed in both conditions at post-test, dissipated to some extent at follow-up. The explanation of the large main effect for time, particularly for post-test, seems to be relatively straightforward. I strongly encouraged the dancers to use the imagery



technique during the 8-week period from pre-test to post-test, whereas I only asked the dancers to continue to use the imagery program during the 8 weeks from post-test to follow-up test, so imagery use during this period depended much more on the dancers themselves. It could be that during this period of time, the dancers might not have used their imagery program as often as they did during the pre-test to post-test period, when they were being more closely monitored and encouraged. The assumption needs further examinations, but this suggests that dancers need regular encouragement to use imagery to have the optimal impact on flow experience.

For professional dancers, anxiety associated with performance is a common symptom. Such anxiety, which can be conceived as associated with low confidence, influences dancers' standard of performance as well as the quality of their dance experience (Taylor & Taylor, 1995). Dancers need to control all their muscles for dancing even a single movement; however, when dancers experience tension, it is more difficult for them to control their body movements, so they do not function optimally. Thus, control or management of anxiety level is an important skill or challenge for dancers. The results from this study indicated no effect on trait anxiety in the flow imagery condition, while state anxiety was reduced in both the flow and relaxation imagery conditions. The reason for this might be that the relaxation imagery condition encouraged dancers to be calm, stable, and comfortable, whereas the flow imagery condition tended to stimulate dancers' arousal level by evoking peak experience and performance, which could have activated both their arousal and anxiety levels. The sample in this study might have been particularly susceptible to high levels of arousal that translate into anxiety as an emotional state. Noh et al. (2009) found that Korean ballet dancers, who were similar to the present sample, experienced high levels of stress associated with dance training and performance, and

possessed few coping skills to manage their stress. It is likely that the dancers in the present study also experienced high levels of stress and had limited coping resources, so learning to cope with the relaxation imagery intervention helped reduce state anxiety, which in turn facilitated flow. Typically, trait anxiety is relatively stable, only being altered by major, targeted interventions (Jorm, 1989), so it is not surprising that it was not affected by the interventions in the present study.

Considering performance enhancement, I found that both the flow imagery condition and the relaxation imagery condition increased the dance teachers' ratings of performance, but, dancers' ratings of their own performance did not increase from pre-test to follow-up test for the relaxation imagery condition. A possible explanation could be that the dancers in the present study might have relatively low self-esteem, so they were particularly critical of their own performance. It could also be that high level dancers tend to be perfectionists, as reported by Hamilton (Hamilton, 1998), so, even though they experienced flow during dance, making the experience of dancing positive, dancers believed that their dance performance was not good enough, not perfect. Thus, their self-ratings of performance did not increase significantly. The dance teachers' views might have been more objective or less influenced by such subjective factors, than those of the dancers themselves. For this reason, the dance teachers' assessment that the imagery intervention program improved dancers' performance should be noted. These results demonstrated that the imagery intervention programs I used in this study had a positive effect on performance, supporting the study by Hanahan, Tetreau, and Sarrazin (1995).

According to the dance teachers' ratings, performance was enhanced much more in the flow imagery condition than in the relaxation imagery condition, although this difference did not reach significance. This finding is strengthened by the

observation that the dance teachers were blind to the assignment of participants to the two interventions. The greater impact of the flow intervention on performance is consistent with its content. Much of the imagery in the flow intervention, while it was designed primarily to enhance flow in this study, was the kind of content that has been shown to enhance performance in numerous studies in sport (see Morris, Spittle, & Perry, 2004; Morris, Spittle, & Watt, 2005 for reviews), as well as in dance (Hanrahan et al., 1995; Hanrahan & Vergeer, 2001). This includes establishing clear goals, enhancing confidence, and focusing attention on the task. Support for the claim that performance was enhanced by the specific content comes from the observation that flow was enhanced equally in both interventions, whereas teacher-rated performance was enhanced much more in the flow imagery condition than the relaxation imagery condition. At the same time, these observations suggest that the increase in performance for the flow imagery condition was not mediated by flow, because flow was not increased more in the flow imagery condition than in the relaxation imagery condition. It was not considered to be appropriate to statistically test the question of mediation of performance by flow because the single item, subjective rating of performance did not reach an acceptable level of measurement. This point does suggest that comments made regarding performance should be treated with some caution, but they do show promise for more rigorous study in the future.

To summarize, the flow and relaxation imagery interventions were valuable for enhancing state and dispositional flow experience in dancers and reducing state anxiety. I also found evidence that flow imagery increased performance. Based on the results of the present study, further investigation focused on causal relationships between flow experience and performance would be valuable. Even though there was a small effect for flow and anxiety and no significant interaction effect for

performance, such small increases could have a significant influence on intrinsic motivation and future performance.

### *Methodological Issues*

The present study had several limitations that may have restricted attainment of a broader set of positive outcomes. One limitation of this study was that I intended flow imagery to be an active intervention condition to enhance flow experience and performance and relaxation imagery to be an attention control condition. The results showed that the both imagery conditions were effective for enhancing flow experience and performance. Although I have proposed plausible explanations for the effects I found in the relaxation imagery condition, because there was little difference between that condition and the flow imagery condition, it is possible that flow and performance increased due to other training factors common to the dancers in both conditions during the 16 weeks of the study. To minimise the likelihood of this outcome, I recommend that future researchers should include a no-treatment control condition, which has no intervention at all.

A related methodological issue is based on the decision to employ a placebo control condition in which participants were given equal attention and imagery training to the participants in the active flow imagery condition. In the flow imagery intervention there were variables I considered to be key elements to enhance flow experience, based on the results of Study 1 and Study 2. In the relaxation imagery intervention there was pleasant place imagery, a widely-used technique intended to create a feeling of relaxation, which I considered to bear little relation to the major dimensions of flow. The results for flow state and flow disposition, trait and state anxiety, and performance showed that there was little difference between the effectiveness of the flow and relaxation imagery conditions, with both showing

positive impact on flow, anxiety, and performance. It is not clear whether the effects observed for the relaxation imagery condition were attributable to an expectancy effect, which is one possible explanation of the results for that condition. It is also plausible that reducing anxiety gave participants in this condition a sense of control, which in turn enhanced flow. In either case, I did not foresee the positive outcomes observed for relaxation imagery when I decided to use relaxation imagery as a placebo control condition. To be safe, in future research, the proposed placebo controls should be pilot tested or selected on the basis of previous research in which they did not show the type of effect being demonstrated in the current study.

Having now observed the potential effect of relaxation imagery in facilitating flow state and disposition, it would be interesting to examine the combination of flow and relaxation in imagery programs designed to enhance flow in dancers. Thus, in future, researchers could avoid comparing intervention programs based on the same mechanism, especially when the interventions, like imagery cannot be directly monitored to ensure that participants are following precisely the instructions given for that condition. One way to gain some insight into what participants actually did during an intervention, such as imagery, is for researchers to probe participants during debriefing. In this study, during debriefing, I did not ask participants systematic questions regarding their imagery use. I propose that inclusion of questions about the content of imagery would be useful for the active imagery condition too, because it is possible that participants in that condition do not or cannot follow the imagery script instructions. I did not include such questions in the debriefing for the present study.

With regard to the way in which I delivered the intervention to participants, I designed a single flow imagery intervention and presented the same intervention to all the dancers in that condition. Similarly, the relaxation imagery intervention comprised

one script, which I presented to each dancer assigned to that condition. I designed the flow imagery script on the basis of the results from quantitative (Study 1) and qualitative (Study 2) examinations of flow and imagery, but some imagery researchers propose that specific imagery scripts designed for each individual should increase the effectiveness of imagery training programs (Callow, Hardy, & Hall, 2001; Cupal, 1998).

Almost all the participants in this study were female because of the peculiar characteristics of dance, especially in Korea, where the vast majority of high-level dancers are female. Thus, the results could have been influenced by female perspectives on flow and/or imagery. In future, researchers could make comparisons between genders that might provide clearer understanding of the flow experience, as well as imagery use, even though research has not shown any systematic differences in flow experience or imagery use between females and males in the related context of sport (Jackson & Marsh, 1996).

In terms of participants' motivation, I used a written script to deliver imagery instructions in the intervention conditions. Some dancers might have experienced difficulty reading or understanding the scripts, especially during the first intervention stage, because of the unfamiliar content. Instead of writing scripts, researchers can create audiotapes to present the instructions clearly and slowly. This could enhance the motivation of participants who struggled with written instructions. Equally, it might slow down other participants causing them to lose interest. The best method to deliver imagery instructions has yet to be determined (Morris, Spittle, & Watt, 2005).

In addition, I asked participants to report their imagery use in an imagery log, which included the time, date, and place of each imagery session they completed. This kind of imagery checklist might provide some motivation to dancers by clearly

showing them their progress in the use of imagery. Gould, Damarjian, and Greenleaf (2002) proposed some important tips to facilitate the use of videotapes or audiotapes to enhance imagery skills, the use of triggers or cues to facilitate imagery quality, and the use of imagery logs to provide support when performers are using imagery.

However, I did not collect participants' diaries because, when I gave participants the diaries, I mentioned that the diary was only for motivational purposes and not for data collection. I assumed that this would enable participants to write more freely in their diaries. As a result, it is difficult to know how clear and vivid their imagery was. In future research, it would be valuable to use diaries or logs as an additional method of collecting information about the personal experiences of dancers during imagery training.

To examine the impact of the intervention on performance, I used daily, basic dance routines, which are employed for warming-up and establishing the basic elements of movement, in dance institutes. The reasons I chose basic dance routines instead of a specific single movement is that measuring a single movement does not show significant meaning for improvement of performance, because of artistic characteristics in dance. There are studies that have measured a single dance movement from a physiological perspective, such as *battement*, *developpe*, *releve*, and *arabesque*, to examine the improvement of performance (Hanrahan & Salmela, 1990; Hanrahan, Tetreau, & Sarrazin, 1995). However, this seems to place the emphasis on the technical aspects of specific movements. In dance, the quality of performance involves a variety of aspects, such as expression of movement feelings, harmonising with music, interaction with other dancers, and the connection of movements. Therefore, changing the height and width of movements might satisfy the validity and reliability of a measure providing accurate biomechanical scores, but it does not fully

explain enhancement of performance in dance from an aesthetic perspective. To be judged as a good dance performance, a dance sequence must display a variety of elements, such as uniting with music, connection of each movement, and expressing performance moods. Thus, subjective evaluation and scoring is important in rating performance in an activity like dance, but that should not stop researchers from ensuring that processes are employed to demonstrate the validity of the subjective judgments, such as obtaining independent ratings of the same performances by two or more expert judges and examining the level of agreement between the raters. This would have strengthened confidence in ratings, whereas each dancer was only rated by one teacher in the present study.

In sports, such as gymnastics, diving and ice skating, certain aesthetic elements of performance exist. Thus, these sports involve a precise judgment of the artistic side of a performance. Usually, in those activities, there is a set of specified movements that provide the basis for performance and those movements can be technically rated, as well as judged for artistic merit. However, in dance, the audiences, teachers, directors, or dancers' themselves generally measure the improvement of dance performance subjectively. Dance evaluation, therefore, is not as precise as sports that involve ratings, because in dance the examinations by teachers and dancers place more emphasis on the subjective perspectives in improvement of performance, including creativity and emotion. Moreover, dancers and dance teachers do not usually examine performance for the purposes of comparison between dancers; rather the purpose of evaluating performance normally focuses on individual improvement. Although all assessment of dance is subjective, self-assessment is more likely to be influenced by personal and contextual variables. I included evaluation by dance teachers, along with dancers' assessment of their own



performance, to reduce reliance on self-evaluation. It was interesting to note that the dancers were more critical of their own performance than were their dance teachers, who are often perceived to be harsh critics.

To discover the effect of an intervention program, I used pre-, post-, and follow-up tests on flow experience and performance. However, some situational factors in relation to performance could exist. For instance, the conditions of the stage, audience, and interaction with other dancers alter each performance. So the result might be influenced by those situational factors. In addition, measuring flow experience by concentrating on the task at hand, loss of self-consciousness, transformation of time, and autotelic experience are sensitive and influenced by situations (Kawabata, Mallett, & Jackson, 2008). For this reason, I measured both state and dispositional flow through pre-test, post-test, and follow-up. The results of state flow may have been influenced by those situational factors, however, dispositional flow might provide more accurate results for the intervention program. In addition, excluding people with high imagery because they experienced moderate flow might have lead me to exclude some dancers who had great potential to use imagery to stimulate flow.

### *Implications for Practice*

In this study, I found that the imagery intervention played a significant role in enhancing flow state and disposition, as well as performance, for Korean dancers. The results supported the proposition that developing and using imagery skills would be a valuable strategy for enhancing dancers' flow experience and performance. In particular, applying individualised imagery interventions could be more beneficial for a variety of characteristics in dancers to enhance quality of flow experience. Furthermore, imagery is also influential in developing performance skills and quality

of performance. Dancers naturally use imagery for a range of purposes. A surprising finding from Studies 1 and 2 was that Korean dancers did not receive any instruction in the use of imagery techniques to enhance their dance during training and performance. Thus, I confidently recommend that dancers, teachers, and directors should systematically employ imagery techniques for enhancing the quality of their dance experience and performance. For example, if dancers use imagery regularly prior to, during, and after performance, especially prior to performance, this could help dancers' preparation for performance, providing strong confidence and deep concentration, which are key facilitators of flow experience. Russell's (2001) qualitative study showed that an optimal pre-competition preparation plan, including mental imagery and self-talk was one of the important facilitators of flow. The present study showed that the imagery intervention was a successful tool for improving performance. In general, from a preparation perspective, imagining dance routines and specific successful movements over and over could benefit dancers who intend to master their movement skills. Imagery, as one of the alternative ways for practising performance to physical practice could be crucial for dancers to improve performance through familiarity of their dance movement routines.

Dancers, teachers, and directors should be encouraged to use a variety of relaxation training in daily life. Professional dancers experience a high level of tension and rigorous requirements associated with the psychological and physiological aspects of training and performance (Noh et al., 2009). Kerr, Fujiyama, Wilson, and Nakamori (2006) found that professional modern dancers reported a high arousal level during performance. Thus, it would be beneficial to encourage relaxation imagery with professional dancers to control optimal arousal level for improving performance and achieving positive flow experience.

In addition, dancers, teachers, and directors should note or emphasise the importance of the development and application of imagery over a long period of time within their training and performance situations. Based on constant imagery use, dancers might be more intrinsically motivated and enjoy their dancing activity through enhancing flow experience and this could positively influence their dance career.

### *Future Research*

In the present study, I specifically focused on a flow imagery intervention to enhance the experience of flow in high-level dancers demonstrating lower levels of flow experience. I provided dancers with psychological strategies to enhance the quality of their dance experience, based on understanding the phenomenon and facilitators of flow, and the relationships between flow and imagery. In particular, I found that the flow imagery intervention that focused on self-confidence, satisfying oneself, exploring the feeling of performance, concentration into performance, and positive thoughts had a positive effect on the frequency and intensity of experiencing the optimal positive psychological state, that is, dispositional and state flow increased among professional dancers. It seems those psychological aspects of flow are important in the professional dance environment. To effectively deal with those aspects of flow in the future, it would be interesting for researchers to specifically investigate the role of those psychological factors that are clearly representative of dance environments to determine which environmental factors enhance performance and positive experiences in dance.

In this study, I demonstrated that a simple relaxation intervention was effective in facilitating optimal flow experience, state anxiety, and performance. This finding highlights the claim that relaxation is one of the most important performance

preparation techniques that dancers require. Future research could involve investigations focussing on the association between states of relaxation and confidence, or the reduction of anxiety.

In addition, trait anxiety remained stable from pre to post-test, while state anxiety was lowered in the dancers in the present study. This result suggests it might be difficult to change dancers' trait anxiety. Jorm (1989) demonstrated in a meta-analysis that a number of psychotherapeutic techniques can be used to change trait anxiety. The approach that showed the largest effect size was rational emotive therapy (RET). In a recent study, Lerner (2009) demonstrated that rational emotive behaviour therapy (REBT) could be used to change trait anxiety intensity and direction in sport, specifically ten-pin bowling. It is less likely, however, that a basic relaxation imagery technique like pleasant place imagery will influence cognitive processing at a level that is deep enough to affect trait anxiety as the disputation techniques associated with REBT. Relaxation imagery did influence state anxiety, which is a useful finding. Combining relaxation imagery with aspects of flow imagery might be a particularly effective way to manage anxiety in performance situations, while promoting those dimensions that seem to stimulate flow. Research would be interesting that compared the impact on flow, anxiety, and performance of imagery programs that introduced relaxation and flow elements of imagery at the same time with programs that start with relaxation imagery and introduce flow imagery once performers are comfortable with the process of using imagery.

To further examine the benefits of both intervention conditions, it would be interesting to introduce flow imagery programs that train dancers and sport performers to generate images related to one dimension of flow, such as sense of control, at the first step, then add a second dimension, such as concentration on the task, then a third,

and so on. If such a step-by-step approach is more effective than trying to include all dimensions at Step 1, it should then be valuable to investigate whether the order of the steps makes a difference.

In terms of performance improvement, this study showed that dancers' ratings were lower than the teachers' ratings. This indicates that dancers tend to be critical of themselves, thus, exploring the basis of dancers' self-criticism and heightened self-consciousness that may negatively influence optimal experience and performance might assist in better understanding dancers' psychological states during training and performance.

In summary, the current study showed that imagery interventions can improve state and dispositional flow in dancers, who have little flow experience, reduce state anxiety, and enhance performance. This is the first study to systematically examine imagery techniques related to flow experience in dance. I suggest that this study may serve as a stimulus for future research to investigate a variety of psychological interventions targeting performance development for professional dancers.

## CHAPTER 6: GENERAL DISCUSSION

### Introduction

The major purpose of this thesis was to examine flow and imagery in dance, so that an imagery intervention focused on psychological factors that facilitate flow state could be developed and implemented. Thus, I examined the relationship between flow experience and imagery use, employing a correlational approach in Study 1 and I explored facilitators of flow in dance, using in-depth interviews in Study 2. Then I developed an imagery script to facilitate flow in dance and examined its impact in highly skilled dancers. In this General Discussion chapter, first, I summarise and comment on the conclusions from the three studies. Then I discuss methodological issues. Next, I present directions for future research and implications for practice based on the understanding gleaned from the three studies. Finally, I make concluding remarks about the research reported in this thesis.

### Conclusions

Since Csikszentmihalyi (1975) provided theoretical background knowledge on flow, flow characteristics have been explored by numerous researchers in sports (Jackson & Wrigley, 2004; Kimiecik & Jackson, 2002) and other general areas (Martin & Jackson, 2008). In dance, flow experience is one of the valuable and positive experiences that provide intrinsic motivation to continue dancing, which leads to a higher quality of life in dancers. However, there exist differences between individuals, some of whom tend to feel flow experiences more intensely and frequently, whereas others rarely experience flow. Thus, the general purpose of the present research was to enhance the optimal positive flow experience in Korean dancers, who have low levels of flow experience. In the third study of this thesis, I designed an intervention for enhancing flow experience based on the findings of

Studies 1 and 2. These studies included both quantitative and qualitative methods, providing information about the flow-imagery relationship and the facilitators of flow experience among Korean dancers.

In Study 1, based on previous flow and imagery research (Lindsay, Maynard, & Thomas, 2005; Straub, 1996), I conducted a correlation study to identify the types of imagery use that were most closely associated with dimensions of flow. This was done in order to examine whether imagery predicted flow experience in Korean professional dancers. The results indicated that dancers experience flow frequently and intensely during training and performance.

Moreover, there were significant correlations between specific types of imagery use, measured using the SIQ, and flow experience, reflected in particular dimensions of flow as measured by the DFS-2 and FSS-2. I found that the cognitive specific (e.g., imagery related to specific dance skills or successful specific skills) and motivational general mastery (e.g., imagery related to confidence and staying positive) types of imagery use were the main predictors of flow dimensions among Korean dancers.

Further, I discovered that the dimensions of flow that were most strongly related to imagery use were challenge-skill balance, clear goals, concentration, sense of control, and autotelic experience. This indicates that some dimensions of flow were more strongly related to specific aspects of imagery, whereas other dimensions of flow did not show such strong relationships with imagery. This finding is consistent with a proposition made by Stavrou and Zervas (2004), who have suggested that some characteristics of flow, such as challenge-skills balance, sense of control, total concentration on the task, and clear goals, are associated with the stimulation of flow states, so they might be considered to be antecedents, whereas other aspects of flow,

such as merging of action and awareness, loss of self-consciousness, and time transformation, might be by-products of the flow experience, so they might be considered to be concomitants of flow. This is important for the development of effective and efficient interventions to facilitate flow, suggesting that interventions should be designed to focus on those dimensions of flow that stimulate the flow state, rather than those that appear to emerge with or from flow.

In addition, the results of Study 1 showed that loss of self-consciousness produced the lowest scores among the flow dimensions, whereas, in the interviews in Study 2, loss of self-consciousness was reported to be one of the important characteristics of flow in professional dancers. This finding might indicate that loss of self-consciousness is one of the more difficult dimensions of flow to attain in practical situations. The results of Study 1 indicated that imagery played a prominent role in predicting flow experience in Korean dancers. In particular, further examination of the role of loss of self-consciousness in enhancing global flow experience in dancers should aim to determine whether the experience of an altered state of self-consciousness is essential for flow to occur, that is an antecedent, or whether it is a powerful indicator that flow is occurring, that is a concomitant. It is also possible that, in the stressful context of professional dance performance, loss of self-consciousness is a sign to dancers that they have entered an altered mental state in which the dance is everything and normally intimidating factors, such as an audience perceived to be evaluating the dancer, are no longer a focus of attention.

To explore the characteristics and facilitators of flow and imagery use in Korean professional dancers from the dancers' experience stated in their own words, in Study 2, I conducted a qualitative study, using in-depth interviews. I found the main ways in which dancers reported that they used imagery to enhance their flow



experience were associated with the characteristics of flow experience. Dancers reported that they employed imagery both in training and during performance to stimulate the flow experience. The deductive and inductive analyses of the in-depth interviews revealed that Korean professional dancers could identify experiences of optimal positive flow state. In particular, this was associated with deep concentration on performance, merging of action and awareness, sense of control, unambiguous feedback, loss of self-consciousness, time transformation, positive feelings, and autotelic experience. The characteristics of flow reported by Korean professional dancers are similar to those identified in previous research that explored the flow experience in sports based on the self-report of athletes (Jackson, 1996; Sugiyama & Inomata, 2005; Young, 2000) and in general (Csikszentmihalyi & Csikszentmihalyi, 2000), using qualitative methods.

In addition, the facilitators of flow that emerged from the interviews, which the dancers most strongly endorsed, were good preparation of performance (e.g., well-mastering technique and well exploring feelings and sensibilities of artistic performance), confidence, concentration, and positive motivation. The principal condition for flow is the balance between perceived challenges and personal skills (Csikszentmihalyi, 1990). Without mastering techniques and exploring feelings and sensibilities about performance that are required for aesthetic beauty in dance, dancers could find difficulties in concentrating deeply on their performance.

In sports, through in-depth interview, researchers have shown that the most frequently mentioned and major facilitators for flow were preparation, confidence and positive attitude, optimal arousal level, and motivation (Jackson, 1995; Russell, 2001; Young, 2000). In addition, Stavrou and Zervas (2004) supported that motivation, psychological preparation, perceived competence, and positive thinking were

important factors that stimulated the experience of flow. Based on these research findings that focused on examining factors that influence the flow experience, it appears that, typically, the facilitators of flow experience have been found to be similar regardless of the nature of the activity examined. The findings in this thesis contribute to knowledge about the phenomenal experience of flow, extending research to Korean professional dancers, that is, a different activity within a different cultural context.

In Study 2, interviews also showed that the dancers used a range of imagery content to improve performance, to develop confidence, to become absorbed in performance, and to control optimal arousal and motivation. These interesting findings for imagery applications were also keys for major facilitators to enhance flow experience in dancers. However, many dancers did not directly make the connections between their imagery use and flow experience.

The use of imagery as a psychological skill has also received substantial research attention (Morris, Spittle, & Watt, 2005). The results of research have supported the proposition that imagery often has benefits for, or effects on, physical and psychological aspects of skilled performance. For instance, in terms of physical elements, imagery is a technique that can help to improve movement skills and solve technique problems. In addition, with regard to psychological aspects, imagery can be used to enhance concentration and confidence, and to reduce anxiety. Also, imagery is a tool that can be used to explore a variety of feelings and moods related to performance, with the aim of enhancing performance (Morris et al., 2005).

The findings from Studies 1 and 2 provided a number of clear guidelines that helped to design an imagery intervention that was intended to enhance flow experience for Korean dancers, using imagery functions and flow dimensions

identified in Study 1 and focused on facilitators determined in Study 2. Thus, the major aim of the intervention study (Study 3) was to examine the effects of two interventions. The guided flow imagery program was designed to enhance the flow experience and to improve performance in Korean dancers, using all the information gleaned from Studies 1 and 2. This was compared to a relaxation imagery intervention, which was intended to act as an attention-placebo control condition. The relaxation imagery program focused on participants imagining being in a pleasant, warm, and relaxing environment with no stress. This imagery program mentioned nothing about the flow experience and performance in its content. The guided flow imagery was designed to evoke the flow experience by using imagery to focus on the key dimensions identified in Studies 1 and 2, namely challenge-skill balance, clear goals, concentration, sense of control, confidence, and autotelic experience. The guided flow imagery program used primarily cognitive specific and motivational general – mastery imagery, which was also indicated by the strongest correlations with the dimensions of flow in Study 1. The guided flow imagery also helped dancers in achieving optimal arousal level, self-confidence, satisfying oneself, motivating oneself, and exploring the feelings and moods of performance. The results of the intervention study indicated that the flow experience was enhanced by the guided flow imagery intervention. Moreover, the relaxation imagery intervention, which was intended to be an attention-placebo condition, was also effective in promoting some aspects of flow among Korean dancers. The reason the relaxation imagery promoted flow might have been that the relaxed state it induced enhanced sense of control, a key flow dimension, and also induced confidence, which was identified in Study 2 as one of the important facilitators of flow. The relaxation imagery appears to demonstrate the benefit associated with enhancing confidence, which could help

dancers more effectively reduce their body tension and anxiety, so they can move freely and focus more on their performance. It was concluded that both the guided flow imagery and the relaxation imagery programs can enhance flow experience and improve performance. This finding is consistent with previous research that examined a hypnosis intervention, very similar to imagery, to enhance flow experience in a variety of sports (Lindsay, Maynard, & Thomas, 2005; Pates, Cummings, & Maynard, 2002; Pates, Maynard, & Westbury, 2001; Pates, Oliver, & Maynard, 2001). In addition, imagining flow experience might familiarise the dance experience. In a study of hypnotic susceptibility and flow, Grove and Lewis (1996) found a positive relationship between hypnotic susceptibility and prior experience of the activity, and flow experience in exercise. The familiarity of the activity helps to reduce anxiety, enhance confidence, and control arousal level (Grove & Lewis, 1996). Reducing anxiety, controlling arousal, and enhancing confidence were all aspects of the flow imagery intervention, so that intervention might have benefited from these effects. It is also possible that by inducing anxiety-reducing and arousal control experiences through relaxation imagery, the relaxation “placebo” had a real effect on the experience of flow.

Tremayne and Ballinger (2008) also presented evidence suggesting that the management of performance anxiety, use of imagery, dealing with distractions, preparation before competition, and preparation on the day of competition are important factors for performance enhancement for ballroom dancers. Specifically, Tremayne and Ballinger reported that use of imagery for enhancing concentration, confidence, and optimal arousal level was beneficial for dancers’ quality of experience, as well as for their performance. Considering the dimensions of the flow experience identified in Study 1 and previous research (Nektarios A. Stavrou &

Zervas, 2004; Tremayne & Ballinger, 2008) were related specifically to psychological variables, such as confidence, positive thoughts, concentration, and optimal arousal level or sense of control, suggests why both imagery programs had positive effects on flow and performance in Korean dance in Study 3. Based on the outcomes found in Study 3, it is not possible to definitively state whether the impact of the relaxation imagery program was a placebo effect or a specific result of anxiety-reduction produced by relaxation imagery. Nor is it possible to delineate which aspects of the flow imagery program influenced flow and performance. Whether there is the possibility that learning early to use imagery as an effective way to reduce anxiety better facilitates flow might merit further testing. Similarly, the use of more elaborate imagery programs targeted at specific dimensions associated with flow, as in the guided flow imagery program used here, might need to be examined using programs that are practised for longer, so that any initial anxiety-reducing effects are less prominent. This way the effects on confidence, concentration, goals, and feedback might be more evident. Alternatively, participants might be selected who show evidence of already managing the anxiety associated with practice and performance.

The overall results from the three studies undertaken in this thesis demonstrated that imagery is a powerful tool for enhancing flow experience, not just improving movement skills. The experience of flow enhances enjoyment and leads to increases in intrinsic motivation, which can also lead to performance enhancement. At this time, the third study in this thesis is the first intervention study in the context of dance to examine flow experience related to imagery use, designing the intervention on the basis of quantitative and qualitative studies of imagery and flow in that specific context. This is one of only a small number of intervention studies on the flow-

imagery relationship across the whole performance area, including sport as well as dance.

### Methodological Issues

The results of this thesis from three studies were fruitful, however, some methodological issues arose with regard to the measurement of flow and imagery, and with reference to design of each of the three studies.

#### *Measurement*

Measuring the specific nine dimensions in flow scales like the DFS-2 and FSS-2 might also influence the results of research. The reason is that even though all nine dimensions of flow are meant to measure equivalent aspects of flow, some of the subscales might be more sensitive than the others. Stavrou and Zervas (2004) proposed that challenge-skill balance, clear goals, unambiguous feedback, concentration on task at hand, and sense of control are precursors of flow experience, whereas action-awareness merging, loss of self-consciousness, transformation of time, and autotelic experience are consequences of flow experience. Based on this distinction, it is possible, for example, that subscale scores related to consequences of flow might be modified if there is a time delay between performance and measurement of flow. Thus, I conducted flow state measurements immediately after performance and training. Measurement of flow state should be conducted immediately after dancers complete their performance. In addition, it is generally the case that researchers should be cautious when they interpret retrospective measures, such as the FSS-2, which refers to flow in previous performance. For one thing, it has not been made clear to what extent the outcome of performance affects the later assessment of flow. Thus, it is possible that positive outcomes of performance in dance, such as audience accolades and dance director or critic praise would lead to

positive post-performance feelings that are then perceived in memory as flow experiences during performance.

Moreover, while measuring flow experience, I used the scores on the nine dimension in the DFS-2 and FSS-2 along with global level scores, rather than just using a global level of flow experience. Jackson and Eklund stated that the nine dimension level scores are more sensitive than a global level (Jackson & Eklund, 2002). Future research should consider usage of scores depending on the purpose of study.

In Study 1, I used the Sport Imagery Questionnaire (SIQ), which contains five imagery function variables, to measure imagery use for sport. The results showed that the SIQ, which was developed with athletes, had sound reliability and validity for use with dancers. Thus, I used the SIQ throughout this thesis because it was consistent and meaningful to measure imagery use in dancers. Nordin and Cumming (2006b) stated that dancers use a variety of imagery for many purposes, thus, there is a need to explore more specific imagery measurement for dancers. Even though measuring imagery use in terms of five categories limited the variety of imagery use options the dancers could choose, the qualitative interview study (Study 2), which explored variety of imagery use in dance employing an open-ended format, provided enough rich information to design the intervention study (Study 3). In Study 2, I identified that dancers imagined characteristics of roles to express feelings of performance and movement qualities by using the metaphorical method specifically. Therefore, more examination is required based on developing specific imagery measurement devices for use with dancers. Even though the recently developed Dance Imagery Questionnaire (DIQ; Nordin & Cumming, 2006) has not yet been widely used in research, the DIQ contains a subscale called role and movement quality that measures

some of the imagery described in Chapter 4, but not measured by the SIQ. Thus, the DIQ might be a useful tool to examine imagery use specifically in the context of a subjective, aesthetic activity like dance.

Some researchers have argued that more specificity increases the power to predict (e.g., Bandura, 1977; Martens, 1987), whereas others would propose that the proliferation of highly specific measures minimises the potential for comparison between domains and limits the generalisability of findings.

### *Design of Three Studies*

Overall, the present thesis is composed of the correlation study (Study 1) and in-depth interview study (Study 2), which led to the intervention study (Study 3) to enhance flow experience in dancers. I consider that the combination of quantitative and qualitative approaches for designing a sensitive psychological intervention program was beneficial for maximalizing the effectiveness of intervention programs. I demonstrated that this three-study approach was effective for the purpose of enhancing the flow experience in professional dancers. However, with hindsight, further interview regarding the dancers' experience of the two imagery programs after the intervention study (Study 3), would have been beneficial to fully understand the effect of the flow and relaxation imagery programs developed and delivered in this thesis.

### *Implications for Future Research*

Important implications for future research emerged from the three studies in this thesis in terms of flow experience, imagery use, and performance. In Study 1, I identified the relationship between the dimensions of flow and imagery. Most dimensions of flow were strongly correlated to imagery. Specifically, among the nine dimensions of flow, the autotelic experience was significantly involved in the



dancers' flow experience. Moreover, CS imagery (e.g., imagining specific dance skills) and MG-M imagery (e.g., imagining feeling self-confident, being focussed and in control, and staying positive) were most closely associated with flow experience in dancers. Thus, future research is needed to examine the development of the CS and MG-M imagery skills related to performance to facilitate flow experience in dancers. In Study 2, challenge-skills balance, feeling free of anxiety, concentration, positive attitude, and confidence were shown to be key facilitators that dancers reported enhanced the flow experience. In addition, relaxation imagery was found to be an effective intervention to enhance flow experience as well as flow imagery (Study 3). Bond and Stinson (2007) studied the dance experience in young people. Bond and Stinson found that flow experience occurs when there is challenge matched by skill to be confident, positive affect, sense of autonomy, and personal control. Overall, having high skill and a positive attitude to deal with anxiety are important to experience flow and improve performance. Thus, being calm and relaxed might promote a sense of control and confidence. Future research should explore what roles the reduction of anxiety and enhancing confidence might play in the experience of flow among professional dancers. Moreover, further systematic examination of what elements of relaxation imagery and flow imagery influence dancers' experience and performance might provide more precise information regarding the critical content of effective imagery interventions for the enhancement of flow.

The present thesis provides evidence about the application of imagery intervention targeted to enhance flow experiences. Even though the present thesis shows positive results in terms of enhancing flow experiences, additional research is needed to determine whether this kind of flow imagery intervention would be useful

in other populations, such as athletes and musicians. This would support the generalizability of this intervention approach.

In addition, future researchers should examine in depth the psychological variable of self-consciousness with professional dancers to understand dancers' psychological characteristics related to flow experience. An interesting finding in this thesis showed that loss of self-consciousness had one of the lowest correlations with imagery use among the nine dimensions of flow in Study 1, yet it was one of the most important characteristics reported subjectively by dancers in Study 2. Sugiyama and Inomata (2005) insisted that loss of self-consciousness is an experience that is associated with the highest levels of flow, so it is rarely experienced in participants and could be a moment of single peak experience. Sugiyama and Inomata (2005) proposed that basic or low levels of flow are related to unambiguous feedback, concentration on the task at hand, and autotelic experiences, whereas moderate levels of flow are related to action-awareness and sense of control, and high levels of flow are related to loss of self-consciousness and time transformation among the nine flow dimensions. Study 3 in the present thesis also supported the view that loss of self-consciousness seems to be difficult to achieve, however, it is crucial to enter a deep flow state. Thus, exploring self-consciousness in dancers might provide rich information to understand psychological aspects of the dance environment and also enhance global flow experience. The conceptualisation of Sugiyama and Inomata should be compared to the proposition made by Stavrou and Zervas (2004) that some dimensions of flow are effectively antecedents that promote the occurrence of flow, whereas others, such as loss of self-consciousness and time transformation, are concomitants that are experienced when flow has been attained. This proposition leads to the same prediction as Sugiyama and Inomata made that loss of self-

consciousness will be experienced only when a deep state of flow is established, but proposes a very different view regarding the role of loss of self-consciousness in the facilitation of flow.

Despite the use of a combination of approaches for designing intervention programs to provide information on what to include in an imagery program to stimulate flow, the present thesis could not provide insight into how dancers felt about experiencing an imagery training program. Thus, in future research it would be beneficial to include interviews after the intervention program, to examine the experience of participants in the program. Such interviews might be able to provide deeper understanding about the effectiveness of the intervention programs.

#### Implications for Practice

When dancers are in a flow state their movements become authentic. Dancers feel the full awareness of their movements and how they are linked to the music, so everything unites together. Many dancers and teachers are not aware of the value and meaningful experience of flow, which is a positive and optimal psychological state, even though most highly skilled dancers will experience flow from time to time during training and performance. Thus, dance teachers or directors should understand the phenomenological flow experience related to intrinsic motivation in dance and include in their educational programs in-depth knowledge about the flow experience and facilitators of flow in dance. It is especially important for dance teachers to impart in their students an understanding of how the characteristics and facilitators of flow related to dance might provide more opportunities for dancers to enter the flow state, which in turn will enhance their enjoyment and their intrinsic motivation for dancing.

The studies in this thesis showed that dancers who achieved higher scores on measures of the flow experience also imagined more frequently than lower scorers on

the flow measures. However, some dancers who have more anxiety and do not possess skills in the use of anxiety management techniques, such as relaxation imagery, experience flow rarely compared with dancers who are confident and have higher imagery use. This finding is consistent with Jackson's (1995) study in which she showed that confidence and mental attitude are important factors that influence the flow experience. Confidence is the belief a person has that they can meet the challenge successfully. Because confidence is based on belief, the perceived challenge-skill balance is more important than the real challenge and skill. Specifically, Study 1, the regression study, showed that imagining specific dance skills (CS imagery) and imagining feeling self-confident, being focussed and in control, and staying positive (MG-Mastery imagery) are significant predictors of flow experience. In addition, previous research showed dancers who use more MG-Mastery imagery reported higher levels of confidence (Fish, Hall, & Cumming, 2004; Monsma & Overby, 2004). Thus, practitioners should use imagery techniques to focus on enhancing confidence to facilitate flow experiences. Particularly, practitioners might benefit from using imagery associated with MG-Mastery to reduce performance anxiety and enhance confidence, which will facilitate occurrence of the flow experience. In addition, dancers need to be aware of the value of imagery use not just for enhancing the flow experience, because at the same time use of the appropriate kinds of imagery can also contribute to the improvement of movement skills. For example, dancers benefit from using CS imagery (imagining desired movement qualities and movement dynamics toward a specific goal) for improving performance as well as enhancing flow experience.

Professional dancers intensively and frequently experience flow during training and performance. In particular, the regression study (Study 1) showed that

dancers experienced flow more frequently during training than during performance, however, dancers experienced flow more intensely during performance than during training. Put another way, the professional dancers in this research found it easier to generate an experience of flow when they were practicing than when they were performing in front of an audience, but when flow did occur during performance it was a deeper, more powerful experience than flow during practice. In the qualitative study (Study 2), dancers reported that they used imagery to control arousal level for facilitating flow experience. For example, dancers explained that during training, they imagine a real performance to optimise arousal level. On the other hand, dancers stated that during a performance, they imagined themselves performing as if they were in a normal training situation to reduce anxiety. The intervention study (Study3) included those aspects of imagery and revealed positive results for enhancing flow experience. Thus, practitioners should encourage dancers to use imagery to focus on those aspects that will help them to attain optimal arousal level during training and performance.

In particular, this thesis demonstrated that the relaxation and flow imagery interventions were both valuable methods to enhance the qualitative experience of flow in dancers. Thus, teachers or directors should find benefits from using the kinds of imagery intervention programs developed in this research, in particular with dancers who appear to lack motivation and do not experience flow very often. In addition, when applying imagery interventions in practice, practitioners need to bear in mind that there are individual differences and also performance differences between dancers. In Study 3, the relaxation imagery program was intended to be a placebo control. Examination of pre- and post-intervention flow and performance data indicated that this imagery program was associated with increases in flow experience

and performance. This could be because imagery training can be anxiety provoking in the early stages and the relaxation exercise in the imagery program could have helped dancers manage their anxiety. At the same time, the potentially effective aspects of the flow imagery program aimed at increasing concentration on the task, clarity of goals, and unambiguous feedback might not have been fully activated because the dancers experiencing that intervention were also anxious and had to first adjust to their early experience of doing a systematic imagery program. Thus, imagery interventions that are tailored for individuals' prior experience of imagery, as well as other individual factors, should be valuable in practice.

As mentioned previously, I identified that there was low formal use of imagery training in dancers in Korea. Thus, dance teachers and directors need to introduce dancers to its potential, especially to enhance flow. Also, dancers showed a lack of awareness about imagery as a psychological skill that can be developed effectively by appropriate practice. Nordin and Cumming (2006a) reported that psychological skills, such as imagery, can be developed through practice and changed to more complex and frequent use in professional dancers. Thus, teachers should introduce psychological skills, including imagery use to practice. Moreover, practitioners should encourage dancers to use imagery systematically and regularly. Using imagery to enhance flow is related to the central implication that flow enhances intrinsic motivation, which has been found to be the key variable in determining effort, persistence, and maintenance for dancers. The benefits of more frequent and intense experiences of flow in practice and in performance could be reflected in increased creativity, as well as enhanced intrinsic motivation.

### Concluding Comments

The aims of the present thesis were to identify flow experience and imagery use in Korean professional dancers. Moreover, I examined the relationships between dimensions of flow and imagery use. Based on exploring the relationships between flow experience and imagery use, the imagery intervention program was designed to enhance flow experience for dancers, and it was tested in comparison to a relaxation imagery program. Through three studies, I obtained valuable information and insight into flow among Korean highly-skilled dancers, and enhanced knowledge about imagery and flow in dance and in general performance contexts. Increasing flow by the use of appropriate imagery can have benefits for enjoyment, motivation, creativity, and performance. This thesis also addressed important theoretical issues for the conceptualisation of flow, including whether some dimensions of flow are antecedents, whether others are concomitants, and what is the role of loss of self-consciousness in the generation and experience of flow. I hope that this research stimulates others to examine the role of imagery for enhancing flow and performance in the future and helps dancers and their teachers to understand that they can enhance the satisfaction and personal growth, as well as the performance, of dancers by working to increase the frequency and intensity of flow experiences.

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## APPENDICES

### ATTACHMENT A – Study 1

#### Information for Participants

#### Examination of flow experience and imagery use in [Korean] dancers

##### Statement of project:

The quality of experience or optimal psychological state was named "flow" by Csikszentmihalyi (1975), who studied the optimal experience in many areas of life, such as the arts, sport, and work. He defined flow as an optimal and positive psychological state attained through deep concentration on the task at hand and involving total absorption (Csikszentmihalyi, 1990). In one study, Csikszentmihalyi reported that creative people and award-winning novelists frequently experienced flow compared to other people, who rarely experience flow, with deep concentration and interestedness (Csikszentmihalyi, 1998). Dance, at the highest level, is a combination of highly disciplined movement skills and artistic interpretation. Putting these factors together in an optimal way is very challenging, because it requires practice for a long period of time, controlling a range of mental and physical conditions (Taylor & Taylor, 1995). When dancers achieve a high skill level, they often experience "flow", which can be described as a sense of ecstasy, that is, enjoyment and happiness, and also experience some feelings of entering a high concentration, hypnotic state or "automatic pilot", during practice and performance (Risner, 2000). Dancers often experience imagery associated with practice or performance. The ways in which dancers use imagery could be related to their experience of flow. This study will explore the principal antecedents of the flow state and imagery use in dance using questionnaires.

##### Purpose of the study

This study proposes to explore the flow state in professional dancers, and to examine the use of imagery to enhance flow.

##### Procedures

As a participant in this study, you will be requested to complete a series of three questionnaires that are the Flow State Scale, which is administered soon after a performance, Dispositional Flow Scale, and Sport Imagery Questionnaire which are administered away from performance during a break in training. The FSS-2 will take 10 minutes and the DFS-2 and SIQ will take 20 minutes. The questionnaires cover specific and general experience of flow and imagery use. There are no right or wrong answers to these measures; they just reflect your own experience.

##### Important Issues

Should you have any questions at any time prior to, during, or after participation in the research, please do not hesitate to ask any of the researchers at the time. In addition, contact details for the investigators are provided at the bottom of this page. Furthermore, contact details for the Victoria University Ethics Committee are also provide should there be a need to address any ethical concerns you have about the procedures or any other aspects of the research project.

Please be aware that the strictest confidentiality will be upheld; all information will only be used for the purpose of the investigation; it will be stored under lock and key, will only be accessed by the research investigators. It will be coded such that

individuals cannot be identified – your name will not be associated with any information provided by you, and any personally identifying information, such as your signature on the consent form, will be stored separately from the data. To ensure confidentiality, you will be instructed not to disclose names or other personally identifiable information about colleagues or teachers.

Please also note that if anything is upsetting you to the point that you do not wish to continue at any time during this study, and postpone it until a time convenient for you or you may withdraw completely from the study without continuing to complete the questionnaires at any time without jeopardising yourself in any way. If you feel distressed with study and wish to speak to somebody not involved in the research, you can also contact Professor Park Jun Hee, a sport psychologist.

<p>Any queries about your participation in this project may be directed to the researcher (Name: Professor Tony Morris ph. 03-9688-4075, Student Eun Hee Jeong ph. 03-9688-4066) or to a counsellor (Park Jun Hee ph. 062-651-5517). If you have any queries or complaints about the way you have been treated, you may contact the Secretary, University Human Research Ethics Committee, Victoria University of Technology, PO Box 14428 MC, Melbourne, 8001 (telephone no: 03-9688 4710).</p>
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## **ATTACHMENT B – Study 1**

### **Consent Form for Participants**

Examination of flow experience and imagery use in [Korean]  
dancers

#### **INFORMATION TO PARTICIPANTS:**

We would like to invite you to be a part of a study investigating experience of flow and imagery use in dancers. Flow was defined by Csikszentmihalyi as an optimal and positive psychological state attained through deep concentration on the task at hand and involving total absorption. Dance, at the highest level, is a combination of highly disciplined movement skills and artistic interpretation. Putting these factors together in an optimal way is very challenging, because it requires practice for a long period of time, controlling a range of mental and physical conditions (Taylor & Taylor, 1995). When dancers achieve a high skill level, they often experience “flow”, which can be described as a sense of ecstasy, that is, enjoyment and happiness, and also experience some feelings of entering a high concentration, hypnotic state or “automatic pilot”, during practice and performance (Risner, 2000). Dancers often experience imagery associated with practice or performance. The ways in which dancers use imagery could be related to their experience of flow. The study will explore the principal antecedents of the flow state and imagery use in dance using questionnaires.

#### **CERTIFICATION BY SUBJECT**

I, \_\_\_\_\_ of \_\_\_\_\_  
certify that I am at least 18 years old and that I am voluntarily giving my consent to participate in the study entitled: Experience of Flow and Imagery Use in Dancers, being conducted at Victoria University of Technology by Professor Tony Morris, Dr Tony Watt & doctoral student Eun Hee Jeong.

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the study, have been fully explained to me by Eun Hee Jeong and that I freely consent to participation involving the use of these procedures.

#### **Procedures:**

As a participant in this study, you will be requested to complete a series of three questionnaires that are the Flow State Scale, which is administered soon after a performance, Dispositional Flow Scale, and Sport Imagery Questionnaire which are administered away from a performance during a break in training. The FSS-2 will take 10 minutes and the DFS-2 and SIQ will take 20 minutes. The questionnaires cover specific and general experience of flow and imagery use. There are no right or wrong answers to these measures; they just reflect your own experience.

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal

will not jeopardise me in any way. If you wish, you can also speak with Professor Park Jun Hee, a sport psychologist, who is not involved in the study.  
I have been informed that the information I provide will be kept confidential.

Signed: .....}

Witness other than the experimenter:.....**Date:**  
.....}

<p>Any queries about your participation in this project may be directed to the researcher (Name: Professor Tony Morris ph. 03-9688-4075) or to a counsellor (Park Jun Hee ph. 062-651-5517). If you have any queries or complaints about the way you have been treated, you may contact the Secretary, University Human Research Ethics Committee, Victoria University of Technology, PO Box 14428 MCMC, Melbourne, 8001 (telephone no: 03-9688 4710).</p>
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**Attachment C – Study 1 & 3****Flow State Questionnaire (FSS-2)**

Please answer the following questions in relation to your experience in the event you have just completed. These questions relate to the thoughts and feelings you may have experienced during the event. There are no right or wrong answers. Think about how you felt during the event and answer the questions using the rating scale below. Circle the number that best matches your experience from the options to the right of each question.

Rating scale:

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	2	3	4	5

During the event \_\_\_\_\_

1. I was challenged, but I believed my skills would allow me to meet the challenge.

1	2	3	4	5
---	---	---	---	---

2. I made the correct movements without thinking about trying to do so.

1	2	3	4	5
---	---	---	---	---

3. I knew clearly what I wanted to do.

1	2	3	4	5
---	---	---	---	---

4. It was really clear to me how my performance was going.

1	2	3	4	5
---	---	---	---	---

5. My attention was focused entirely on what I was doing.

1	2	3	4	5
---	---	---	---	---

6. I had a sense of control over what I was doing.

1	2	3	4	5
---	---	---	---	---

7. I was not concerned with what others may have been thinking of me.

1	2	3	4	5
---	---	---	---	---

8. Time seemed to alter (either slowed down or speeded up)

1	2	3	4	5
---	---	---	---	---

9. I really enjoyed the experience.

1	2	3	4	5
---	---	---	---	---

10. My abilities matched the high challenge of the situation.

1	2	3	4	5
---	---	---	---	---

11. Things just seemed to be happening automatically.

1	2	3	4	5
---	---	---	---	---

12. I had a strong sense of what I wanted to do.

1	2	3	4	5
---	---	---	---	---

13. I was aware of how well I was performing.

1	2	3	4	5
---	---	---	---	---

14. It was no effort to keep my mind on what was happening.

1	2	3	4	5
---	---	---	---	---

15. I felt like I could control what I was doing.

1	2	3	4	5
---	---	---	---	---

16. I was not concerned with how others may have been evaluating me.

1	2	3	4	5
---	---	---	---	---

17. The way time passed seemed to be different from normal.

1	2	3	4	5
---	---	---	---	---

Rating scale:

Strongly Disagree 1	Disagree 2	Neither agree nor disagree 3	Agree 4	Strongly agree 5
18. I loved the feeling of that performance and want to capture it again.				
1	2	3	4	5
19. I felt I was competent enough to meet the high demands of the situation.				
1	2	3	4	5
20. I performed automatically, without thinking too much.				
1	2	3	4	5
21. I knew what I wanted to achieve.				
1	2	3	4	5
22. I had a good idea while I was performing about how well I was doing				
1	2	3	4	5
23. I had total concentration.				
1	2	3	4	5
24. I had a feeling of total control.				
1	2	3	4	5
25. I was not concerned with how I was presenting myself.				
1	2	3	4	5
26. It felt like time went by quickly.				
1	2	3	4	5
27. The experience left me feeling great.				
1	2	3	4	5
28. The challenge and my skills were at an equally high level.				
1	2	3	4	5
29. I did things spontaneously and automatically without having to think.				
1	2	3	4	5
30. My goals were clearly defined.				
1	2	3	4	5
31. I could tell by the way I was performing how well I was doing.				
1	2	3	4	5
32. I was completely focused on the task at hand.				
1	2	3	4	5
33. I felt in total control of my body.				
1	2	3	4	5
34. I was not worried about what others may have been thinking of me.				
1	2	3	4	5
35. I lost my normal awareness of time.				
1	2	3	4	5
36. I found the experience extremely rewarding.				
1	2	3	4	5

### Attachment D- Study 1 & 3

#### Dispositional Flow Questionnaire (DFS-2)

Please answer the following questions in relation to your experience in dance. These questions relate to the thoughts and feelings you may experience during participation in dance. You may experience these characteristics some of the time, all of the time, or none of the time. There are no right or wrong answers. Think about how often you experience each characteristic during your activity and circle the number that best matches your experience.

Rating scale:

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	2	3	4	5

When participating in \_\_\_\_\_ (Name of dance):

B1. I am challenged, but I believe my skills will allow me to meet the challenge.

1	2	3	4	5
---	---	---	---	---

B2. I make the correct movements without thinking about trying to do so.

1	2	3	4	5
---	---	---	---	---

B3. I know clearly what I want to do.

1	2	3	4	5
---	---	---	---	---

B4. It is really clear to me how my performance is going.

1	2	3	4	5
---	---	---	---	---

B5. My attention is focused entirely on what I am doing.

1	2	3	4	5
---	---	---	---	---

B6. I have a sense of control over what I am doing.

1	2	3	4	5
---	---	---	---	---

B7. I am not concerned with what others may be thinking of me.

1	2	3	4	5
---	---	---	---	---

B8. Time seems to alter (either slowing down or speeding up)

1	2	3	4	5
---	---	---	---	---

B9. I really enjoy the experience.

1	2	3	4	5
---	---	---	---	---

B10. My abilities match the high challenge of the situation.

1	2	3	4	5
---	---	---	---	---

B11. Things just seem to happen automatically.

1	2	3	4	5
---	---	---	---	---

B12. I have a strong sense of what I want to do.

1	2	3	4	5
---	---	---	---	---

B13. I am aware of how well I am performing.

1	2	3	4	5
---	---	---	---	---

B14. It is no effort to keep my mind on what is happening.

1	2	3	4	5
---	---	---	---	---

B15. I feel like I can control what I am doing.

1	2	3	4	5
---	---	---	---	---

B16. I am not concerned with how others may be evaluating me.

1	2	3	4	5
---	---	---	---	---

Rating scale:

Strongly Disagree 1	Disagree 2	Neither agree nor disagree 3	Agree 4	Strongly agree 5
B17. The way time passes seems to be different from normal.				
1	2	3	4	5
B18. I love the feeling of that performance and want to capture it again.				
1	2	3	4	5
B19. I feel I am competent enough to meet the high demands of the situation.				
1	2	3	4	5
B20. I perform automatically, without thinking too much.				
1	2	3	4	5
B21. I know what I want to achieve.				
1	2	3	4	5
B22. I have a good idea while I am performing about how well I am doing				
1	2	3	4	5
B23. I have total concentration.				
1	2	3	4	5
B24. I have a feeling of total control.				
1	2	3	4	5
B25. I am not concerned with how I am presenting myself.				
1	2	3	4	5
B26. It feels like time goes by quickly.				
1	2	3	4	5
B27. The experience leaves me feeling great.				
1	2	3	4	5
B28. The challenge and my skills are at an equally high level.				
1	2	3	4	5
B29. I do things spontaneously and automatically without having to think.				
1	2	3	4	5
B30. My goals are clearly defined.				
1	2	3	4	5
B31. I can tell by the way I am performing how well I am doing.				
1	2	3	4	5
B32. I am completely focused on the task at hand.				
1	2	3	4	5
B33. I feel in total control of my body.				
1	2	3	4	5
B34. I am not worried about what others may be thinking of me.				
1	2	3	4	5
B35. I lose my normal awareness of time.				
1	2	3	4	5
B36. The experience is extremely rewarding.				
1	2	3	4	5

## Attachment E – Study 1

## Sport Imagery Questionnaire (SIQ)

## PARTICIPANT INFORMATION

**Please fill in the blank or circle the appropriate answer:**

Name: \_\_\_\_\_

Age: \_\_\_\_\_ Gender: Male / Female Rank: \_\_\_\_\_

## Dance Imagery Questionnaire

**General Purpose:**

Imagery, also known as mental rehearsal and visualisation, is the concept of reproducing, in the mind, skills, behaviours and emotions. It is commonly used by elite athletes and sports performers to enhance performance.

Imagery serves two functions, motivational and functional. The motivational function of imagery can represent emotion-arousing situations as well as specific goals and goal-oriented behaviours. For example, imagining an appreciative audience after performing a difficult variation. The cognitive function entails the mental rehearsal of skills and strategies of performing, such as work on a particular step or aspect of technique and one's relationship to others on the stage ("placing").

**General Instructions:**

Any statement describing a function of imagery that you **rarely** use should be given a **low rating**. In contrast, any statement describing a function of imagery that you use **frequently** should be given a **high rating**. Your ratings will be made on a seven-point scale, where **one** is **rarely or never** engage in that kind of imagery and **seven** is **often** engage in that kind of imagery. Statements that fall within these two extremes should be rated accordingly along the rest of the scale. Read each statement below and fill in the blank with the appropriate number from the scale provided to indicate the degree to which the statement applies to you when you are practicing or performing. Don't be concerned about using the same number repeatedly as long as you feel that number represents your true feelings. Remember that there are no right or wrong answers, so please answer as accurately as possible.

<i>Rarely</i>						<i>Often</i>
1	2	3	4	5	6	7

A1. I rehearse new dance sequences in my head \_\_\_\_\_

A2. I imagine the excitement of performing. \_\_\_\_\_

A3. I imagine giving 100% effort during a performance. \_\_\_\_\_

A4. I can consistently control the image of a dance move. \_\_\_\_\_

A5. I imagine the emotions I feel while performing. \_\_\_\_\_

A6. I imagine my dance technique improving. \_\_\_\_\_

A7. I imagine alternative sequences in case I need them \_\_\_\_\_

A8. I imagine myself handling the nerves and excitement associated with performing. \_\_\_\_\_

<i>Rarely</i> 1	2	3	4	5	6	<i>Often</i> 7
A9. I imagine myself appearing self-confident in front of the public and the other dancers.						
A10. I imagine the ballet staff and other dancers congratulating me on a good performance.						
A11. I imagine each section of a dance. _____						
A12. I imagine myself being in control in difficult situations. _____						
A13. I can easily change the image of a dance move. _____						
A14. I imagine others applauding my performance. _____						
A15. When imaging a particular dance move, I consistently perform it perfectly in my mind. _____						
A16. I imagine the audience cheering at my curtain call _____						
A17. I imagine the stress and anxiety associated with performing. _____						
A18. I imagine myself continuing with the performance, even when it is going poorly. _____						
A19. When I imagine myself performing, I feel myself getting psyched up. _____						
A20. I can mentally make corrections to dance skills. _____						
A21. I imagine entire dance sequences just the way I want them to happen in a performance. _____						
A22. Before attempting a particular dance move, I imagine myself performing it perfectly. _____						
A23. I imagine myself being mentally tough. _____						
A24. When I imagine myself performing in front of an audience, I feel anxious. _____						
A25. I imagine the excitement associated with performing. _____						
A26. I imagine myself being congratulated by the choreographer/director following a successful performance _____						
A27. I imagine myself being focused during a challenging situation. _____						
A28. When learning a new dance skill, I imagine performing it perfectly. _____						
A29. To help me fine-tune a dance routine, I use imagery. _____						
A30. I imagine myself staying positive in tough situations (e.g., injury, problem with costume, etc.). _____						



## ATTACHMENT F – Study 2

### Experience of Flow and Imagery Use in Dancers Interview Guide

#### Interview: Professional Dancers

**1. Background Information:** To get the interview started, participants will be asked about their dance history and career. Follow up questions will be asked to show that the interviewer is listening and interested in the dancer to develop rapport.

#### 2. Main Interview Topics:

##### 1) Questions focusing on the experience of flow during practice and performance

**The researcher will first explain the definition of flow.**

The quality of experience or optimal psychological state was named "flow" by Csikszentmihalyi, who studied the optimal experience in many areas of life, such as the arts, sport, and work. He defined flow as an optimal and positive psychological state attained through deep concentration on the task at hand and involving total absorption (Csikszentmihalyi, 1990). Flow can be described as a sense of ecstasy, which is, enjoyment and happiness, and also experience some feelings of entering a high concentration, hypnotic state or "automatic pilot", during practice and performance.

##### *i) Open-ended responses to questions*

###### *Sample questions:*

- Please describe your experience of flow (or enjoyment and exhilaration) during dance practice and performance?
- Tell me about the major factors influencing your experience.

##### *ii) Probing questions*

Based on free recall, ask interviewee to expand on their discussion topics.

- Can you tell me more about.....?
- Please explain that some more.

##### *iii) Follow-up questions*

Based on responses to initial questions, ask for any further details on relevant discussion topics.

##### 2) Questions focusing on imagery use

**The research will explain the definition of imagery.**

Imagery is an experience that mimics real experience we can be aware of 'seeing' an image, feeling movements as an image, or experiencing an image of smell, tastes, or sounds without actually experiencing the real thing. Sometimes people find that it helps to close their eyes. It differs from dreams in that we are awake and conscious when we form an image.

##### *i) Open-ended responses to questions*

###### *Sample questions:*

- Do you use imagery techniques for dance anytime?
- What kinds of imagery do you use?
- How do you portray these techniques?
- Why do you use imagery?
- When do you use imagery?
- What effects do you want to achieve when you use these techniques?

***ii) Probing questions***

- Can you tell me more about .....?

***iii) Follow-up questions (depending on responses)***

**3) Questions focussing on ways of stimulating the exhilaration**

***i) Open-ended responses to questions***

***Sample questions:***

- What do you think the best “exhilaration” strategies are for you?
- How effective is that approach for you?
- What is the effectiveness of the other “exhilaration methods”?

***ii) Probing questions***

- Can you tell me more about .....?

***iii) Follow-up questions (depending on responses)***

## **ATTACHMENT G - Study 2**



### **Participant information form**

#### **Examination of flow experience and imagery use in Korean dancers**

##### **Statement of project**

The quality of experience or optimal psychological state was named "flow" by Csikszentmihalyi, who studied the optimal experience in many areas of life, such as the arts, sport, and work. He defined flow as an optimal and positive psychological state attained through deep concentration on the task at hand and involving total absorption (Csikszentmihalyi, 1990). In one study, Csikszentmihalyi reported that creative people and award-winning novelists frequently experienced flow compared to other people, who rarely experience flow, with deep concentration and interestedness (Csikszentmihalyi, 1998).

Dance, at the highest level, is a combination of highly disciplined movement skills and artistic interpretation. Putting these factors together in an optimal way is very challenging, because it requires practice for a long period of time with controlled mental and physical condition (Taylor & Taylor, 1995). When dancers achieve a high skill level, they often experience "flow", which can be described as a sense of ecstasy, that is, enjoyment and happiness, and also experience some feelings of entering a high concentration, hypnotic state or "automatic pilot", during practice and performance (Risner, 2000). Dancers often experience imagery associated with practice or performance. The ways in which dancers use imagery could be related to their experience of flow. This study will explore the principal antecedents of the flow state and imagery use in dance using interviews and questionnaires.

##### **Purpose of the study**

This study proposes to explore the flow state in professional dancers, to explore what personal and situational factors relate to flow, and to examine the use of imagery to enhance flow.

##### **Procedures**

As a participant in this study, you will be requested to take part in an interview, lasting 30-40 minutes, which gives you the opportunity to talk about your experience of flow and imagery use in dance. Also, you will be asked your perceptions about mental strategies you use. Questions will cover topics such as your history of involvement in dance, and experience of flow and imagery use. The interview will be audio taped. You will also be requested to complete a series of three questionnaires that are the Flow State Scale, which is administered soon after a performance, Dispositional Flow Scale, and Sport Imagery Questionnaire which are administered away from performance during a break in training. The FSS-2 will take 10 minutes and the DFS-2 and SIQ will take 20 minutes. The questionnaires cover specific and general experience of flow and imagery use. There are no right or wrong answers to these measures; they just reflect your own experience. The questionnaires will be completed on a different day from the interview.

### **Important Issues**

Should you have any questions at any time prior to, during, or after participation in the research, please do not hesitate to ask any of the researchers at the time. In addition, contact details for the investigators are provided at the bottom of this page. Please be aware that the strictest confidentiality will be upheld; all information will only be used for the purpose of the investigation; it will be stored under lock and key and will only be accessed by the investigators. It will be coded such that individuals cannot be identified – your name will not be associated with any information provided by you, and any personally identifying information, such as your signature on the consent form, will be stored separately from the data. To ensure confidentiality, you will be instructed not to disclose names or other personally identifiable information about colleagues or teachers. In addition, we will remove any personal names or other personally identifiable information about colleagues or teachers that is recorded on tape.

Please also note that if anything is upsetting you to the point that you do not wish to continue at any time during the interview, you may end the interview and postpone it until a time convenient for you. If necessary, you may withdraw completely from the study without continuing the interview at any time without jeopardising yourself in any way. If you feel distressed with this study and wish to speak to somebody not involved in the research, you can also contact Professor Park Jun Hee, a sport psychologist.

**Many thanks for taking the time to read the information forms. We really appreciate it.**

Any queries about your participation in this project may be directed to the researcher (Name: Professor Tony Morris ph. 03-9688-4075, Student Eun Hee Jeong ph. 03 96884066, Email; [eunhee.Jeong@research.vu.edu.au](mailto:eunhee.Jeong@research.vu.edu.au) ) or to a counsellor (Park Jun Hee ph. 062-651-5517).

If you have any queries or complaints about the way you have been treated, you may contact the Secretary, University Human Research Ethics Committee, Victoria University of Technology, PO Box 14428 MC, Melbourne, 8001 (telephone no: 03-9688 4710, email [erika.moreno@vu.edu.au](mailto:erika.moreno@vu.edu.au)).



## **ATTACHMENT H – Study 2**

### **Consent Form for Participants**

#### **Examination of flow experience and imagery use in Korean dancers**

#### **INFORMATION TO PARTICIPANTS:**

We would like to invite you to be a part of a study investigating experience of flow and imagery use in dancers. Flow was defined by Csikszentmihalyi as an optimal and positive psychological state attained through deep concentration on the task at hand and involving total absorption. Dance, at the highest level, is a combination of highly disciplined movement skills and artistic interpretation. Putting these factors together in an optimal way is very challenging, because it requires practice for a long period of time, controlling a range of mental and physical conditions (Taylor & Taylor, 1995). When dancers achieve a high skill level, they often experience “flow”, which can be described as a sense of ecstasy, that is, enjoyment and happiness, and also experience some feelings of entering a high concentration, hypnotic state or “automatic pilot”, during practice and performance (Risner, 2000). Dancers often experience imagery associated with practice or performance. The ways in which dancers use imagery could be related to their experience of flow. This study will explore the principal antecedents of the flow state and imagery use in dance using interviews and questionnaires.

#### **CERTIFICATION BY SUBJECT**

I, \_\_\_\_\_ of \_\_\_\_\_  
certify that I am at least 18 years old and that I am voluntarily giving my consent to participate in the study entitled: Experience of Flow and Imagery Use in Dancers, being conducted at Victoria University of Technology by Professor Tony Morris, Dr Tony Watt & doctoral student Eun Hee Jeong.

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the study, have been fully explained to me by Eun Hee Jeong and that I freely consent to participation involving the use of these procedures.

#### **Procedures:**

As a participant in this study, you will be requested to take part in an interview, lasting 30-40 minutes, which gives you the opportunity to talk about your experience of flow and imagery use in dance. Also, you will be asked your perceptions about mental strategies you use. Questions will cover topics such as your history of involvement in dance, and experience of flow and imagery use. The interview will be audio taped. You will also be requested to complete a series of three questionnaires that are the Flow State Scale, which is administered soon after a performance, Dispositional Flow Scale, and Sport Imagery Questionnaire which are administered away from performance during a break in training. The FSS-2 will take 10 minutes

and the DFS-2 and SIQ will take 20 minutes. The questionnaires cover specific and general experience of flow and imagery use. There are no right or wrong answers to these measures; they just reflect your own experience. The questionnaires will be completed on a different day from the interview.

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me in any way. If you wish, you can also speak with Professor Park Jun Hee, a sport psychologist, who is not involved in the study.

I have been informed that the information I provide will be kept confidential.

Signed: .....}

Witness other than the experimenter:.....} **Date:**  
.....}

Any queries about your participation in this project may be directed to the researcher (Name: Professor Tony Morris ph. 03-9688-4075, Student Eun Hee Jeong ph. 03-9688-4066) or to a counsellor (Park Jun Hee ph. 062-651-5517). If you have any queries or complaints about the way you have been treated, you may contact the Secretary, University Human Research Ethics Committee, Victoria University of Technology, PO Box 14428 MC, Melbourne, 8001 (telephone no: 03-9688 4710).

## **ATTACHMENT I – Study 3**

### **Information for Participants (Relaxation Imagery)**

#### **Enhancement of Positive Experience in Korean Dancers**

##### **Statement of project**

Dance should be enjoyable and rewarding, but the demands of training and performance can lead dancers to lose some of the enjoyment and satisfaction of dancing. Positive experiences, such as feeling relaxed, in control, concentrating fully on performing, and even becoming absorbed or immersed in performance are experiences that encourage dancers to keep training and performing. These experiences have been called “Flow” by Csikszentmihalyi (1975). Dancers who have more experience of this optimal and positive psychological state tend to seek that state to repeat the positive experience. Thus, the aim of this study is to examine the effects of programs designed to increase the feelings of relaxation and flow on your thoughts, feelings and dance training.

##### **Purpose of the study**

The aim of this study is to examine whether imagery-training programs have benefits for relaxation and flow in dancers.

##### **Procedures**

As a participant in this study, you will be requested to complete four questionnaires on two occasions, once at the start of the study and, again, at the end. These are the Flow State Scale (5 minutes) and the State Anxiety Scale (5 minutes), which are administered soon after training, and the Dispositional Flow Scale (5 minutes) and the Trait Anxiety Scale (5 minutes), which are administered away from training. You will be asked to rate your performance compared to your personal best and worst levels of performance.

Then you will be requested to practice the Imagery Training (IT) three times a week for 8 weeks. Each session will take about 10 minute. The IT is involves imagining being in a pleasant relaxing place and feeling comfortable and relaxed. During the period of IT practice, you will keep a diary logging your practice of the IT technique. Then you will be asked to complete the four questionnaires again and to rate your performance.

After that you will be asked to do regular practice of the IT for another 8 weeks on your own and to log your practice for that period.

Finally, you will be asked to complete the four questionnaires and to rate your performance again.

## Important Issues

Should you have any questions at any time prior to, during, or after participation in the research, please do not hesitate to ask any of the researchers at the time (contact details for the investigators are provided at the bottom of this page).

Please be aware that the strictest confidentiality will be upheld; all information will only be used for the purpose of the investigation; it will be stored under lock and key and will only be accessed by the investigators. It will be coded such that individuals cannot be identified – your name will not be associated with any information provided by you, and any personally identifying information, such as your signature on the consent form, will be stored separately from the data.

Please also note that if anything is upsetting you to the point that you do not wish to continue at any time during the intervention program, you may end the intervention program and postpone it until a time convenient for you.

If necessary, you may withdraw completely from the study at any time, without jeopardising yourself in any way.

If you feel distressed with any aspect of this study and wish to speak to somebody not involved in the research, you can also contact Professor Park Jun Hee, a sport psychologist, whose details are listed at the end of this statement.

## Thanks you for your kind cooperation

Any queries about your participation in this project may be directed to the researcher (Name: Professor Tony Morris ph. 03-9919- 5353, Email; [tony.morris@vu.edu.au](mailto:tony.morris@vu.edu.au), Student Eun Hee Jeong ph. 03- 9919 4066, Email; [eunhee.Jeong@research.vu.edu.au](mailto:eunhee.Jeong@research.vu.edu.au)) or to a counsellor (Park Jun Hee ph. 062-651-5517). If you have any queries or complaints about the way you have been treated, you may contact the Secretary, University Human Research Ethics Committee, Victoria University of Technology, PO Box 14428 MC, Melbourne, 8001 (Ms Erika Moreno. telephone no: 03-9919 5354, email: [erika.Moreno@vu.edu.au](mailto:erika.Moreno@vu.edu.au) ).



**ATTACHMENT J – Study 3****Consent Form for Participants (Relaxation Imagery)****Enhancement of Positive Experience in Korean Dancers****INFORMATION TO PARTICIPANTS:**

We would like to invite you to be a part of a study investigating the experience of flow using imagery training in dancers. Dance should be enjoyable and rewarding, but the demands of training and performance can lead dancers to lose some of the enjoyment and satisfaction of dancing. Positive experiences, such as feeling relaxed, in control, concentrating fully on performing, and even becoming absorbed or immersed in performance, are experiences that encourage dancers to keep training and performing. These experiences have been called “Flow” by Csikszentmihalyi (1975). This optimal and positive psychological state is a valuable experience that dancers seek to repeat.

The aim of this study is to examine the effects of programs designed to increase the feelings of relaxation and flow on your thoughts, feelings and dance training.

**CERTIFICATION BY SUBJECT**

I, \_\_\_\_\_ of \_\_\_\_\_  
 certify that I am at least 18 years old and that I am voluntarily giving my consent to participate in the study entitled: Enhancement of Positive Experience in Korean Dancers, being conducted at Victoria University of Technology by Professor Tony Morris, Dr Tony Watt & doctoral student Eun Hee Jeong.

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the study, have been fully explained to me by Eun Hee Jeong and that I freely consent to participation involving the use of these procedures.

**Procedures:**

As a participant in this study, you will be requested to complete a series of four questionnaires that are the Flow State Scale and State Anxiety Scale, which are administered soon after training, and the Dispositional Flow Scale and Trait Anxiety Scale, which are administered away from performance. The questionnaires cover specific and general experience of flow and anxiety. There are no right or wrong answers to these measures; they just reflect your own experience. You will be asked to rate your performance compared to your personal best and worst performance. Then, you will be requested to practice the Imagery Training three times a week for 8 weeks. During the period of IT practice, you will keep a diary logging practice of the IT technique. After that you will be asked to do regular practice for another 8 weeks and

to log your practice for that period. Then you will be asked to complete the four questionnaires and to rate your performance one more time.

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me in any way. If you wish, you can also speak with Professor Park Jun Hee, a sport psychologist, who is not involved in the study.  
I have been informed that the information I provide will be kept confidential.

Signed: .....

Witness other than the experimenter:.....

Date: .....

**Thanks you for your kind cooperation**

Any queries about your participation in this project may be directed to the researcher (Name: Professor Tony Morris ph. 03-9919- 5353, Email; [tony.morris@vu.edu.au](mailto:tony.morris@vu.edu.au), Student Eun Hee Jeong ph. 03- 9919 4066, Email; [eunhee.Jeong@research.vu.edu.au](mailto:eunhee.Jeong@research.vu.edu.au)) or to a counsellor (Park Jun Hee ph. 062-651-5517). If you have any queries or complaints about the way you have been treated, you may contact the Secretary, University Human Research Ethics Committee, Victoria University of Technology, PO Box 14428 MC, Melbourne, 8001 (Ms Erika Moreno. telephone no: 03-9919 5354, email: [erika.Moreno@vu.edu.au](mailto:erika.Moreno@vu.edu.au) ).



## **Information for Participants (Flow Imagery)**

### **Enhancement of Positive Experience in Korean Dancers**

#### **Statement of project:**

Dance should be enjoyable and rewarding, but the demands of training and performance can lead dancers to lose some of the enjoyment and satisfaction of dancing. Positive experiences, such as feeling relaxed, in control, concentrating fully on performing, and even becoming absorbed or immersed in performance are experiences that encourage dancers to keep training and performing. These experiences have been called “Flow” by Csikszentmihalyi (1975). Dancers who have more experience of this optimal and positive psychological state tend to seek that state to repeat the positive experience. Thus, the aim of this study is to examine the effects of programs designed to increase the feelings of flow on your thoughts, feelings and dance training.

#### **Purpose of the study**

The aim of this study is to examine whether imagery-training programs have benefits for relaxation and flow in dancers.

#### **Procedures**

As a participant in this study, you will be requested to complete four questionnaires on two occasions, once at the start of the study and, again, at the end. These are the Flow State Scale (5 minutes) and the State Anxiety Scale (5 minutes), which are administered soon after training, and the Dispositional Flow Scale (5 minutes) and the Trait Anxiety Scale (5 minutes), which are administered away from training. You will be asked to rate your performance compared to your personal best and worst levels of performance.

Then you will be requested to practice the Imagery Training (IT) three times a week for 8 weeks. Each session will take about 10 minute. The IT is involves imagining being in a pleasant flow experience related to coherence of concentration, confidence, and clear goals. During the period of IT practice, you will keep a diary logging your practice of the IT technique.

Then you will be asked to complete the four questionnaires again and to rate your performance.

After that you will be asked to do regular practice of the IT for another 8 weeks on your own and to log your practice for that period.

Finally, you will be asked to complete the four questionnaires and to rate your performance again.

## Important Issues

Should you have any questions at any time prior to, during, or after participation in the research, please do not hesitate to ask any of the researchers at the time (contact details for the investigators are provided at the bottom of this page).

Please be aware that the strictest confidentiality will be upheld; all information will only be used for the purpose of the investigation; it will be stored under lock and key and will only be accessed by the investigators. It will be coded such that individuals cannot be identified – your name will not be associated with any information provided by you, and any personally identifying information, such as your signature on the consent form, will be stored separately from the data.

Please also note that if anything is upsetting you to the point that you do not wish to continue at any time during the intervention program, you may end the intervention program and postpone it until a time convenient for you.

If necessary, you may withdraw completely from the study at any time, without jeopardising yourself in any way.

If you feel distressed with any aspect of this study and wish to speak to somebody not involved in the research, you can also contact Professor Park Jun Hee, a sport psychologist, whose details are listed at the end of this statement.

## Thanks you for your kind cooperation

Any queries about your participation in this project may be directed to the researcher (Name: Professor Tony Morris ph. 03-9919- 5353, Email; [tony.morris@vu.edu.au](mailto:tony.morris@vu.edu.au), Student Eun Hee Jeong ph. 03- 9919 4066, Email; [eunhee.Jeong@research.vu.edu.au](mailto:eunhee.Jeong@research.vu.edu.au)) or to a counsellor (Park Jun Hee ph. 062-651-5517). If you have any queries or complaints about the way you have been treated, you may contact the Secretary, University Human Research Ethics Committee, Victoria University of Technology, PO Box 14428 MC, Melbourne, 8001 (Ms Erika Moreno. telephone no: 03-9919 5354, email: [erika.Moreno@vu.edu.au](mailto:erika.Moreno@vu.edu.au) ).

## **ATTACHMENT L – Study 3**

### **Consent Form for Participants (Flow Imagery)**

## **Enhancement of Positive Experience in Korean Dancers**

### **INFORMATION TO PARTICIPANTS:**

We would like to invite you to be a part of a study investigating the experience of flow using imagery training in dancers. Dance should be enjoyable and rewarding, but the demands of training and performance can lead dancers to lose some of the enjoyment and satisfaction of dancing. Positive experiences, such as feeling relaxed, in control, concentrating fully on performing, and even becoming absorbed or immersed in performance, are experiences that encourage dancers to keep training and performing. These experiences have been called “Flow” by Csikszentmihalyi (1975). This optimal and positive psychological state is a valuable experience that dancers seek to repeat.

The aim of this study is to examine the effects of programs designed to increase the feelings of flow on your thoughts, feelings and dance training.

### **CERTIFICATION BY SUBJECT**

I, \_\_\_\_\_ of \_\_\_\_\_  
certify that I am at least 18 years old and that I am voluntarily giving my consent to participate in the study entitled: Enhancement of Positive Experience in Korean Dancers, being conducted at Victoria University of Technology by Professor Tony Morris, Dr Tony Watt & doctoral student Eun Hee Jeong.

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the study, have been fully explained to me by Eun Hee Jeong and that I freely consent to participation involving the use of these procedures.

### **Procedures:**

As a participant in this study, you will be requested to complete a series of four questionnaires that are the Flow State Scale and State Anxiety Scale, which are administered soon after training, and the Dispositional Flow Scale and Trait Anxiety Scale, which are administered away from performance. The questionnaires cover specific and general experience of flow and anxiety. There are no right or wrong answers to these measures; they just reflect your own experience. You will be asked to rate your performance compared to your personal best and worst performance. Then, you will be requested to practice the Imagery Training three times a week for 8 weeks. During the period of IT practice, you will keep a diary logging practice of the IT technique. After that you will be asked to do regular practice for another 8 weeks and

to log your practice for that period. Then you will be asked to complete the four questionnaires and to rate your performance one more time.

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me in any way. If you wish, you can also speak with Professor Park Jun Hee, a sport psychologist, who is not involved in the study.

I have been informed that the information I provide will be kept confidential.

Signed: .....

Witness other than the experimenter:.....

Date: .....

**Thanks you for your kind cooperation**

Any queries about your participation in this project may be directed to the researcher (Name: Professor Tony Morris ph. 03-9919- 5353, Email; [tony.morris@vu.edu.au](mailto:tony.morris@vu.edu.au), Student Eun Hee Jeong ph. 03- 9919 4066, Email; [eunhee.Jeong@research.vu.edu.au](mailto:eunhee.Jeong@research.vu.edu.au)) or to a counsellor (Park Jun Hee ph. 062-651-5517). If you have any queries or complaints about the way you have been treated, you may contact the Secretary, University Human Research Ethics Committee, Victoria University of Technology, PO Box 14428 MC, Melbourne, 8001 (Ms Erika Moreno. telephone no: 03-9919 5354, email: [erika.Moreno@vu.edu.au](mailto:erika.Moreno@vu.edu.au) ).

## **Attachment M – Study 3**

### **Flow Imagery Script**

#### **Imagery Script to Enhance Flow Experience in Korean Dancers**

##### **General Instructions**

This imagery training script is an enhancement tool for flow. Flow is a positive and peak experience, related to coherence of concentration, calmness, and confidence.

You can use this script prior to, during, or after performance and training, but it is not necessary to memorise the script. You will need to use the script at least 3 times a week for 16 weeks. It takes approximately 10 minutes for a session. Choose a specific dance performance/ dance that you are currently involved in. Try to imagine as much detail as you can and make the imagery as vivid and alive as possible. Also, use all your senses in your imagery. For example, see the environment and your movements, feel the way you move in your muscles, hear the music that accompanies the dance, smell and taste the atmosphere of the dance hall, and sense the texture of the floor under your feet.

During the imagery session, the important points are that:

- 1) No self judgement and comparisons impinge on your movement imagery and,
- 2) Listen and feel from your true heart.

Please note your experience of the imagery and your regular training sessions in the log every time you do an imagery session.

If you follow the imagery training regularly, it should intrinsically motivate you to continue dancing, to persist and increase your effort, and give you pleasure in training and performance. Moreover, imagery will lead you to some new creative spaces in your dance.

### Flow Imagery Script

Please take several slow and deep breaths. Focus on your deep inhalation and then the slow full exhalation of every breath. Now feel the fresh air around you and notice how quiet it is. First, relax your shoulders, then your arms, head, face, and legs. Now your body is totally relaxed. Your mind is open and you feel confident and calm and you are at one with nature like the air or trees.

Focus on the dance you selected earlier. Imagine you are in a waiting room and outside there are audiences, who will love your dance and are waiting to cheer you on. A special person who you love (sits in audience) comes to see the performance. Imagine you have done a lot of practice, so that every single movement has become automatic, so it is a total routine of performance. Now you do the warming up for the performance. You feel that your body is getting more and more flexible and light. Your concentration is focused on your performance and you know clearly what you want to do. Your mind is full of excitement, looking forward to the performance. In the room around you, you see the other dancers preparing for their performances. There are some smells like cosmetics or sweet perfume filling the room. Your perfume is so nice and outstanding. You are wearing a beautiful costume. You feel that the cloth is very light and smooth. You look closely at yourself in the mirror and you look fantastic and everything, including your makeup, hairstyle, and clothes, is very comfortable and suitable to the performance. You are in optimal condition and ready to perform. Your performance is not easy, but you know clearly what is required and you can perform well, because you have had lots of practice and you are very skilful. You are confident in your performance.

You are ready to dance, waiting beside the main stage, where it is a little bit dark. You see the hard flat stage. You are so calm and confident. You start to rehearse the performance on your head and you imagine the best your performance as vividly as possible. Your imagination goes further to the specific moves with music in your performance. You can really feel the mood conveyed by the music in combination with your single movement and total routines of dance. Also your respiration is united with each of your movements. Your feelings involve you more deeply in the performance. Perhaps it is love, happiness, and excitement or sadness, depression, or anger. You really feel the atmosphere surrounding the performance. Now your mood is totally the same as the performance that you are currently involved with.



Now, the music is starting and you enter the stage. The lighting glimmers on the stage and changes you into the role of an actor in performance. You are now the performer you want to be. You concentrate on each of your body movements and you control your head, hands, feet, hips, spine, chest, shoulders, and legs very well. You move slowly and you are aware of the space and air. Imagine that you feel your energy flow to the ends of your fingers, feet, and head, when you move your body. You can feel that your movements are controlled and effortless through your energy. Your movements explore all your senses. Imagine that you feel your energy goes from your feet to endless floor, and also from your head to endless ceiling when you move each step on stage. Imagine you are jumping with accuracy, and rebound across the floor and your movement explores the energy and beauty of the dance. Your breathing is deep and rich. There is just your movements and music. You explore your inner true heart that is really you. You feel the energy comes from deep within you and connects you with the universe. Even when you stop moving, your energy is continually flowing beyond your body to the cosmos. You feel that each movement is connected perfectly to the next one and flows smoothly into it. Your dance is harmonized totally with the music, with dynamic, calm, and peaceful movements. It feels tingling and great. The routines of movements just flow automatically without any effort. Even your finest movements are free and controlled. You concentrate on each sound of every instrument and listen to the music through your heart and body. You move through the music. When the music sounds sad your movements also have sad expressions, and when the music is peaceful your movement is peaceful too. The music and your movements are in tune and it feels like music comes from within your body. Imagine your body movements are perfectly united with the music and everything flows smoothly while you are dancing. Positive thoughts fill your mind. You are totally involved in the dance and you have great confidence in your performance. You are totally immersed in the performance. Now you are free in movement, music, and feeling. Your concentration is deep. As you become deeply immersed in the dance, the audience, stage, and time disappear and you become one with the character. You are dancing with your true heart and expressing emotions well. Your movements flow following the way that your body wants to. Imagine, the audience following your feeling and sharing your thoughts and emotions. This is a beautiful communication with the audience. You feel energised and fresh.

The dance finishes, and the audience applauds loudly and with great approval. There are several curtain calls, because the audience was so impressed by your performance. You return to the waiting area just elated and gratified by your performance. You feel the time passes differently from usual during performance. You love the experience of being in the dance, so that you really want to experience this feeling again. You feel really confident that you will perform this dance very well next time.

Now you must leave that pleasant world of outstanding performance for a while. Bend your arms a couple of times. Flex your legs a few times and become aware of the real environment and your body. You feel refreshed and alert. You can now get on with the other tasks for the day.

**Attachment N- Study 3****Relaxation Imagery Script****Relaxation Imagery Script to Enhance Positive Experience in  
Korean Dancers****General Instructions**

This imagery training script is an enhancement tool for relaxation. You can use this script prior to, during, or after performance and training, but it is not necessary to memorise the script. You will need to use the script at least 3 times a week for 16 weeks. It takes approximately 10 minutes for a session. During each session, you will imagine relaxing in a beautiful, quiet, peaceful park. Choose a specific park to imagine relaxing in during the imagery session. It should be a park where you would feel peaceful, comfortable and relaxed. Your relaxing place should be the same for every session. Try to imagine as much detail as you can and make the imagery as vivid and alive as possible. Also, use all your senses in your imagery. For example, see, feel, and hear the environment and smell and taste the atmosphere and sense the texture of the land under your feet.

During the imagery session, the important points are that:

- 3) No self judgement and comparisons impinge on your imagery and,
- 4) Listen and feel from your true heart.

Please note your experience of the imagery and your regular training sessions in the log every time you do an imagery session.

If you follow the imagery training regularly, it should motivate you to relax during training and performance.

### Relaxation Imagery Script

Please be aware of your breath ... inhale once, hold the breath for a little while and then exhale (pause for 10 seconds) and let the air flow out naturally. Your breath is calm and deep. Now take several slow and deep breaths. Focus on your deep inhalation and then the slow full exhalation of every breath (pause for 10 seconds). Now feel the fresh air around you and notice how quiet it is. You begin to feel more and more relaxed. Imagine the beautiful, peaceful park you selected earlier. Look around the park. There are wide green grass plots. There you are sitting next to big old trees with gnarled dark-brown trunks and lush green leaves. You see a red, blue and green butterfly flying around the colourful flowers and you feel the warm and fresh air on your skin. You hear the sound of rippling water where the ducks and swans play on a small peaceful lake and you hear the soothing song of birds. You smell the sweet perfumes from the variety of fresh flowers and trees, and your feet feel the soft, welcoming textures of grass with each pace you take. You see a lovely grassy spot and you lie down in it. You feel your body sink into the soft grass and your muscles grow more relaxed. You look up the blue sky. Pure white clouds float slowly across it, propelled by a light breeze, which brushes gently across your face. You feel that your body is like the clouds and you float freely and slowly. The sun shines down on your body. It is warm and soothing. Not too hot, just perfect for relaxing in the grass. You feel so calm and peaceful.

Focus on your body and feel every part of it become more and more relaxed.

First, notice how the top of your head becomes warm and heavy and relaxed (pause for 10 seconds).

Now notice the relaxation moving over your face.... and down your neck (pause for 10 seconds) and through your shoulders.... then your arms... and fingers (pause for 10 seconds). The feeling of relaxation spreads down to your hips, legs and feet. The muscles in your body become limp and heavy and you are feeling more and more relaxed. You continue to become more and more deeply relaxed. You feel yourself sinking way down into the soft grass and your body is heavier and heavier. You are completely relaxed from the top of your head to the tips of your toes. Now your mind is open and you feel confident and calm. Your body is totally relaxed and you are at one with nature like the air or trees.

You feel really relaxed and peaceful. Continue to enjoy this wonderful feeling of complete relaxation for a little while.

[Silence for one minute]

Now listen to me again. Now you must leave that pleasant world of peace, calm and relaxation for a while. Bend your arms a couple of times. Flex your legs a few times and become aware of the real environment and your body. You feel refreshed and alert. You can now get on with the other tasks for the day.

## Attachment O – Study 3

State Anxiety (Self- Evaluation Questionnaire;  
STAI Form Y-1)

Name\_\_\_\_\_ Date\_\_\_\_\_

Age\_\_\_\_\_

Sex: M\_\_\_\_\_ F\_\_\_\_\_

Directions: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you feel **right** now, that is, at this moment.

There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

Very much so	Moderately so	Somewhat	Not at all
1	2	3	4

1. I feel calm	1	2	3	4
2. I feel secure	1	2	3	4
3. I am tense	1	2	3	4
4. I feel strained	1	2	3	4
5. I feel at ease	1	2	3	4
6. I feel upset	1	2	3	4
7. I am presently worrying over possible misfortunes	1	2	3	4
8. I feel satisfied	1	2	3	4
9. I feel frightened	1	2	3	4
10. I feel comfortable	1	2	3	4
11. I feel self-confident	1	2	3	4
12. I feel nervous	1	2	3	4
13. I am jittery	1	2	3	4
14. I feel indecisive	1	2	3	4
15. I am relaxed	1	2	3	4
16. I feel content	1	2	3	4
17. I am worried	1	2	3	4
18. I feel confused	1	2	3	4
19. I feel steady	1	2	3	4
20. I feel pleasant	1	2	3	4

### Attachment P – Study 3

#### Study Trait Anxiety (Self- Evaluation Questionnaire; STAI Form Y-2)

Name \_\_\_\_\_ Date \_\_\_\_\_

Directions: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you **generally** feel. There are no right or wrong answers. Do not spend too much time on any statement but give the answer which seems to describe how you generally feel.

Almost never	Sometimes	Often	Almost always
1	2	3	4

21. I feel pleasant	1	2	3	4
22. I feel nervous and restless	1	2	3	4
23. I feel satisfied with myself	1	2	3	4
24. I wish I could be as happy as others seem to be	1	2	3	4
25. I feel like a failure	1	2	3	4
26. I feel rested	1	2	3	4
27. I am “ calm, cool, and collected”	1	2	3	4
28. I feel that difficulties are piling up so that I cannot overcome them	1	2	3	4
29. I worry too much over something that really doesn’t matter	1	2	3	4
30. I am happy	1	2	3	4
31. I have disturbing thoughts	1	2	3	4
32. I lack self-confidence	1	2	3	4
33. I feel secure	1	2	3	4
34. I make decisions easily	1	2	3	4
35. I feel inadequate	1	2	3	4
36. I am content	1	2	3	4
37. Some unimportant thought runs through my mind and bothers me	1	2	3	4
38. I take disappointments so keenly that I can’t put them out of my mind	1	2	3	4
39. I am a steady person	1	2	3	4
40. I get in a state of tension or turmoil as I think over my recent concerns and interests	1	2	3	4

## Attachment Q – Study 3

Dancer Code \_\_\_\_\_

**Log about Imagery Experience**

## Instructions

Dear dancer,

This log is simply for you to record your experience of working on the imagery script.

Please fill out the log after completing **each** imagery session. There are no right and wrong answers, so feel free to report your experience honestly.

## 1) Use of imagery

When (Date)	
Where	
About how long	(Minutes)

## 2) Please place a cross (X) on the line to reflect how clear and vivid the imagery was

No Clear Image	-----	Very Vivid Image
-------------------	-------	------------------------

Comments on your experience of imagery

.....

.....

.....



3) Please place a cross (X) on the line to reflect how you feel after completing the imagery session about your dance?

Very  
Negative |-----| Very  
Positive

Comments about your feeling about your dance performance

.....

.....

.....

.....

**Attachment R – Study 3****Self -Evaluation on Dance Training Chart (Dance Rating by Dancers)**

Code \_\_\_\_\_

Date \_\_\_\_\_

Fill in the sheet after being dance training today.

1. Please place a cross (X) on the line to reflect how you think about your dance performance today compared to your personal best performance and personal worst performance.

<b>Your Worst</b>		<div style="border-top: 1px solid black; height: 10px; position: relative; margin: 0 auto;"> <div style="position: absolute; left: 0; top: -5px; width: 100%; height: 1px; border-bottom: 1px dashed black;"></div> <div style="position: absolute; left: 0; top: 5px; width: 100%; height: 1px; border-bottom: 1px solid black;"></div> </div>		<b>Your Best</b>
		<b>Your Typical</b>		

Additional Comments

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### Attachment S – Study 3

#### Evaluation Chart on Dance Training (Dance Rating by Teachers)

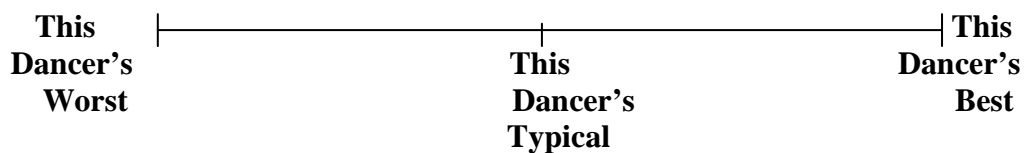
Teacher Code \_\_\_\_\_

Students Code \_\_\_\_\_

Date \_\_\_\_\_

Fill in the sheet after being dance training today.

1. Please place a cross (X) on the line to reflect how what do you think about the student's dance performance today compared to **that dancer's** personal best performance.



Additional Comments

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