DEVELOPMENT OF A RECREATIONAL EXERCISE MOTIVATION QUESTIONNAIRE

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ABSTRACT

This thesis was comprised of three studies that developed a comprehensive measure of motivation in recreational exercise, as well as contributing to the theoretical understanding of the topic. Goal orientation theory was selected as a basis for commencing the research and therefore the thesis starts with a thorough review of the goal orientation literature.

The first study was qualitative and involved interviewing seven female and four male exercise participants aged between 21 and 50 years. Participants were asked to nominate their achievement goals for recreational exercise. Results revealed a range of motives that were classified into 13 categories. These motives and motivational categories were well beyond the scope of achievement goal theory, but they could be encompassed within self-determination theory. Following a review of self-determination theory and participation motivation research, questionnaire items were written to cover the 13 constructs that emerged in Study 1. The items were sent to 16 sport psychologists from around Australia for review. Following adjustments that were made on the basis of their suggestions, 73 items were included in the Recreational Exercise Motivation Measure (REMM). Instructions asked respondents to "think of the motives you have for exercise activities you do". Responses were on a 5-point Likert scale from 1(strongly disagree) to 5(strongly agree).

In Study 2 the REMM was administered to 750 recreational exercise participants who attended a range of gymnasiums around Melbourne. There were 439 females, 238 males and 73 participants who did not disclose their gender, aged between 14 and 84 years ($\underline{M}$=38.5, $\underline{SD}$=13.2). Eight first order factors emerged from a principal axes common

factor analysis that largely confirmed the structure predicted prior to the study, providing construct validity for the REMM. Concurrent validity was provided by the location of items that had been drawn from previous exercise motivation questionnaires within factors that reflected their interpretation in the structure of the original measure. The eight factors were competition, appearance, others' expectations, affiliation, physical condition, psychological condition, mastery, and enjoyment. The reduction from 13 constructs to 8 factors some of the original 13 constructs grouped together into more general factors. The others' expectations factor was the only factor that was not anticipated prior to the study. Internal consistency measures for the eight factors ranged from .77 to .92 and test-retest reliability over a two-week period was between .58 and .84, for a subgroup of 82 participants, who completed the REMM on two occasions.

The applicability of the REMM to recreational sports participants was assessed in Study 3. This study also examined construct validity of the REMM by comparing motives for the recreational exercise and sport groups, based on predictions from previous research. That the REMM successfully explained the motives of a group of 245 recreational exercise participants, (98 females 119 males, and 28 people who did not give their gender, aged between 17 and 74 years of age ($\underline{M}$=30.7, $\underline{SD}$=7.7), was established by the very small number of other motives suggested by participants. Study 3 provided confirmation of the factor structure and internal consistency reliability results obtained in Study 2.

In both Study 2 and Study 3, gender and age differences in item and factor scores were investigated. Females had higher scores than males in affiliation and appearance motives and males had higher scores than females in competition motives. Except for

physical and psychological condition, all motives showed a tendency to decrease in importance as age increased.

It is suggested that the reliability and validity of the REMM needs to be examined further in a range of sport and exercise contexts, in different cultures and across, age, gender, and socio-cultural categories. Nonetheless, the process of questionnaire construction used to develop the REMM has successfully produced a measure of recreational exercise that is more comprehensive than existing measures. The development of the REMM has also contributed to the understanding of motivation in recreational exercise. The findings support the proposition that self-determination theory provides a meaningful framework for the structure of motivation in recreational exercise.

CHAPTER 1: INTRODUCTION

A major interest for people working in sport and fitness areas is determining what factors motivate people to initiate and maintain physical activity. By knowing these motives we could encourage attitudes in children which help them to become active early in life and ensure they stay active al their lives. We could encourage adults to take up physical activity and decrease dropout rates among new exercisers. Individuals of all ability levels can participate in recreational sport and exercise activities. A range of recreational activities is available, which offers the opportunity to participate both in groups and independently. Times and locations of activity can usually be found to suit the individual. For these reasons, motivation to participate in recreational sports and exercise is a critical area to investigate, when one is interested in increasing the level of physical activity of the general community.

It is generally recognised that physical exercise is good for most people (Wankel, 1988). It is recognised by national and international health bodies as a major factor for preventing and reducing morbidity and mortality from a range of conditions including heart disease, stroke, cancer, diabetes, osteoarthritis, osteoporosis, stress, and anxiety (Department of Human Services, Victoria, 1997 1999; United States Department of Health and Human Services, 1998). Research indicates however, that although there has been a marked increase in the number of people engaging in regular physical exercise, there is still a large proportion of the population who do not exercise regularly. A 1999 report concluded that 57% of Victorians were sufficiently active to achieve health benefits, defined as being an energy expenditure of 800 kilocalories per week and that this represented an improvement on surveys done in the 1980's (Department of Human Services). A notion of what 800 kilocalories of exercise entails can be gained from the basic guideline of the "minimum recommendation is for

moderate amounts of physical activity, such as 30 minutes of moderate intensity activity on all or most days of the week, or shorter, less frequent sessions of vigorous activity" (Department of Human Services, 1999, p.35). Using the recommendation of 150 minutes of walking, moderate, or vigorous activity spread over 5 sessions, Bauman (1987) found that 49% of Australians and 52% of Victorians were sufficiently physically active. In the United States, only 37% of adults engage in sustained physical activity for at least 30 minutes, 5 times a week (United States Department of Health and Human Services, 1998). Clearly, there is a need to increase participation in physical activity among adults.

Promotion of Physical Activity

Within Victoria, there have been several attempts to improve community participation in physical activity. The "Life Be In It" campaigns which began in Victoria in 1975, later spreading to the rest of Australia, were well recalled by Australians. Ninety two per cent of Australians felt that the advertisements were valuable (Department of Youth Sport and Recreation, 1979). Of these, 40% claimed to have thought about being more active as a result of the Life Be In It campaign. Thirty six per cent indicated that they exercised more often since the advertisements, although this was not entirely a direct result of the campaign (Department of Youth Sport and Recreation, 1979). The Life Be In It programs promoted exercise for health. Unfortunately, while this may be a sufficient reason for taking up exercise, evidence indicates that it is not sufficient reason to continue exercise, especially when it is perceived as aversive (Wankel, 1988). The Active for Life campaign began in Victoria in 1995, with an aim to increase the awareness of the benefits of physical activity, particularly for health (Department of Human Services, Victoria, 1997, 1999). In 1997, the Active Australia campaign was launched with the intention of getting all

Australians involved in some form of physical activity (Department of Human Services, Victoria, 1999). Implementation of various initiatives to promote physical activity in the state of Victoria have just begun. One way to increase the effectiveness of advertising campaigns such as this is to promote the various goals of achievement other than health of those who regularly exercise. This type of campaign could have several aspects aimed at different sections of the community. To do this properly we need a better understanding of the various exercise goals people have. In a review of the features of qualitative fitness research, Rutherford (1990) highlighted the need for more studies investigating motivation in exercise participants. He wrote that qualitative exercise research needed to move away from looking at participation patterns and socialisation dynamics towards understanding what motivates people to exercise and examining the effectiveness of motivational interventions.

The aim of this thesis is to examine motivation in recreational exercise participants and, in doing so, to develop a questionnaire to measure this motivation. The starting point was the examination of achievement goal orientations. The study of achievement goals is an area of motivation research that investigates what makes individuals feel successful in an activity. Goal orientation research in sport is very wide spread at present and the use of achievement goal measures to assess motivation in exercise is just beginning (e.g. Hayashi, 1996; Li, Harmer, & Acock, 1996). It is important, therefore to examine the applicability of the theory to this setting. Studying the achievement goal orientations of participants may provide knowledge that could help increase exercise participation rates. Ashford, Biddle, and Goudas (1993) argued that determining why people participate should assist in the planning and promotion of exercise. The research began by asking recreational participants to nominate their achievement goals. The aim of the research was to develop a

questionnaire to measure goal orientations of recreational exercise participants. Such a questionnaire would be available for future investigations with various groups of exercise participants, helping researchers establish a better understanding of the goals of exercise initiators, maintainers, and 'drop outs'.

CHAPTER 2: LITERATURE REVIEW

Overview

This review begins with a general introduction to achievement goal theory and how it relates to other motivation theories. This is followed by the definition of recreational exercise as it is to be used in the current study. The overview of research into achievement goals that follows starts by looking at the theoretical background to the theory. Achievement goal research began in education, and so the review of research also begins there. Research on achievement goal orientations within the educational domain addresses the emergence of two main achievement goals and the notion of a differentiated concept of ability. Beliefs found to be related to high scores on each achievement goal are listed and research on motivational climate briefly overviewed. Research on the characteristics of emphasis of each achievement goal and related beliefs within the areas of sport, physical education, and recreational exercise are then summarised, followed by the work on motivational climate in this area.

A brief discussion follows about which achievement goal is thought to best promote initiation and maintenance of recreational exercise. Findings of research on the relationship between the two main achievement goals and a summary of factors correlating with each goal is then presented. Most of the published research on achievement goals has related to two achievement goals, and for this reason, most of this review concentrates on these two goals. Research describing other achievement goals is then considered. Limitations of the current achievement goal literature are discussed. Finally, previous questionnaires developed to measure achievement goals and the methods used are reviewed.

Introduction to Achievement Goal Theory and Research

Achievement goal theory is a social-cognitive theory of motivation (Urdan & Maehr, 1995). Such theories put emphasis on understanding how thoughts and cognitions govern achievement behaviour (Roberts, 1993). Other social-cognitive theories of motivation include attribution theory (Weiner, 1979, 1984), the self-efficacy concept developed by Bandura (Bandura, 1986) and expectancy value theory (e.g. Eccles, Adler, Futterman, Goff, Kaczala, Meece & Midgley, 1983; Eccles, Midgley & Adler, 1884; Urdan & Maehr, 1995). McClelland (1961) stated that the distinguishing characteristic of social-cognitive theories is the notion that motives can be rational. He compared the rational nature of achievement behaviours with more mechanistic behaviours (those behaviours in which the participant is passive), such as psychological drives. McClelland pointed out that even a fundamental need such as eating can not be considered alone as a measure of hunger drive. Achievement behaviours are controlled by many more forces than fundamental needs like eating, such as the desires for social approval, power, and knowledge. Roberts (1992) wrote that we must describe, document, and conceptually represent the cognitive functioning of exercise and sports participants before we can begin to consider any intervention strategies to alter behaviours. It was anticipated that, in the process of developing a questionnaire, this dissertation would take a step towards Roberts' suggestion, by increasing sport and exercise psychologists' understanding of the achievement goals of recreational exercisers, as well as providing a useful tool to measure these goals in future studies. Studying the relationship of these goals to persistence and other external factors can then help us to develop interventions to increase exercise involvement.

Most areas of research in sport psychology have relied on children and competitive sports persons for their data (Battista, 1990). Motivation research in

general, but also achievement goal research, follows this trend (Ames, 1992a; Ames & Archer, 1988; Ashford, Biddle, & Goudas, 1993; Duda, 1989a, 1989c; Maehr & Kleiber, 1980; Roberts, 1982, 1984a, 1984b; Treasure & Roberts, 1994). Roberts and Treasure (1995) wrote that recent research has focused on "an achievement goal analysis of children's achievement cognition and behaviour patterns in competitive sport" (p. 64). This thesis aims to extend achievement goal theories to adult recreational exercisers. There are many changes in exercise behaviour that occur as people get older. The proportion of the population who are physically active decreases up to the age of 50, after which it stabilises (Myers, Weigel, & Holliday, 1989). The type of activities people are involved in also changes with age. There is a greater decrease in the numbers participating in sport activities than in conditioning type activities (Myers et al., 1989). Maehr and Kleiber (1980) argued that achievement motivation in adulthood may be directed at different goals and that researchers need to address the question of how achievement goals may change beyond childhood and young adulthood. It is clearly important that we study adult physical activity separately and not just assume adults have the same motivational characteristics as children.

Recreational Exercise

Caspersen, Powell, and Christenson (1985) defined physical activity as any bodily movement produced by skeletal muscles that causes an increase in resting energy expenditure. They characterise exercise as a form of leisure physical activity in which one objective is the improvement of fitness, physical performance, or health, and in which the participant is advised to conform to a recommended mode, intensity, frequency, and duration of activity. Smith and Theberge (1987) gave a much simpler

definition of recreational activity as being "those kinds of relatively unorganised play that require physical exertion" (p. 3).

Caspersen et al. (1985) argued that sport is a form of physical activity that involves a game or competition. Roberts (1993) proposed that the essential feature that distinguishes sport from recreational exercise is its organisational structure, which he stated directs activity through externally established rules. Another way to distinguish recreational activity from sport is that recreational activity does not necessarily require a formal hierarchical arrangement of roles and positions, a formal history with recognised records and traditions, preparation for participation in the activity or formal competition, and is less constrained by rules. Recreational activity is also more individually oriented, spontaneous, and subject to the starting and stopping wishes of the individual (Smith & Theberge, 1987).

Drawing from the above definitions, in this thesis a recreational exercise participant is be defined as a person who chooses to take part in a physical activity in their leisure/non-work time, where the activity does not involve any form of sport or other formal competition, or any monetary payment. In a review of definitions of leisure time, Smith and Theberge (1987) concluded that the crucial aspect of each definition is that the activity is chosen by the individual because he or she wants to do it. This concept of choice is important in the present study. Activities which are classified as recreational exercise are those such as swimming, running, walking, bicycling, golfing, weight training, roller blading, and aerobics, when these activities are done informally, non-competitively, or individually.

Theoretical Background

Achievement goal orientation research originated in education with the independent and collaborative works of Ames, Dweck, Maehr, and Nicholls (e.g., Ames, 1984a, 1984b; Ames & Archer, 1988; Dweck, 1986; Dweck & Elliott, 1983; Dweck & Leggett, 1988, Elliott & Dweck, 1988; Maehr, 1984, 1989; Nicholls, 1984a, 1984b). These theorists maintained that to understand any achievement behaviour, the function and meaning of that behaviour must be identified. Success or failure for the individual can only be understood in terms of the goal of the behaviour for that person; is, what the person is trying to achieve by the behaviour. They viewed that the primary purpose of behaviour in any achievement context to be to demonstrate competence (Ames, 1984a; Duda, 1996, Dweck, 1986; Maehr, 1984; Nicholls, 1984a, Roberts, 1993). Looked at another way, an individual's achievement goals impact on how they cognitively and affectively respond to and act in an achievement setting. Although achievement goal studies originated within educational research, the theory is relevant to many achievement domains (Roberts, 1984a, 1992). Ames (1992a) stated that, "achievement goal theory provides us with a conceptual framework for studying individuals in their environment, whether that environment involves the home, classroom, gymnasium, or playing field" (p.164).

Sport competition, like education, is a classic achievement context (Roberts, 1982, 1984a). That is, it is a context in which an individual's or team's success or failure can be evaluated in terms of a goal or standard of excellence, and that goal or standard is known by others who can evaluate the outcome. Both education and sport involve outside evaluation and externally imposed tasks and targets. Hence, it is likely that similar theoretical structures are salient in both settings. Students are given work they are expected to complete in a certain time, in particular formats, and to certain

levels of competence. Sport players must adhere to the rules of the game and perform to a level of competence suitable to their grade of competition. Education and sport both involve external observers who assess the player's or student's level of competence by comparing it with that of others. It would be expected that many of the theories and findings that relate to education also apply in the sport context. Following and building on the educational research has been a large body of work on motivational goal orientations in competitive sport (e.g., Duda, 1988a, 1989b; Gill, 1986; Lochbaum & Roberts, 1993; Seifritz, Duda, & Chi, 1992) and to a much lesser extent, recreational sport and exercise (e.g. Duda & Tappe, 1988, 1989).

In much of the theory and research, two achievement goals have been investigated. Although the terms used to refer to these goal orientations have varied, the concepts described by these terms have much in common with respect to their theoretical frameworks and role in achievement motivation. Indeed, Ames and Archer (1988) wrote that the conceptual relations among the concepts were convergent. Alternative nomenclature assigned to the achievement goal of task orientation include task involvement (Duda; 1993; Nicholls, 1984a, 1984b), learning goals (Dweck, 1986, Dweck & Elliot, 1983), and mastery goal orientation (Ames, 1984a, 1992a, 1992b, Roberts & Treasure, 1995). Ego orientation has been referred to as ego involvement (Duda; 1993; Nicholls, 1984a, 1984b; Roberts & Treasure, 1995), performance goal orientation (Ames, 1992b, Dweck, 1986, Dweck & Elliot, 1983) ability-focused goal (Ames, 1984), outcome orientation (Weiss & Chaumerton, 1992), and competitive goals (Roberts, 1992). The recent literature on achievement goals has generally used the terms task goals and ego goals to refer to the different achievement goals (e.g. Biddle, 1999; Hall, Kerr, & Matthews, 1998; Papaioannou & Kouli, 1999; Roberts, Treasure, & Kavussanu, 1996).

The two goals will be referred to in this thesis as task orientation or task involvement, and ego orientation or ego involvement. Goal orientation will refer to an individual's general disposition or trait. Personality trait refers to the hypothesised, underlying disposition of the person that can, in principle be used as an explanation of the regularities of their behaviour. Goal orientation thus relates to the underlying motivational characteristics of the person (Reber, 1985). Goal involvement will refer to their goal emphasis in a particular circumstance, that is, their motivational state at that time. A personality profile involves all kinds of factors (for example ambient stimuli, role cues) that may affect response at a particular moment in time and state refers to their current condition (Hall & Lindsey, 1978). Therefore, goal involvement is the person's momentary condition. A test score at any time will give an indication of the state/goal involvement of the persons, whereas the trait/ goal orientation can be studied by looking at correlations between test scores over time or in different situations (Hall & Lindsey, 1978). Measures of 'goal orientation' aim to assess goal orientation but in reality are likely to fluctuate slightly over time or situation and thus actually measure goal involvement. The test-retest reliability of an instrument is an indication of the amount of fluctuation with time. A test with high test-retest reliability will be a more accurate measure of the underlying trait. In discussing research findings in this thesis, the term goal involvement will be mostly be used despite the use by many researchers of the term goal orientation to describe what they are measuring.

Throughout the review of research a person is often referred to as task or ego involved, as is the style in most of the literature. This means they are high in ego or task involvement and the characteristics described are typical of a person high in that particular involvement. In fact the two orientations are orthogonal and a person may

score high or low in both in any circumstance. This is discussed in the section: "Relationship between task and ego involvement".

Research on Goals in Education

This section will discuss the theoretical concepts of goal orientation described by theorists and cite the research findings within the educational domain that support these ideas. This research is important as it provided the basis for later work within sport and exercise environments.

Ego involvement. A person who is highly ego-involved is thought to be primarily concerned with demonstration of ability, where ability is compared to others. Ego-involved individuals have been found to attempt to do better than others, or to perform as well as others with less effort (Ames, 1992b; Ames & Archer, 1988; Duda, 1992, 1993; Roberts, 1984, 1992a, Thorkildsen, 1988). Success or failure is thus determined for ego-involved individuals by evaluating their own performance in comparison to others. Central to ego involvement is the perception of an ability-outcome linkage, and it is this linkage that guides behaviour (Ames & Archer, 1988). An ability-outcome linkage means that a person perceives his or her ability is high or low, depending on the outcome of the achievement situation. If they beat their opponent, they are likely to perceive themselves as having high ability and experience feelings of success, unless their opponent is seen to have very low ability. In contrast, when a person is defeated, he or she is likely to attribute low ability to themselves and experience feelings of failure. This contrasts with task-oriented individuals, who do not judge their ability or success in comparison to others. Ego-oriented individuals experience negative affect following perceived failure and positive affect following perceived success. Jagacinski & Nicholls (1984, 1987) reported findings confirming these ability-outcome linkages.

Task involvement. Task involvement is hypothesised to refer to the achievement state in which perceptions of demonstrated ability are self-referenced. Success has been found to be associated with when the individual achieves mastery of a skill, learns something new, develops new skills, or improves on their own past performance (Ames, 1992a, 1992b; Duda, 1992, 1993; Roberts, 1984a, 1992). Emphasis is placed on the process of learning. A belief that effort and outcome covary has found to be central to a task involvement goal (Ames & Archer, 1988). If success is attributable to effort, then the task-involved person experiences pride and satisfaction. If the cause for failure is attributable to lack of effort, then they experience low pride and dissatisfaction. As a result, when task involved goals are related to adopted pride and satisfaction they are associated with effort, and guilt is associated with inadequate effort (Jagacinski & Nicholls, 1984; 1987). Failure to achieve a target is thought to lead to increased effort or persistence when one is task-involved. However, easy achievement of targets, is unlikely to lead to satisfaction, but will probably lead to boredom with that task, resulting in a redefining of goals to those that require a greater degree of effort, or selection of a different, more challenging task (Ames & Archer; Jagacinski & Nicholls, 1984; 1987).

Goal involvement and a differentiated concept of ability. There are hypothesised to be many similarities between task involvement and the actions of children who do not yet have a differentiated concept of ability (Nicholls, 1984a). Nicholls (1978) described four levels of reasoning involved in the development of the concepts of effort and ability between the ages of five and thirteen years. At level one, effort and outcome are not distinguished. Children centre on effort, and people who try harder are thought to be smarter. At level two, effort is thought of as the prime cause of outcomes. At level three, the concept of how differing ability can explain equal results

despite unequal effort is partially established. By level four, the concept of ability as a capacity that may increase the effectiveness of effort is clearly understood. Ability and effort are fully differentiated and outcomes are seen as jointly caused by ability and effort. Nicholls (1984a) argued that the differentiated conception is not needed, as we do not need to compare our outcomes with those of others. When one faces tasks which involve performance comparison (competition), a more differentiated conception is adopted. Nicholls (1978) found that at age five children operate predominantely at level one. It is not until ages 12 and 13 that level four reasoning is dominant and a fully differentiated concept of ability exists. Thus under the age of 11 or 12 children are likely to engage predominantly in undifferentiated thoughts and are likely to be task-oriented. Nicholls (1984a) expanded this theory further, relating differentiation of ability to goal orientation and task choice.

Goal involvement and related beliefs and behaviours within the educational setting. Research shows that students who score high on task involvement express the beliefs that success in school depends on interest, effort, co-operation, understanding, and personal improvement (Nicholls & Thorkildsen, 1989, Thorkildsen, 1988). Task involvement is shown to relate to choosing challenging tasks (Ames & Archer, 1988; Elliott & Dweck, 1988), exerting effort (Elliott & Dweck, 1988), having intrinsic interest in an activity (Butler, 1987; 1988; Meece, Blumenfeld, & Hoyle, 1988), displaying active cognitive engagement (Meece, Blumenfeld, & Hoyle, 1988), and showing persistence, especially following failure (Elliott & Dweck, 1988). These patterns of behaviour facilitate initiation and maintenance of achievement behaviour, contribute to long term involvement in learning, and have been referred to as *adaptive* behaviour patterns or effective learning strategies (Ames, 1992; Roberts, 1992; Roberts & Treasure, 1995).

Research supports the proposition that students who score high on ego involvement are those who are inclined to believe that to do well in school a person must have higher ability than others, as well as out-perform them (Nicholls & Thorkildsen, 1989, Thorkildsen, 1988). Ego-involved individuals, who perceive their ability as high, have been found to exhibit (adaptive) behaviours very similar to individuals who are task-involved, because for an ego-involved individual, subjective success is determined by making comparisons between one's demonstrated ability, and the perceived ability of others (Nicholls, 1984a, 1984b). The perception of one's own ability, as well as that of others, may be based on objective and/or subjective measures of success. Objective measures may include information such as who won a race or jumped the highest, whereas subjective measures are factors such as who plays the "best" cricket, which is likely to compose of unspecified combinations of a number of cricket related talents as perceived by an individual. Ego involvement contrasts with task involvement where success is determined by achieving personal goals and trying hard. Maintaining a high sense of competence is much less secure when one is ego-involved than when one is task-involved. Research has shown that when an ego-involved individual has doubts about his or her ability, he or she displays what are referred to as maladaptive behaviour patterns, aimed at avoidance of failure and/or exhibition of low ability. Such maladaptive behaviours include avoiding challenging tasks by choosing tasks that are too hard or too easy (Dweck, 1986; Dweck & Leggett, 1988; Elliot & Dweck, 1988), decreasing effort, devaluing the task, loss of interest, lack of persistence following failure (Frankel & Snyder, 1978; Treasure & Roberts, 1998), and a decreasing level of cognitive engagement (Meece, Blumenfield, & Hoyle, 1988). In contrast, research has found that task-involved individuals are likely to increase effort or redefine goals following perceived failure (Butler, 1988;

Duda, 1992; Dweck 1986; Elliott & Dweck, 1988; Frankel & Snyder, 1978; Meece, Blumenfeld, & Hoyle, 1988; Nolen, 1988). In education research, ego involvement has been associated with work avoidance (Thorkildsen, 1988) and superficial and short-term learning strategies, such as memorising and rehearsing (Meece et al., 1988; Nolen, 1988).

Adaptive and maladative behaviours are discussed within the achievement orientation literature, and were referred to briefly in the previous two paragraphs. Ames (1992a) defined adaptive motivational patterns as those that involve "a range of cognitive, metacognitive, and affective processes that facilitate the initiation and maintenance of achievement activity and that contribute to long-term involvement in learning and a personal investment in learning activities" (p. 161). Dweck (1986) defined adaptive motivational patterns similarly, saying they are "those that promote the establishment, maintenance and attainment of personally challenging and personally valued achievement patterns." (p. 1040)

Motivational climate. In any achievement context an individual's goal perspective is hypothesised to be dependent upon motivational climate and (Ames, 1992a; Duda, 1992; Maehr, 1984; Nicholls, 1984a; 1984b). The motivational climate is defined as the salience of specific cues for the individual (Ames, 1992a). These cues may be the way teammates and classmates receive different types of instruction, assignments, and feedback. The motivational climate may be perceived differently by each individual within that environment. The goal orientation an individual perceives as being dominant in the environment may influence his or her emphasis on a particular goal involvement in that environment. Situational factors affecting goal involvement are the demands of the environment on that person and the salience to the individual of specific goals in the environment (Ames & Archer, 1988). Because people differ in

how they are treated and how they interpret the same events, it is extremely unlikely that situational factors will be perceived the same way by any two individuals in a given environment. The environment that the individual experiences is referred to as the perceived motivational climate (Ames & Archer, 1988, Treasure & Roberts, 1995). Perceived motivational climate is the degree to which task or ego involvement is perceived as the salient theme within the context.

Dispositional goal orientations are thought to be principally a result of childhood socialisation experiences (Nicholls, Patashnick, & Nolen, 1985). In any achievement context, however, an individual's goals are influenced by motivational climate and personal dispositions, both of which will be unique to that individual in that situation.

Following from the theoretical divisions of personal dispositions and perceived motivational climate, research in the area of goal involvement is divided into two categories. First, there is research that aims to investigate individual differences in goal orientation (predispositions) outlined in the previous sections. The second type of study investigates the effect of the environmental context on the individual's goal involvement (situational). Researchers have demonstrated that different classroom environments can be characterised according to the goal theme they project (Ames & Archer, 1988; Jagacinski & Nicholls, 1984, 1987). Meece (1991) reported that the instructional techniques of the teacher influenced the predominant goal orientation in the classroom. In high mastery-oriented classes, meaningful learning was promoted by an emphasis on understanding, application, and personal relevance. In low mastery-oriented classes, learning activities promoted the transmission and recall of facts.

Considerable evidence exists to suggest these differing environments and the demands they impose can and do affect the salience of specific goals of individuals, resulting in different patterns of cognition, affect, and performance (e.g., Ames, 1984b;

Ames, Ames, & Felker, 1977; Covington, 1984; Covington & Omelich, 1984). Butler (1988) argued that information about performance that focuses attention on task demands promotes task involvement and high subsequent interest, whereas information that focuses attention on the self will promote ego involvement and low subsequent interest. She supported this hypothesis when she demonstrated that feedback in the form of individual comments yielded higher task-involved perceptions of outcome causation and lower ego-involved perceptions than either grades or praise (Butler, 1988). In an experiment involving 136 academically advanced high school students, Ames and Archer (1988) also examined the relationship between students' perceptions of classroom goal orientation and motivational processes. The study reported a strong relationship between perceived mastery-oriented environments and students' use of effective learning strategies, preference for challenging tasks, enjoyment of class, positive attitudes towards class, and the belief in the interdependence of effort and success. Together, this research suggests that the motivation of individuals is influenced by the structure of the environment. It also suggests that, although no two individuals are likely to perceive identical motivational climates, the general motivational orientation of the environment will probably be perceived to be similar by the majority of the individuals within that environment.

Research on Goals in Physical Education and Sport

Much of the research on achievement goals in education is replicated in the physical education or sport setting. Although reported as sport, many of the studies in this field are conducted in physical education classes within a school setting. It could be argued that the school sport setting has elements of both educational and sport settings. The following review of studies includes both studies of sport within the school or university environment, and studies of sport in the wider community.

Research has demonstrated that athletes, like students, define success in terms of task-involved and ego-involved goals. Consequently that task and ego involvement are viewed as the two relevant goal perspectives operating in sport contexts (e.g. Duda 1986, 1988, 1989b, 1996; Gill, 1986; Lochbaum & Roberts, 1993; Roberts, Treasure, & Kavassanu, 1996; Seifriz, Duda, and Chi, 1992, Vealey & Campbell, 1988).

Task involvement. Also corresponding with educational research, studies report that task involvement in sport correlates with the belief that success comes through hard work and persistence. In sport, task involvement correlates negatively with factors such as the ability to cheat or deceive the coach and positively with "adaptive" achievement strategies such as effort and persistence (Hom, Duda, & Miller, 1993, Cheung, Lauer, & Patashnick, 1989; Seifriz, Duda, & Chi, 1992, Williams & Gill, 1995). Increased effort and persistence is evident for task-involved sport persons, and is especially salient during practice sessions for recreational sport participants (Duda, 1988; Lochbaum & Roberts, 1993). In addition, task involvement in sport is found to be positively correlated with the perception of sport as fun, enjoyable, and interesting, and negatively correlated with boredom (Duda, Chi, Newton, Walling, & Catley, 1995). Newton and Duda (1993) found task involvement to be positively related to the belief that effort leads to success and the view that external factors/deception do not. Task involvement correlates with high effort in lessons, positive attitudes toward exercise, belief that success comes through interest, effort and co-operation, and the belief in the purpose of physical education being to promote mastery/co-operation, fitness development, and good citizenship (Papaioannou & MacDonald, 1993; Papaioannou & Theodorakis, 1996; Walling & Duda, 1995). Williams and Gill (1995) looked at the relationship between goal involvement and perceived competence and found that task involvement directly influenced perceived competence. Williams

(1994) found that task-oriented athletes given a list of 12 sources of information including coach feedback, parental feedback, skill improvement, affect, personal performance, performance goal attainment, and team-mate evaluation, rated goal attainment, learning, and improving most important.

In a study on wheelchair basketball players, White and Duda (1993) reported results contrary to the usual findings with task-involved athletes described in the above paragraph. In their study, task-involved, disabled basketball players believed that success was linked with external factors in addition to motivation to improve and effort exerted. The authors noted the contrast with previous findings that associated external factors, such as equipment, and coaches expectations with ego involvement. They suggested that this might be due to these factors being more pertinent to success in disabled sport.

Duda, Smart, & Tappe (1989) also reported results in contradiction with the general pattern. Using multiple regression analysis they found that task involvement was not a significantly better predictor of attendance, adherence, or completion of rehabilitation exercise in intercollegiate athletes than ego involvement, although task involvement was significantly better than ego involvement at predicting intensity of rehabilitation exercise. This result was attributed to the observation that dropping out of rehabilitation was not a viable option for intercollegiate athletes who want to remain on the team.

Ego involvement. Researchers have reported that high ego involvement positively correlates to the belief that superior ability, deceptive tactics, taking an illegal advantage, external factors such as impressing the coach, luck, and chance lead to success in sport (Duda & Nicholls, 1989; Hom, Duda, & Miller, 1993; Lochbaum & Roberts, 1995; Newton & Duda, 1993; Treasure & Roberts, 1994; Walling & Duda,

1996; White & Duda, 1993; White & Zellner, 1996). Roberts, Treasure, and Kavassanu (1996) found that ego-involved athletes were less likely to attribute success to effort than task-involved athletes. Athletes who are ego-involved tend to display potentially "maladaptive" strategies, such as lack of persistence and avoiding exertion of effort (Hom, Duda, & Miller, 1993; Nicholls, Patashnick, & Nolen, 1985; Seifriz, Duda, & Chi, 1992). White and Zellner (1996) found athletes with higher ego than task involvement were more likely to experience concentration disruption prior to or during a performance. The benefit of practice for ego-involved athletes is hypothesised to be that it allows them to demonstrate competence relative to others (Roberts & Treasure, 1995). Ego involvement has also been negatively correlated with enjoyment and intrinsic satisfaction in sport (Duda, Chi, & Newton, 1990, as cited by Duda, 1992). Papaioannou (1992, as cited by Papaioannou, 1995a) found a stronger relationship between intention for engagement in physical education lessons and perceived physical competence in low task-, high ego- involved students than in low ego-, high task- involved students. Conflicting with this, Williams and Gill (1995) found no relationship between ego involvement and perceived physical competence and effort. Williams (1994) found that athletes higher in ego orientation reported social comparison sources and self-referenced sources such as goal attainment, learning, and improvement, program attitude and sport enjoyment.

Combinations of task and ego involvement. Little research has been conducted within sport and exercise on the motivational effects of different task and ego levels other than those described above in which one goal involvement level is generally high and the other low. Fox, Goudas, Biddle, Duda, and Armstrong (1994) conducted such a study and found that, among eleven year-olds, those who were high in both task and ego involvement were the highest in sport enjoyment and perceived competence;

although those high on task and low on ego involvement faired almost as well. Those lowest in both task and ego were the lowest in sport enjoyment and perceived competence. No differences were found in the level of voluntary participation in sport for the various groups. This is an expected result because children at this age are at a stage where ability differentiation is just beginning to develop. It would be expected that the consequences on participation of different goal involvement would appear in older age groups. The authors did comment on the fact that the achievement profiles of children of the ages of those in their study are "still in the embryonic stage and it is probable that the motivational and behavioural consequences have yet to be fully realised" (p. 259). However, they did not make it clear why such a sample was chosen for a goal achievement study. Williams (1994) investigated youth athletes' preference for different types of competence information and found athletes who were high in both task and ego goal involvement preferred goal attainment information (also preferred by highly task-involved athletes), as well as social comparison information (also preferred by highly ego-involved athletes). Thus, these athletes showed liking for information types preferred by individuals highly involved in both task and highly ego orientations.

Motivational climate. Research has shown that, as in the educational domain, perceived motivational climate in sport can influence attitudes and strategies of achievement behaviour in sport (Papaioannou & Kouli, 1999; Seifriz, Duda, & Chi, 1992, Walling, Duda, & Chi, 1993). Mastery-involved physical education programs have been related to increases in perceived sport and social competence, when compared to control groups in traditional physical education classes (Treasure, 1993). Students in task-involving physical education lessons have been found to have lower somatic anxiety and higher self-confidence, greater concentration, more enjoyment,

and be more likely to believe success comes from effort than those in ego involving lessons (Papaioannou & Kouli, 1999; Treasure & Roberts, 1998). Those in ego-involved environments have been found to be more likely to believe success comes from ability and deceptive tactics than those in task-involved environments (Treasure & Roberts, 1998).

It has been demonstrated that motivational climate can influence individual disposition within that environment. In an experiment involving recreational exercise participants, Lloyd and Fox (1992) chose 12 girls high in ego involvement from a pool of 50 undertaking an aerobics fitness program. Six of the group was exposed to an externally referenced program, which focused on performance comparisons. The others experienced a self-referenced treatment, which focused on personal improvement and task mastery. The mean ego-involvement scores decreased in the self-referenced group and slightly increased in the externally-referenced group, showing that the motivational environment can affect the strength of different goal involvements in recreational exercise participants. This finding is important as it demonstrates that individual goal involvement can be influenced by environmental factors. This means that if one goal involvement is found to be much better at promoting persistence in sport and exercise, this goal can be emphasised to beneficial effect.

According to achievement goal theory (Nicholls, 1989) dispositional goal orientations and perceptions of motivational climate interact to affect behaviour. It follows from this that an interactionist approach that investigates both variables is likely to provide a more complete understanding of achievement behaviour (Duda, Chi, Newton, Walling, & Cately, 1995; Treasure & Roberts, 1998). Two studies have been conducted looking at the respective contributions and interaction of goal involvement

and perceptions of motivational climate. Swain and Harwood (1996) found that the interaction of situational and individual variables (level of task involvement) predicted intensity of task involvement, whereas situational variables were the main predictors for ego involvement. Treasure and Roberts (1998) found that perceptions of a mastery climate appeared to complement high task involvement and increase task involvement in individuals originally displaying low task involvement. They also found the perceptions of an ego-involved climate increases focus on ability as a cause of success for individuals who have high ego involvement but had no influence on those with low ego involvement prior to exposure to the environment.

Relationship between Task and Ego Involvement

Whereas early theories often assumed that task and ego involvement were related, it is now thought that they are independent. Research in academic settings has consistently demonstrated the existence and independence of task and ego involvement (Ames & Archer, 1988; Nicholls, 1989). Thus, whether a person is high or low in one type of goal involvement does not affect the strength of the other type of goal involvement.

Consistent with educational research, task and ego goals are generally found to be orthogonal in sport (Duda & White, 1992; Hom, Duda, & Miller, 1993; Roberts & Treasure, 1995; Roberts, Treasure, & Kavussanu, 1996; Treasure & Roberts, 1994). This finding is important because it means that athletes can be high in task and/or ego involvement, low in both, or high in one and low in the other. This means that we can encourage high task involvement for individuals high in ego involvement without decreasing their ego involvement. Indeed, elite athletes are found to be high in both task and ego involvement (Duda & White, 1992). This seems logical because to remain at the top, an athlete must have a desire to win and thereby demonstrate their

ability (ego), as well as a high motivation to improve their own performance and continue training even when they are not winning or, more importantly, when they are winning everything, so their ability is not in question. Such a person would be high in both task and ego orientation.

Which goal is "best"?

Papaioannou (1995a) argued that

> if we want to provide equal motivation for both high- and low-ability students and to avoid the encouragement of ego orientation, both high learning and low performance goals should be adopted in physical education. (p. 261)

Papaioannou supported his argument with the finding that when learning goals are emphasised in a physical education class, both high and low perceived competence students preferred difficult, challenging tasks. In contrast, when students perceived their class to be low in learning involvement there was a substantial drop in intrinsic motivation in low perceived competence students (Papaioannou, 1992, as cited by Papaioannou, 1995a). Similar arguments for encouraging task goals have been put by other authors. Ames (1992a) concluded that a mastery orientation goal is associated with adaptive and desirable achievement behaviours and recommended the promotion of mastery orientation in the classroom. Dweck (1986) wrote "challenge seeking and persistence are better facilitated by attempts to foster a learning goal orientation" (p. 1045). She linked adaptive behaviour and task orientation, writing that children displaying adaptive behaviour patterns enjoy exerting effort in the pursuit of task mastery.

In promoting mastery environments, these authors have not acknowledged innate individual differences and the fact that some people may perform better in an ego-oriented environment. This approach also fails to recognise that in the real world,

sport involves competition. Hardy (1997, 1998) argues that the idea that high ego orientations are detrimental to performance and predispose on to drop out does not sit well with the notion that goals motivate and direct behaviour. As Roberts, Treasure, and Kavussanu (1996) pointed out, it is difficult to convince coaches to depress ego orientation because "many coaches implicitly, and explicitly, believe it is necessary to be ego-oriented to achieve excellence and competitive success" (p. 406). Athletes who succeed in elite sport have been found to display both high task and high ego involvement goals (Duda & Tappe, 1992). In physical education and recreational exercise environments, it is extremely important to emphasise task goals, as these can promote participation in athletes of all standards. It is also important for maintaining an athlete's achievement striving when they experience hardship or temporary failure (Roberts & Treasure, 1995). It is also important that ego goals are not forgotten. Ego goals are often vital in the sporting arena and can also play a role in recreational sport and exercise. In a study on exercise goals, I recorded the comments of one participant who expressed both high task and high ego involvement (Clayton, 1993). These comments provide a good synopsis of the concepts implied by the two terms and illustrate that ego orientation can be important to recreational exercisers: "There is no point in doing anything unless you try your best (task) and you are the best (ego)".

Ames (1986) wrote about task and ego orientations: "It is not that one structure produces higher or lower motivation levels than another, rather, the resulting motivational systems are qualitatively different" (p. 231). Hardy (1997, 1998) argues for the importance of maintaining a balance between task and ego orientations, and the education of athletes so that they are able to evaluate their performance in different manners to facilitate training and performance under different conditions. Adaptive behaviour has been described as behaviour that promotes the adoption and

maintenance of personally challenging and meaningful tasks (Ames, 1992a; Dweck, 1996). Dictionaries (Garmonsway, 1978; Reber, 1985) refer to adaptation and adaptive behaviour as that enabling one to fit into or survive in a new environment. It may not always be adaptive to maintain personally challenging tasks. Survival in a new environment may be enhanced by trying to outperform others, or by recognising when you can not and ceasing the activity. As Ames pointed out, task and ego orientations are qualitatively different, and, therefore, each is likely to be most beneficial in different environments.

Factors Correlating with Different Goal Involvements

Achievement goal orientations represent different reasons for approaching and engaging in achievement activities and therefore influence how we interpret and respond to achievement environments (Ames, 1992b). An individual's goal orientation affects self-evaluations of demonstrated ability and effort as well as success and failure attributions. These cognitions then affect subsequent achievement behaviours such as task choice, persistence, and effort exertion (Duda, 1992a). Several factors have been found to correlate with personal disposition toward task or ego involvement. These include age, gender, cultural background, and exercise frequency, duration, and persistence.

Age. Studies have found that systematic differences in task and ego involvement are related to age in athletes. Ewing, Roberts, and Pemberton (1983, as cited by Duda, 1989) found that 9 to 11 year-old athletes were more likely to be task-involved than 12 to 14 year-old athletes. This can be explained by the development of a mature or "differentiated" concept of ability at around 13 years (Duda, 1987; Nicholls, 1984; Nicholls & Miller, 1983). Prior to the development of a differentiated concept of ability, children are not able to fully conceive ability as a capacity, and as a will hold

task-involved goals as they believe that this is the way to achieve success. With the development of a differentiated concept children are able to perceive the different amounts of effort required by different people to meet different standards. A higher amount of ego- involvement is thus likely to result as children realise they can outperform others with less effort or strive to conceal their low ability by obviously putting in less effort.

Maehr and colleagues (Maehr & Braskamp, 1986; Maehr & Klieber, 1980; Wigfield & Braskamp, 1985) suggested that goal perspectives are likely to change throughout adulthood. They hypothesised that as age increases, people are more likely to emphasise task orientation, down play the role of ego-oriented goals, and be more motivated by factors such as task mastery. Indeed, researchers have found that extrinsic incentives such as competition and social recognition tend to decrease with age, whereas mastery and affiliation incentives become more important (Edwards & Wine, 1963; Klein, 1972; Wigfield & Braskamp, 1985). Wigfield and Braskamp assessed a range of personal incentives and self-beliefs in a group of 750, 18 to 79 year-olds. They found that older participants (over 50 years) scored significantly higher on task involvement and social scales than other participants. Younger participants (20 to 34 year-olds) scored higher on recognition, self-esteem, and financial reward scales. Wigfield and Braskamp found no difference between age groups in striving for excellence, competition, or power. This may be accounted for by the fact that all participants were highly educated professionals, who, as such, may have required high levels of these traits to succeed at their jobs.

Before about 13 years of age, developmental constraints, mean that task orientation is engaged in by children. Following the development of a differentiated concept of ability adults and teenagers are able to engage in task or ego orientation.

In adults, existing research suggests that the emphasis on task involved goals increases and the importance of ego oriented goals increase across the lifespan.

Gender. In both sport and academic contexts, females are usually found to be less motivated by ego goals than males, and more by task goals than males (Duda, 1985; Gill, 1986; Olsen & Templin, 1991; White & Zellner, 1996). Several studies have found results contrary to this general rule. In a study of Anglo-American and Japanese marathon runners, Hayashi and Weiss (1994) found no differences in strength of task and ego goal involvement between males and females. The authors hypothesised that this might be due to a general high level of task and low level of ego orientation among participants, possibly a characteristic of all marathon runners, necessary to undertake the long training sessions and the event itself. That is, a marathon might be more of a personal challenge than other sports or less difficult activities. Wigfield and Braskamp (1985), in their study of working, educated professionals, found that there was no difference on competitive or affiliation goal levels of male and female participants, although men scored slightly higher in the power, recognition, and financial rewards scales. The authors attributed the difference from traditional results to the nature of the sample and changing face of the workforce.

The general trend for males to have higher ego involvement and lower task involvement is also seen in recreational sport environments (Duda, 1988) and in exercise (Duda & Tappe, 1989). Although, in a study on undergraduate physical activity classes, Li, Harmer, and Acock (1996) found no significant difference in levels of task involvement between genders, they found that males had higher levels of ego involvement than females.

Culture. Just as current motivational climate can affect an individual's goal involvement in that climate, an individual's past environmental experiences affect the

goal orientation (predisposition) they bring to any situation. That is, the social or cultural background of an individual can influence the goal disposition they bring to any context. It has been argued that different types of goal are differentially important to different cultures and different sexes, and that the personal qualities thought desirable, like the goals, differ from culture to culture (Maehr & Nicholls, 1980).

Several studies have looked at achievement goal involvement in cultures other than white North Americans. Papaioannou (1990, as cited by Papaioannou, 1995a) found that the characteristics of the task and ego goals of Greek sports students were in accord with those found in North American studies. In a study of Japanese and Anglo-American marathon runners, Hayashi and Weiss (1994) found no cross-cultural differences in task and ego goal involvement as measured by the TEOSQ, however, differences were found on the Sport Orientation Questionnaire. Anglo-American males and females scored significantly higher on competitiveness and lower on win involvement than Japanese males and females. Goal perspectives have been found to vary cross-culturally in other studies. Duda (1985,1986) found Anglo-males were more likely to define sport success in terms of ability, whereas Anglo-females and both male and female Mexican American athletes were more likely to define success in terms of demonstration of effort. She also found that black females were more likely to stress social comparison in sport competition than black males who were more likely to define success in terms of mastery; a result which is contrary to the usual findings in Anglo males and females (Duda, 1986). In a three country study, Li, Harmer, Chi, and Vangjaturapat (1996) found that university physical activity class students from the United States had the highest mean task and ego scores, followed by students from Taiwan, then Thailand. In a study on Thai intercollegiate athletes Li, Harmer, Acock, Vongjaturapat, and Boonverabut (1997) found support for the two-factor structure of

the TEOSQ in both male and female athletes. In contrast to the findings in most studies, females scored significantly higher in ego involvement and lower in task involvement than males. The authors speculated that this may be a reflection of cultural differences in sport socialisation. Also, in contrast with most findings in North American studies and with goal perspective theory of two independent constructs, Li et al. (1997) found the task and ego constructs were highly negatively correlated. Hayashi (1996) examined cultural differences in achievement motivation characteristics between Anglo-American and Hawiian male weight-room participants. Hayashi found task and ego goal involvements, as well as goals reflecting positive relationships with others, which he called 'interdependent perspective of the self', and which he described as similar to the social approval category put forward by Maehr. He found that Hawiian participants and Anglo-Americans differed in their interdependent self-perspective. Hawiians were more likely to define positive experiences in terms of an 'in group pride and harmony' goal not present in the Anglo-American group.

Beyond Two Goals

Although the majority of work on achievement goal orientations has focused on testing the two-goal theory, particularly in children, some research has tested other goals beyond task and ego involvement. In addition to research findings, a strong argument can be made for existence of achievement goals other than task and ego orientations. Urdan and Maehr (1995) argued convincingly for the presence of several types of social goals, saying it is becoming clear that two goals are insufficient to explain student behaviour and that other goals should be routinely included in studies on student motivation. They identified a social approval goal, a social solidarity goal, and a social welfare goal as examples of possible social goals. Maehr and Braskamp (Maehr 1984, 1991; Maehr & Braskamp, 1986) proposed four achievement goals in

their theory of personal investment (PI) designed for an adult population. The four goal orientations they proposed are: accomplishment, power, affiliation, and recognition. Accomplishment, which refers to the pursuit of excellence, learning and mastery, and academic challenge, is similar to task orientation. Individuals who are highly motivated by accomplishment goals have their own set of standards for judging success and seek tasks to challenge them. Power is a comparison goal with the emphasis on interpersonal competition, being better than others, and having influence and control over them. If a person has high power goals, success is measured by relating one's own performance to that of others. The recognition goal orientation emphasises the achievement of recognition or acknowledgement of attainment received from other people. Success is judged by the amount of recognition gained. It has been found that power and recognition are highly correlated and appear to be aspects of an ego goal involvement (Tammen, 1995). Maehr and Braskamp (Maehr 1984, 1991; Maehr & Braskamp, 1986) described the affiliation goal as one of pleasing significant others, gaining social approval, and gaining pleasure from being with others in harmonious and meaningful relationships. Co-operation and attachment to the group are highly important when one has high affiliation goals. Maehr's work demonstrated that there are likely to be more than two goal orientations operating in any achievement situation.

In referring to the inclusion of social goals in achievement goal theory, Urdan and Maehr (1995) highlighted several factors that influence the cognitive and behavioural outcomes of goals. These factors are applicable to any achievement goals and are important to consider when looking at the possible existence of goals other than task and ego. The factors are: a) the type of goal orientation activated, b) the values of the targets of the goals (that is, what does the person the actor is trying to

impress think is good), c) the meaning of the goal and the achievement situation to the actor, and d) the co-ordination of the goal with other goals.

Ames (1986) described three motivational systems and corresponding goal structures in the achievement environment. In the first, egoistic, one's own performance is compared to that of others. In the second, moral responsibility, the focus is on group performance and working towards a group goal. Finally, in a task mastery system the focus is on own performance improvement over time. Thus, in addition to the traditional task and ego orientations, Ames added a co-operative goal similar to that described by Maehr and colleagues. Whitehead (1992) also grouped achievement goals into three categories: personal progress (task), beating others (ego), and pleasing others (social).

From the above review, it can be seen that although achievement goal research has concentrated on task and ego goals, various types of social goals have been suggested by different authors. It may be, in competitive sport and education settings, that task and ego goals are the predominant goals people have and therefore are most important. This needs to be studied. I think it is unlikely that this is true in all achievement situations. The restriction to examination of only task and ego goals in many of the previous studies may have limited our understanding of the role of achievement goals.

Limitations of the Current Goal Orientation Literature

There are several gaps in the current literature that point to areas in need of further study. The need for further studies involving adults is important, as it can not be assumed that children and adults have the same goal orientations. The majority of the goal orientation research in sport psychology to date has used children or adolescents as experimental participants (Battista, 1990). The goal orientation patterns

of adults are likely to be different to those of children, especially given that children generally have more constraints on how to spend their time. A large amount of a child's time is organised for them, both at school and at home. The free time that children do have is often limited by lack of transport, or need for adult supervision and/or approval. Adults on the other hand have a much wider selection of activities from which to choose, and are less limited through lack of transport or the need to gain approval from others. Adult goal orientations are also likely to be more elaborate than children's due to the higher demands placed on their time and energy. An adult usually has many family and work commitments, as well as recreational pursuits they would like to do; few of which are strictly defined in terms of time requirements. It had been found that participation in sport and physical activity decreases with age (McPherson, 1984, as cited by Wankel, 1988). Most children are responsible only for themselves, but their options are restricted. Adults have a wider range of options for recreational activity, but this is counterbalanced by their commitments to family and work. They may be more or less free to vary the amount time and energy expenditure on all or some of these activities. This means that adults are likely to have a more complex pattern of goals than children within their recreational and non-recreational behaviour.

Another deficit in the literature is the small amount of research in the area of recreational sport and exercise activities. Sport has been characterised as an activity focused on skilled performance, structured competitions, public evaluation, and an elaborate set of rules and regulations (Duda, 1989). In recreational exercise, none of these characteristics is essential. Nicholls (1992) proposed that there are features of motivation common to many achievement situations, as well as unique motivational features of any particular situation. It is imperative that we recognise and study both.

The unique features of recreational exercise settings are largely overlooked in previous research on goal orientations.

The two-goal (task and ego) theory probably explains much of the variance in goal orientations with children in educational settings and in competitive sport. Research measuring task and ego orientations using the Task and Ego Orientation in Sport Questionnaire (TEOSQ) has reported explaining 67% (Duda, 1989a) and 50% (Duda & White, 1992) of the variance. However, this variance is only relevant to variation in the measurement of the TEOSQ which is designed to measure two constructs and not motivation in general, therefore, the variance explained is not a percentage of the total variance in motivation but of task and ego orientations. Although it will not be done in the present thesis, future work needs to be conducted to assess whether the inclusion of further motives could explain substantially more variation in these contexts.

Due to the voluntary nature of participation in recreational exercise, the two-goal orientation theory is possibly not sufficient to explain goals in these settings and an expansion of the goal orientation theory is needed. It is proposed here that there are other goals for recreational exercise that have not been widely investigated. These might include goals of a social nature, goals that involve exercise as a means to an end, such as health, fitness, or weight loss and other goals not previously identified. A type of social goal called an affiliation goal was described by Maehr and Braskamp (Maehr 1984, 1991; Maehr & Braskamp, 1986). This construct involved the desire to be with people and make friends. It is essential that research explores whether the pre-eminence of task and ego goals extends to recreational exercise or whether the inclusion of affiliation, health, and other goals provides a description of exercise motives that accounts for a substantially larger proportion of the variance.

When investigating cross-cultural goal orientations in exercise participants, Hayashi (1996) identified social goals to be clearly pre

Urdan and Maehr (1995) wrote that

> The nature, origins, and effects of social goals are complex and not as yet well understood. Therefore, we need to examine social goals with a wide lens if we are to develop a meaningful and useful understanding of their effects on motivation and behaviour (p. 226).

This statement is equally valid for any other goals that emerge in this or other studies.

Previous Questionnaires

Questionnaires measuring goal orientations have typically been developed based the assumption of the existence of two independent achievement goals. Two of the most frequently used questionnaires in achievement goal studies in sport and recreation are the Task and Ego Orientation in Sport Questionnaire (TEOSQ), developed by Duda and Nicholls (1989, as cited by Duda, 1992), and the Perceptions of Success Questionnaire (POSQ), developed by Roberts and Balague (1989). Both these questionnaires were designed to measure only task and ego goals, ignoring other goals people might have. Duda (1992) described the development of the TEOSQ as "drawing from the scales designed to assess task and ego orientation in the classroom" (p. 61). Roberts and Balague (1993) related their item development as creating questions that "met the sport specific task and ego goal criteria" (p. 4). Thus, the items generated reflected those two goal orientations making the finding of two-goal orientations inevitable. The major goal orientation questionnaires that have been used in the past are briefly described below and the shortcomings of their use in recreational sport and exercise settings are highlighted.

Perception of Success Questionnaire (POSQ)

This questionnaire was developed by Roberts and Balague and was originally known as the Social-Cognitive Scale of Motivation (SCSM) (Roberts & Balague,

1989, 1991, as cited by Ostrow, 1990; Roberts & Treasure, 1995). As mentioned earlier, this scale was designed specifically to measure two major achievement goals in sport: competitive and mastery goals. The SCSM was developed by writing a pool of 48 questions (designed to measure the two goals), that were narrowed down by a panel of experts to 29 items. The questionnaire was administered to a group of 66 female and 71 male psychology students who were involved in sport. Principal component analysis with varimax rotation revealed two factors, accounting for 48% of the variance. Elimination of items that loaded on both factors or that decreased the Cronbach alpha resulted in a 26-item questionnaire with an alpha coefficient of .92 for task items and .90 for ego items. These 26 items formed the initial scale of the POSQ (Roberts & Balague, 1993; Roberts & Treasure, 1995). The POSQ was refined to 16 items by selecting only those questions that consistently loaded the highest on the task or ego scales. Factor analysis of questionnaires from an administration involving 141 male and 102 female undergraduates found the two orthogonal factors accounted for 55% and 63% of the variance in the data in two successive tests separated by a one-week interval (Roberts & Balague, 1993). Following analysis of this data, the questionnaire was reduced to the 12 items that consistently loaded highest on one factor and lowest on the other factor. This short form correlated .98 for the task sub-scale and .97 for the ego sub-scale, with the longer form. A reservation concerning this questionnaire is that it was designed specifically to measure only two goal orientations. In designing the questionnaire in this way it is hardly surprising that two factors measuring the two goal orientations emerged from the results. This method did not allow for the possibility of other goal orientations emerging. Also, various versions of the POSQ have only accounted for around 50% of the variance in the data, suggesting that other variables need to be considered.

Task and Ego Orientation in Sport Questionnaire (TEOSQ)

The TEOSQ is the most widely used achievement orientation questionnaire within the literature. The purpose of the TEOSQ is to assess task versus ego goal orientations within a sport context (Duda, 1989a, 1992). The TEOSQ is a modified, sport specific version of an inventory developed by Nicholls and his colleagues (1989, as cited by Ostrow, 1996) to assess task and ego orientation in an academic, classroom environment. The initial version of the TEOSQ contained 15 items that were administered to 286 male and female high school sports participants. Exploratory factor analysis revealed a stable two-dimensional factor structure with seven items loading on the task factor and six loading on the ego factor with the two scales being orthogonal (Duda, 1989a, Duda, 1992). Two items were removed to produce a 13-item version of the TEOSQ. Further studies with sports participants from ten years of age to adult have shown the TEOSQ to be internally consistent. Results report alpha coefficients of .81 to .86 for the task scale and .79 to .90 for the ego scale (Duda, Olsen, & Templin, 1991). The TEOSQ suffers from the same problem as the POSQ, in being designed specifically to measure task and ego orientations in a sport setting, and unsurprisingly finding these two goal orientations and no others.

A study by Chi and Duda (1995) used confirmatory factor analysis to test the fit of the two factor structure of the TEOSQ across intercollegiate athletes, college students undertaking a skills class, high school athletes, and junior high sports participants. Their results supported a two-factor model in all groups. The structure varied across groups, however, indicating that the groups did not hold identical conceptualisations of task and ego orientations. The finding of unequal validity across groups highlights the importance of confirming the factor structure on a sample of a population prior to any major study involving the TEOSQ and that population. Li,

Harmer, and Acock (1996) used similar methodology and found that male and female students in physical activity classes held similar conceptualisations of task and ego orientations.

The majority of published achievement goal research has been conducted using the TEOSQ. Roberts, Treasure, and associates (Kavussanu & Roberts, 1996; Roberts & Balague, 1993; Roberts, Treasure, & Kavussanu, 1996) have conducted research using the POSQ, and Maehr and colleagues have used SPECTRUM (Maehr, & Braskamp, 1986; Tammen, 1995) and derivations of it. Apart from these works, the achievement goal orientation research reviewed in this paper, which reflects the composition of the total published research, was conducted using the TEOSQ or modifications of it.

Sport Orientation Questionnaire (SOQ)

The SOQ was developed to assess the disposition to strive for success in competitive and non-competitive sport activities (Gill & Deeter, 1988). Items representing achievement orientation in sport and exercise activities were developed based on a literature review of achievement and sport competition, consultation with other sport psychologists, and by collecting open-ended responses from independent samples of sport participants. Fifty-eight items were developed and reviewed for content validity and clarity, by five graduate sport psychology students. The inventory was reduced to a pool of 32 items by retaining only those items that were rated as definitely clear and definitely representative of sport achievement orientation by all five raters. These items were administered to samples of undergraduate (n = 237) and high school (n = 266) students. Factor analysis led to retention of 25 items and confirmation of a three-factor structure, with sub-scales of competitiveness, goal orientation, and win orientation. The competitive orientation factor assesses a desire

to enter competition and strive for success within it, where success is measured by working hard, mastering skills, and meeting challenges. The goal orientation factor represents the desire to reach a personal goal, and win orientation reflects the desire to win in competition. Alpha coefficients were .94, .81 and .86 respectively (Gill & Deeter, 1988). The competitive and win orientations of the SOQ have been found to correlate with ego orientation in the TEOSQ, and the goal orientation of the SOQ has correlated with both task and ego orientations in the TEOSQ (Duda & Nicholls, 1989a). The methodology used to construct the questions in the SOQ was good, however, the questionnaire is limited because of its emphasis on competition. Designed primarily for competitive contexts, the SOQ is unlikely to be applicable to non-competitive sports and exercise settings. Duda (1992) pointed out that the correlation of the goal orientation sub-scale with both task and ego orientation highlights the ambiguity of the concept of goal orientation; a goal to be aimed for may emphasise either task or ego orientations.

Competitive Orientation Inventory (COI)

The COI was developed to measure individual differences in the tendency to strive toward achieving certain types of goal in sport (Vealey, 1986). In the COI, the participant is forced to compare the values of winning versus performing well in competitive sport, using a format that requires the participant to weigh the importance of each goal simultaneously. The participants' responses result in them being assigned an outcome orientation score and a performance orientation score. In a comparison between task and ego orientation scores and outcome orientation scores, Duda and Nicholls (1989b, as cited by Duda, 1992) found that a significant positive relationship emerged between outcome orientation and ego orientation. They also found that neither task nor ego orientation significantly correlated with performance orientation.

The COI was designed to measure the relative strength of competitive and performance aims within a competitive sport environment. In doing so, it is limited in its applicability to competitive environments, as it can say nothing about the absolute strength of each goal. It is also limited in the scope of the goals it measures, only being relevant in competitive contexts. Comparing goals is most useful when two goals are interdependent. Task and ego goals have been found to be independent. If the two goals of winning and performing well are also independent, which would seem likely due to their similarity to task and ego goals, then a method of comparing the two on a continuum such as is done in the COI is flawed. Contrasting one with the other tells nothing of the absolute strength of each goal.

Learning and Performance Orientations in Physical Education Questionnaire (LAPOPECQ)

Papaioannou (1994) developed a questionnaire that aimed to measure learning and performance goals in a physical education context. He based his initial 80 items on previously published goal orientation questionnaires in the educational literature. Forty-five experts evaluated face validity and relevance to learning or performance goals in the physical education environment, resulting in a reduction of the number of items in the questionnaire to 45. Following pilot studies, factor analysis further reduced the number of items to 24. Papaioannou (1994) reported that the final form consisted of five factors: (a) learning environment created by teacher behaviour, (b) competitive orientation in physical education lesson, (c) students' worry about mistakes, (d) outcome without effort, and (e) students' learning orientation. Intercorrelations among factors indicated two higher order factors; the two learning-orientation factors grouped together and three performance-oriented factors grouped together. This was confirmed in a confirmatory factor analysis. The two learning

orientation scales and the students' competitive orientation scale were found to be reliable. This was not true of the worry about mistakes and outcome without effort scales. This questionnaire was developed as a measure of motivational climate rather than individual goal orientation. The main problem with the development of this questionnaire is that it was constructed on the basis of past questionnaires and therefore carried all their development faults. The lack of reliability of some of the scales is also a problem.

SPECTRUM

Tammen (1995) used a modified version of the SPECTRUM survey, originally designed for a workplace environment (Braskamp & Maehr, 1985, as cited by Tammen, 1995) to assess strength of personal incentive goal orientations, strength of team motivational climate, strength of communication of the climate, and satisfaction and commitment to the team within a sporting context. The version used by Tammen consisted of 125 items, which were rated on a 5-point Likert scale ranging from strongly disagree to strongly agree. Modifications, such as substitution of the word "organisation" by "team" and "co-workers" by "team mates" were made to suit the sport environment. Similar previous modifications to the SPECTRUM survey made for business and school environments (Krug, 1991, 1992; Krug & Krug, 1991, all as cited by Tammen, 1995) had not changed the reliability or internal consistency of the scale.

The measurement of personal incentives in the SPECTRUM survey is based on Maehr and Braskamp's (1986) f our-goal theory of personal investment; with goal orientations consisting of accomplishment, recognition, affiliation, and power. The Cronbach alpha measures found for these scales were .83 for accomplishment (19 items), .79 for recognition (19 items), .69 for power (13 items) and .75 for affiliation

(14 items) (Braskamp & Maehr, 1985, as cited by Tammen, 1995). The Cronbach alpha measures for the scales measuring strength of team motivational climate were .63 for accomplishment (9 items), .68 for recognition (9 items), .56 for power (5 items), and .70 for affiliation (9 items) (Braskamp & Maehr, 1985 as cited by Tammen, 1995).

As with some of the other measures already reviewed, the SPECTRUM survey was designed to measure those goals hypothesised in a particular theory, and therefore, may be limited in scope. The SPECTRUM also suffers in that it was not primarily developed for sport or exercise settings. Although the modifications that have been made to change the emphasis from a work to sport environment may have proved adequate, the goals emphasised by participants in the exercise environment may not be comprehensively covered.

All of these questionnaires measure between two and four achievement goals in sport. The POSQ, TEOSQ, and LAPOPECQ all measure task and ego goals. The COI asks participants to comparatively value task and ego goals. The SOQ purports to measure three goals, however correlation with the TEOSQ suggests that it is really only measuring task and ego goals. The SPECTRUM measures the four goals of accomplishment, recognition, affiliation, and power. All of these questionnaires were designed to measure theoretical constructs. Items were constructed to cover these constructs and unsurprisingly, factors emerged that confirmed the constructs. None of the designers of these questionnaires involved participants in the development stage. This could be done by interview or written response to a number of open-ended questions about achievement in sport.

The Present Thesis

The aim that the present thesis started with was to develop a questionnaire measuring goal orientations in adult recreational sport and exercise participants. In doing this, the aim was to develop a reliable and valid test of the full range of goals that can be used as a tool in further research on motivation for recreational exercise participation. Based on the limitation noted for existing questionnaires in this field, it was considered to be important to allow recreational exercise goals to emerge from exercisers rather than to be predetermined. This was started by first interviewing exercise participants to get their nomination of goals through open-ended questions. The responses of exercise participants were then to be used, in addition to theoretical concepts on motivation, to develop a questionnaire to measure achievement goals, which will be administered to a sample of exercise participants to determine its validity and reliability. A specific aim, while developing the questionnaire, was to ensure that coverage of participant goals was comprehensive; that is, to attempt to measure the range of participant goals, rather than just a sub-set of them, as has been the case in some previous questionnaires. Future studies using the questionnaire could investigate goal orientations in relation to variables such as persistence and effort, or demographic variables such as ethnicity, socio-economic status, and cultural background.

Following participant interviews, it was clear that the achievement goal approach could not adequately explain much of the variance in motivation of recreational exercise participants. It was also evident that interview participants did not distinguish between achievement goals and other motives for exercise. Self-determination theory was a theoretical structure that could incorporate and explain the interview findings. Existing questionnaires developed on the basis of self-determination theory were not comprehensive and therefore construction of the a new questionnaire was continued,

with a broader aim of measuring motivation in general and not just achievement motivation.

CHAPTER 3: A QUALITATIVE STUDY OF THE ACHIEVEMENT GOALS OF RECREATIONAL EXERCISE PARTICIPANTS.

Introduction

The aim of this study was to interview recreational exercise participants in order to understand why they exercise. Participants were asked about the achievement goals they have for exercise with the hope of using their responses in developing a questionnaire to measure these goals. Goal orientation theory provides a potentially fruitful approach to understanding the achievement goals people have for their exercise. It was hoped that the interviews would provide evidence to confirm the theory in recreational exercise environments and possibly provide further evidence for goals in addition to task and ego goals, by verifying those previously hypothesised and possibly extending with the inclusion of other goals. This research is important because little work has been done on achievement goals within the exercise domain, most studies on achievement goals concentrating on educational and sporting arenas.

Interviewing recreational exercise participants to discover first hand what achievement goals they hold for the exercise they do could provide a different set of achievement goals than would be gained by reviewing previous research, operationalising theory, or consulting experts. Interviewing participants also enables the establishment of achievement goal factors that are less driven by the views of the researcher. Both qualitative and quantitative designs are important research methods. Which is most useful in any situation depends on the research question being asked. Qualitative research allows theory to be developed, as many pieces of data are grouped together (Bogdan & Biklen, 1992). Qualitative research is concerned with participant perspectives (Bogdan & Biklen, 1992), focusing on the ways different people make sense of their lives. It allows the achievement goal themes to be volunteered by

participants, enabling them to provide factors and evaluation of their importance that are not influenced by what the researcher hypothesises might be important. In this way achievement goals can emerge that the researcher might not have thought of, whereas other goals the researcher thought important may appear to be less so. A participant who is given a list generated by a researcher may put more emphasis on these items than they would otherwise, if they assume that the researcher knows what is the 'right response'. Although they are not driven by the opinions of the researcher or findings of previous studies, qualitative techniques can allow confirmation or refutation of theories proposed on the basis of past knowledge (Miles & Huberman, 1984).

This study will go some way towards determining whether the two goal (task and ego) theory of achievement goal orientation (e.g., Ames, 1992a, 1992b; Duda, 1993; Roberts, 1984a, 1992) frequently used in educational and sport contexts is appropriate for use in the recreational exercise climate or whether some other approach is more appropriate. Several researchers have proposed additional achievement goals to task and ego. Ames (1986) and Whitehead (1992) described different social goals. Ames' goal involved co-operation with others, whereas Whitehead's social goal involved pleasing others. Maehr and Braskamp (Maehr, 1984, 1991) described a four-goal theory of motivation, personal investment theory, with goals of accomplishment, power, affiliation, and recognition, described in the literature review. Power and recognition are highly correlated to ego orientation (Tammen, 1995), accomplishment is similar to task orientation and affiliation is a social goal of pleasing others and gaining pleasure from being with others (Maehr & Braskamp, 1986). It may be that Maehr's approach (Maehr, 1984, 1991) provides a better description of the achievement goals exhibited by recreational exercise participants than the two achievement goals of task orientation and ego orientation. It is also

possible that these theories, developed in the study of educational achievement, do not reflect all the achievement goals of people who undertake exercise as a non-competitive activity. The proposition here is that neither of these theories adequately explains the categories of achievement goals of recreational exercisers.

Method

Participants

Eleven interviews were successfully tape-recorded for seven female and four male exercise participants. The age of participants ranged from 21 to 50 years with a mean age of 36.1 years (SD = 11.5 years). Another three males and one female were interviewed, but the recordings were not successful due to poor sound quality, which made transcription impossible.

An initial attempt to access participants was made by posting notices in several gymnasiums around Melbourne. Following a lack of response to this method, I sought participants through personal gymnasium contacts. I asked several gymnasium contacts whether they knew anyone who participated in regular leisure time physical activity, who may be willing to take part in the study. The gymnasium contacts then approached the individual to ask if they would be prepared to discuss the possibility of participating. This ensured that none of the participants were known by me prior to the study. Most of those who were willing to participate either contacted me personally via a telephone number given to them by the gymnasium contact or gave their phone number to the gymnasium contact and I contacted them. The selection of participants in this study, as is usually the case in qualitative research (Miles & Huberman, 1994; Patton, 1990), was purposive rather than random. Attempts were made to gather a maximum variation sample (Patton, 1990), that is, to interview participants to reflect the ages across the life span, both males and females, and

different social classes represented in the exercise community. Thus, in the later stages of the research, some willing participants were not included, as their demographic group had already gained sufficient coverage. Participants were required to consistently engage in exercise at least three times a week for at least half to one hour to be included in the study. Upon contact, participants were advised that the interview would be tape-recorded and would last approximately one hour. Any questions they had at this stage were also answered.

Materials

Demographics and interview. An interview guide was developed for the purposes of this investigation. The aim of the interview was to understand each participant's achievement goals for exercise. The interview began by asking the participants for some demographic information. First they reported their age, gender, and occupation. Following this I collected some descriptive information about the type, frequency, duration, and intensity of exercise in which they participate. Participants were asked to describe both the competitive and non-competitive activities they did. This is the type of question recommended by Patton (1990) and Minichiello, Aroni, Timewell, and Alexander (1995) for opening an interview, as such questions allow the participant to discuss their own experiences in a way that is non-threatening, where the participant controls the flow of information. The aim of this section was to "break the ice" of the interview and allow the researcher to get an overall idea of the activities of the person.

Following the descriptive questions, were questions on the achievement goals the participant had for engaging in exercise. The aim of this section was to get the participant to talk about their achievement goals for exercise. They were asked to nominate what they hoped to achieve from the recreational exercise activities they

were doing, asked to think about the different achievement goals they had for the different activities they did, and their success to date at achieving these goals. Four questions were asked:

(i) What do you hope to achieve from the non-competitive exercise activities you are involved in?

(ii) Do you hope to achieve different things from the different non-competitive activities?

(iii) How do you think the activities can help you achieve these things?

(iv) How successful have you been so far in achieving these goals?

A similar set of questions was asked about the competitive and sport activities the participant undertook. The aim of this was to complete the interview in the participant's mind. Questions asking the participant to outline each type of activity separately had been asked in the introduction to help the participant separate the two types of activity. It was felt that only asking about exercise during the interview might lead the participant to feel something had been forgotten. This approach also provided information of the different goals participants had for competitive sport and recreational exercise. The questions on recreational exercise were asked first as these were the most important for the present study and I wanted participants to outline their goals for recreational exercise thoroughly and independently of their goals in sport. A final question was asked on goals for exercise they thought that other people might have that may be different from their own. Throughout all the interviews, the wording of the questions was read exactly as it appeared on the interview guide. In keeping with qualitative research tradition (Bogdan & Biklen, 1992), the interview was structured to allow for open-ended responses, encouraging the participant to use his or her own words.

The questions were designed by my co-supervisor and myself with consideration to the goal orientation interview construction literature. Following the initial drafting of the interview guide it was read by two other researchers, one with a good knowledge in the goal orientation field and the second with experience in qualitative research. This resulted in several changes to the original interview. The interview was then talked through with a non-expert in psychology to further check clarity, resulting in a couple of additional minor alterations. Two recreational exercise participants I knew then acted as "guinea pigs" for the interview. This enabled a final check to be made that the interview questions were comprehensible for participants. Administering the interview to these two individuals allowed me to become more familiar with the questions and procedures. No further alterations were made as a result of these trials. The final version of the interview guide is included in Appendix A.

Procedure

Participants were recruited through gymnasium contacts as described earlier. Interviews were conducted at locations to suit the interviewee. Locations used were my home (5 interviews), and participants' homes (five interviews), and their workplace (1 interview). The interview guide was used to give a general structure to the interviews. Questions were asked in the same order to each participant and read exactly as worded in the guide. Occasionally items were skipped. This occurred if the item had already been answered by the respondent in their response to a previous question or if the questions were not applicable to the respondent. Examples of questions that were not applicable were those referring to competitive sports played when the person had already indicated they did not participate in any competitive activity. Following the participant's initial response to a question, I would generally use probes such as "that's all? Is there anything else" or "do you feel you have been

successful in the other goals you said you had now?", to gain clarification and further information. Interviews lasted between half an hour and an hour, were tape-recorded, and later transcribed verbatim by myself in preparation for data analysis. The interview process was continued until it was clear that only goals that were repetitions of those cited by previous interviewees were being stated, that is, no new goals were emerging. In the process of data collection, four tapes of poor quality were made, which were unable to be transcribed. I attempted to summarise these interviews, but, they were essentially regarded as lost and replacement participants were found.

Results

In analysing the qualitative data in the current study two processes were undertaken: data reduction and inductive content analysis. The method of analysis used was an interpretational analysis (Côté, Salmela, Baria, & Russell, 1993). The aim of interpretational analysis is to allow elements, categories, and relationships to emerge from the data with minimal overlap between categories. That is, elements, categories, and relationships are not predetermined.

Côté et al. (1993) stated:

> Although there is no one correct way of analysing qualitative data, it is essential that qualitative researchers provide a detailed description of the procedures, decision criteria, and data manipulation that allow them to present the final results of the study. (p. 128)

The following description of the data analysis procedures undertaken in the current study is presented to satisfy this requirement.

Data Reduction

Patton (1990) recommended the use of data reduction in the analysis of qualitative data. A data reduction process similar to that used by Jackson (1995) was

employed in the analysis of the interviews. After independently reading and making notes on the interview transcripts, my supervisor and I met and discussed each interview and came to agreement on the salient goal themes of each participant. In making independent notes, we each highlighted goal statements made by participants and tried to classify each statement in terms of achievement goal themes. For example, one participant stated: "I think it would be ... a personal goal to be able to say that I've done, I've trained for a triathalon and I've completed it." One analyst wrote next to the statement: "test of self: mastery of task," whereas the other wrote "mastery goal." This process of dual coding was conducted to enhance the validity of the analysis (Côté et al., 1993). The salient goal themes and goal statements were noted on separate copies of the transcripts by my supervisor and myself. After conducting separate coding, we came together to discuss each interview. Goal statements that had either been highlighted by only one analyst or that were differently labelled by each were discussed and agreed on. The results were then compiled into a set of raw data themes (the goal statements) and accompanying goal themes (see Appendix B). Côté et al. (1993) called this 'creating tags' and described it as separating relevant portions of data from their context.

Inductive Content Analysis

The aim of inductive content analysis is to group the goal themes expressed by individuals into meaningful integrated concepts (Patton, 1990; Strauss, 1990). The purpose of using an inductive design is to allow dimensions to emerge from the patterns in the cases without presupposing in advance what these dimensions will be (Patton, 1990). Côté et al. referred to this stage as creating categories. Since the aim of the current study was to reduce the influence of past achievement goal theories in the development of categories for the current questionnaire, this method was ideal for

the current analysis. A schematic overview of the products of the analysis process is shown in Figure 3.1.

The raw data themes for all the individuals were put into a pool then sorted into groups linking similar goal themes. This was done by myself and then later checked by my supervisor. Agreement between the two reviewers was high. To facilitate this

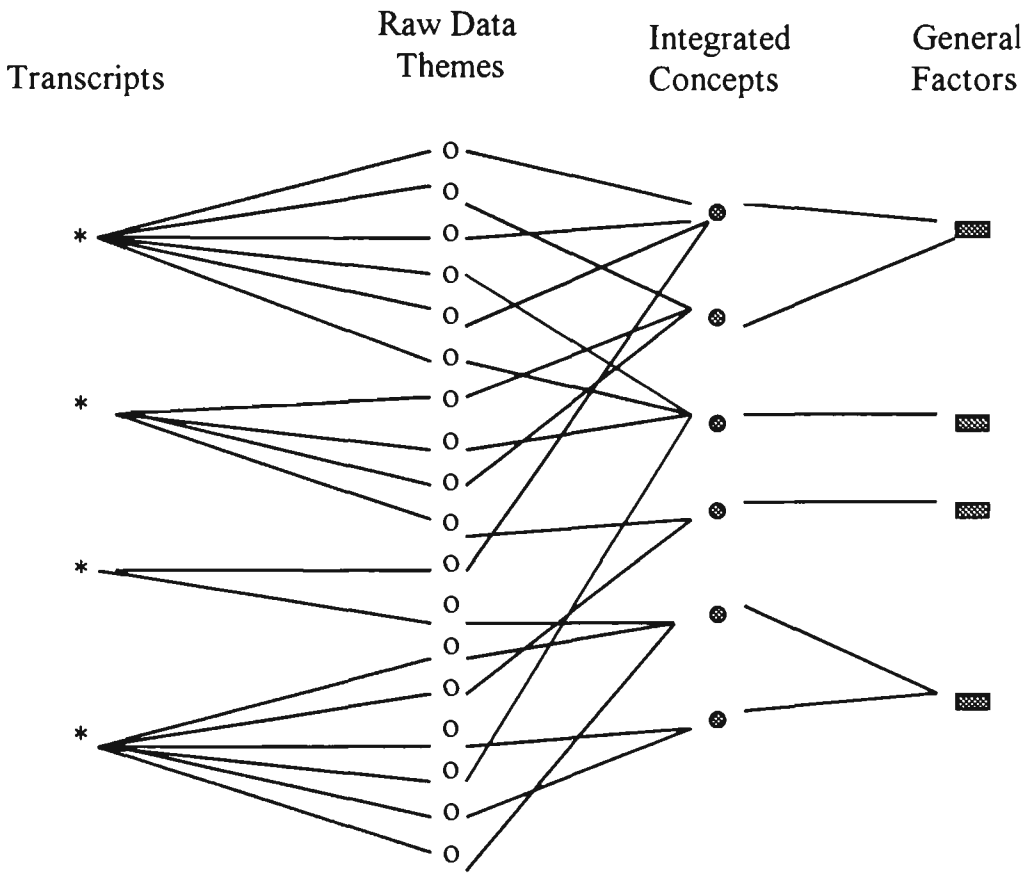


Figure 3.1. Stages of inductive content analysis used to reduce transcript data to meaningful themes.

process, the raw data themes and their accompanying goal themes were recorded on small slips of paper, which could then be moved around and grouped. For example the participant statement "a friend encouraged me... and I really enjoyed it" reflected two participation motives. The section "a friend encouraged me" was placed in the social

category, and the section "I really enjoyed it" was placed in the enjoyment category. The inductive content analysis was completed in successive stages. The first stage, which was very specific, involved linking conceptually very close statements (goal themes). An example of very close concepts would be all comments related to skill improvement. In the second stage, these concepts were grouped into slightly more general concepts or factors, which enabled a large number of participants' ideas to be drawn together. Throughout the process, categories remained flexible until it was felt that the data in each was similar to each other and yet distinct from other categories (Côté et al., 1993). Continuing the above example, the slightly more general concept might include a number of specific concepts all related to mastery of the activity; for instance, skill improvement, learning new skills, and improving on one's previous performance. The raw data themes were grouped into 13 integrated concepts (Côté et al., 1993) in this manner. At each stage, the process was conducted independently by two persons (my supervisor and myself) and later discussed. It was found that consistency of results was high. The concepts and data themes are shown in Appendix C.

The 13 integrated concepts were reduced to seven general factors by further linking connected ideas. The aim of this process was to reduce the amount of data and to find patterns in it in a manner that could contribute to our understanding of the underlying dynamics (Miles & Huberman, 1994). This process is shown in Figure 2. For example, it was felt that the concepts of appearance and social comparison were linked to the competition/ego factor. It is at this second level that the achievement goal concepts of task and ego fit. They are represented the general factors of mastery and competition. The process of reducing the factors was continued as long as meaningful connections could be seen between factors. Based on this criterion

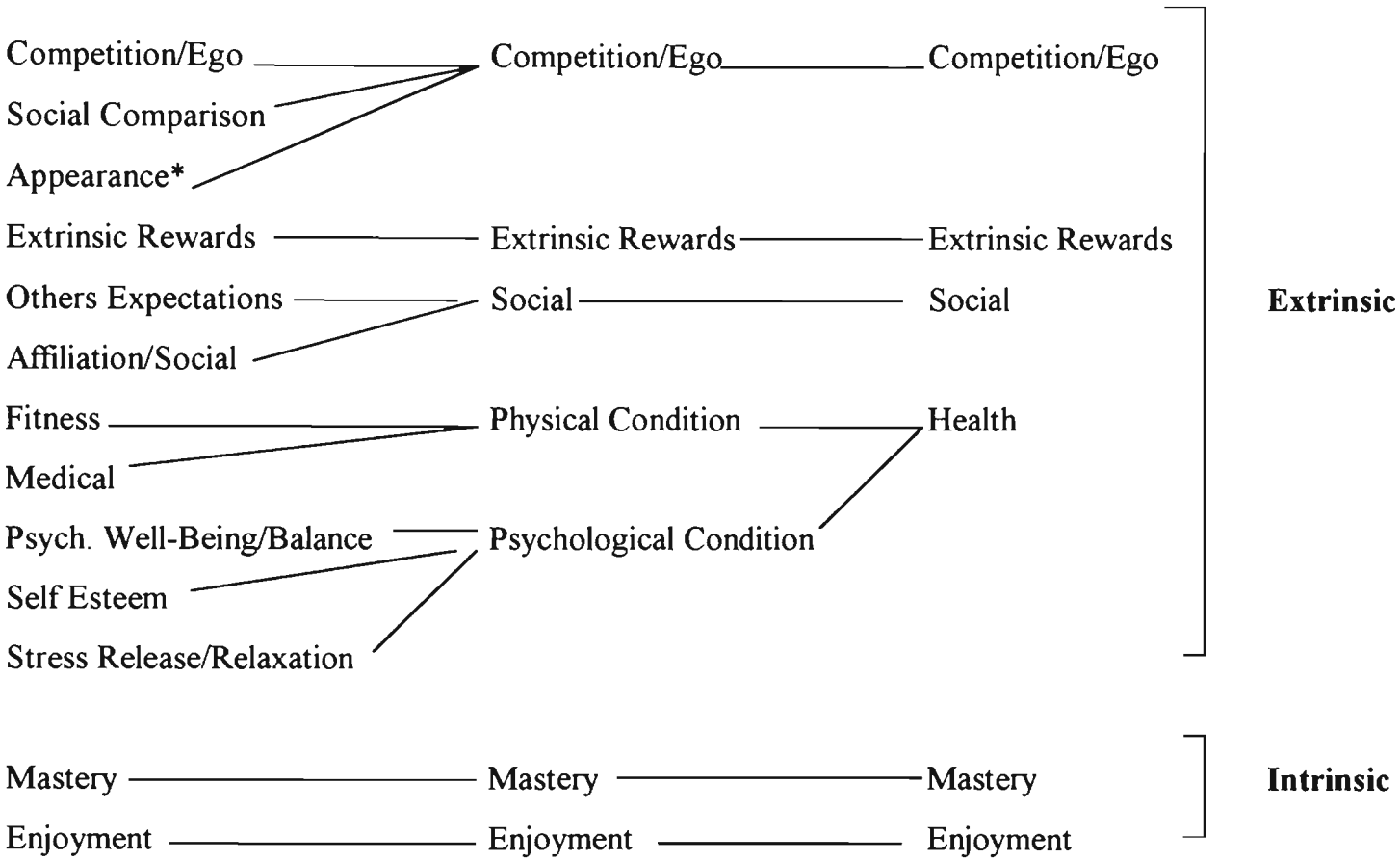
grouping stopped two more steps, when it was felt that there were no more useful and logical links to be made between factors. In this way the seven factors were grouped into two themes.

The 13 Integrated Concepts

The list of thirteen integrated concepts is important, as it represents the initial grouping of the raw data. In this section each concept is described and some examples of statements by participants reflecting the concept are given.

Competition. This concept refers to competition directly related to the exercise being undertaken. It includes such things as running faster or for longer than others, or doing an exercise more easily than others; anything that reflects comparison of ability in the activity being done. A comment reflecting this goal was this response: "I still like to compete... even now down at the gym if we go for a five k I always like to try to be up there in the top two or three even with the young guys." Another was "I'm a very competitive person". The converse of the competitive theme was exemplified by some participants who conveyed a dislike of competitive activities as being a reason for choosing the recreational activities they did. Comments emerged such as "competitive nature probably put me off...I'm interested in it because of the skills and...its good for fitness" and "um I didn't like the competition, basically yeah".

Social comparison. Participants who have this goal exercise because they want to impress others by their looks or simply by the fact that they exercise. This differs from the others' expectations goal in that here the participant is out to impress people in general or compare themselves to others rather than satisfy the wishes of one particular person. Comments such as "a lot of people who go to gym because they're the body beautiful...they sort of parade around you know" and "people say: oh you know. Do



* Although appearance has been placed within the competition group here, it is recognised that subsequent studies may show that it is better positioned alongside mastery.

Figure 3.2. Integrated concepts and hypothesised general concepts from Study 1

you go to the gym...How many times a week do you go?" both reflect different aspects of this goal.

Appearance. The appearance concept refers to the instrumental aim of changing or maintaining one's body shape or size through exercise. This includes goals such as losing, gaining, or maintaining weight, increasing muscle size, and toning up. An appearance goal was indicated by comments such as: "It was more the fact that I wanted to keep my figure now" and "It used to be weight loss, but I don't want that. I want to just be more toned, muscle defined".

Extrinsic Reward. An extrinsic reward is a reward such as money, a medal or some other material object, or praise from a significant person given to the participant for doing the activity. This may be given either just for completing the activity, or for completing it to a specified standard, or for performing better than others. An extrinsic reward goal is represented in the comment "but in terms of aerobics I'm pretty pleased...did the instructors course...and then got employment".

Others' expectations. This includes any reasons for exercise that are to do with pleasing others or doing it because it is expected by other people, such as family members, friends, or medical practitioners. One participant commented "its really for myself I 'spose. (Fred) likes me to look a certain way but .....in the long run I'm doing it for myself," which suggested to the reviewers that Fred may have some influence on the participant's exercise habits. One of the participants commented "the reason I started was 'cause my father was saying 'you're unfit, you have to go' and I started going." Several participants commented that they had taken up exercise at the recommendation of a doctor or physiotherapist.

Affiliation. There are two aspects to the affiliation goal. In the first, exercise participants who have affiliation as a goal for exercise do exercise because it enables

them to be with and talk to their friends who exercise at the same time or because it enables them to relate to others who also exercise. One participant referred to this goal in commenting on the activities of others who "meet people at the gym (and)...spend more time talking to each other than actually exercising". Other comments reflecting this goal were: "I sort of went to an aerobics class with a friend of mine," and "a lot of my friends had newish bikes and they were doing a lot of riding...". The second aspect of the affiliation goal is to meet new people or to make new friends. One participant claimed "when I first started it was more to get out and probably meet people...but its sort of changed". For her meeting people was the main goal she had when she started exercise in a gymnasium environment. Another similar comment by a participant was: "meeting different people and just being in a different environment".

Fitness. The concept of fitness refers to maintaining or increasing fitness levels by participating in exercise. The two most common things participants said when asked what they wanted to achieve from their exercise were health and fitness. Participant remarks such as "I suppose if I didn't value health and fitness I wouldn't be at the gym any more", "I think it's just fitness", and "just greater fitness level and overall healthiness" were very common.

Medical. This concept refers to aims directly related to improving an existing medical condition as well as to avoid further health problems in the future. The health aspect of a medical goal has already been mentioned, as it often accompanied fitness in participants' goal statements. The crucial distinction between fitness and medical categories was that medical related directly to a specific health problem the participant was being or had been treated for whereas fitness related to general overall health.

One participant cited medical reasons for exercise, saying "I guess the reason I started ...I used to have um a back problem...and I found the gym strengthened the muscles."

Psychological well-being/ balance. In both balance and psychological well-being, exercise is thought of as part of a healthy lifestyle. The idea of physical activity as part of overall health and to promote a healthy mind is conveyed in the concept of psychological well-being. Participant statements such as "healthy mind, healthy body" and "a sound mind and a sound body" reflect this concept. The balance concept is about doing exercise as part of an overall healthy lifestyle, which is balanced in work, family, and recreation; that is, the person commits time for each and by doing so does not allow any one thing to take over. The concept of a balanced life is contained in the participant statement that an exercise goal was: "to keep a balanced life...I think balance is really important for me...". This concept also includes the notion of a healthy mind-healthy body connection as a goal of exercise.

Self-esteem. The concept of self-esteem refers to doing exercise to improve the value the participant puts on themselves. Self-esteem goals were reflected in comments such as "...the fact that I'm doing exercise makes me feel good about myself". and "I'm doing something for myself...I feel better..." and "If I have a week off I feel really depressed" In this last instance the participant was saying that by doing something for herself, she increased her self-esteem and that this helped her to avoid becoming depressed. The avoidance of depression was not included as a separate category as this was the only instance of it being reported and because it linked with self-esteem as an aspect of psychological well-being. Exercising to improve one's self-esteem does not mean that you must improve or beat others to feel better about yourself. Just having participated may be sufficient, as was the case with the

participant quoted in the above example. Therefore, exercising to improve self-esteem is different from either ego or mastery goals.

Relaxation/ stress relief. Commonly cited goals for exercise were relaxation, stress reduction, and getting away from other things. Comments such as "health and fitness number one, peace of mind number two....it's like my hour and a half that I have to myself", "exercise is more to relieve the stress levels", "I feel so much more relaxed when I exercise", "I felt I needed an outlet..." reflect this aspect. Frequent phrases used by participants included such things as "needed an outlet" and "to get away from the work a day world," suggesting that exercise was a way of relaxing, letting off steam, and of getting time to themselves, away from pressures in their life.

Mastery. This concept refers to improving or acquiring skills in the exercise activity being undertaken. The mastery concept included things such as learning and improving skills, and meeting personal challenges. Participants with this goal said things such as "You know it's a challenge more than anything else"; "I just want to accomplish...getting faster and longer distances"; and "just small improvements like if you improve or you get up a hill that normally kills you, it sort of makes me feel better about myself.". Another participant commented that "I enjoy the feeling of using my body for what it was designed to be used for and so whether it is going for a run and working the cardiovascular system or doing karate and working your arms and legs or whatever else and just working your whole body generally".

Enjoyment. For many participants, an important goal in determining their exercise behaviour was having fun or doing something just because they want to. One participant commented "I do an exercise because I want to do an exercise and that's just a small part of my life", another remarked of sport and exercise "I've just always loved it", and another "I felt I needed an outlet...and I really enjoyed it". The

enjoyment factor also includes people who exercise because it makes them feel good or gives them a "buzz" and who give achieving this sensation as their goal when they exercise. Comments such as "you get on a real adrenaline high the more you do" and "Skiing...That's much more exhilaration".

General Factors

As mentioned previously, the thirteen integrated concepts were reduced to more general themes in a number of steps linking related ideas. In the first instance seven themes were listed. These were competition/ego, extrinsic reward, social, physical condition, psychological condition, mastery, and enjoyment. The competition/ego group contained the integrated concepts of competition/ego, social comparison, and appearance, all of which were felt to reflect competing against others in some manner. Although appearance has been placed within the competition theme, it may be made up of two separate goals. The first involves trying to look better than others and therefore belongs in the competition themes. The second involves trying to look how I think I should look, which would belong in the mastery theme. Factor analysis in future studies will indicate where the appearance concept best fits or whether it needs to be divided into two categories. The general theme of extrinsic reward contained only the extrinsic reward integrated concept. Social included aspects of affiliation and meeting others' expectations. The physical condition theme contained the integrated concepts reflecting physical aspects of health, fitness, and medical. The theme containing the mental aspects of health was called psychological condition. It contained the integrated concepts of psychological well-being/balance, self-esteem and stress release/relaxation. The mastery and enjoyment integrated concepts similarly alone as general themes. The next stage grouped physical and psychological condition themes into an overall health theme. A final reduction linked competition/ego, extrinsic

reward, social, and health to form an extrinsic theme, whereas mastery and enjoyment were combined to form an intrinsic theme.

Establishing Quality and Credibility

Qualitative analysis is continually questioned regarding the quality and credibility of the research process. Given that human judgements are generally found to be less accurate than statistical ones (Miles & Huberman, 1994), careful scrutiny of qualitative data is justified. Several procedures were followed in an attempt to maximise the quality and credibility of the current study. These processes are aimed to address the similar issues to those of validity and reliability in quantitative analysis.

Reporting. Patton (1990) emphasised the importance of careful reporting of methods and results in qualitative studies. Precise and detailed reporting allows others to assess the quality of the research and, thus, gives it greater credence. The present methods and results sections represent an attempt to satisfy this criterion. In the Methods section, a thorough explanation of the sampling and testing techniques that were used was reported to enable readers to get a clear understanding of these processes as applied to the study. In the results section, possible quality-related questions about the researcher and methods used are answered and a detailed reporting of results and analysis is provided.

Representative sample. The population of interest in the current study was adult recreational exercise participants. The selection of participants was purposive and used a maximum variation strategy (Patton, 1990). Participants were chosen to cover a range of ages in both genders. The sample was limited because I mainly looked at people who visited a gymnasium to exercise and because I relied on friends of friends who were willing to participate. The possible drawback of this method is that some goals of recreational exercise participants who do not attend gymnasiums may have

been missed. This possibility is lessened with the knowledge that several of the participants did a large portion of their exercise outside the gymnasium context, and may therefore have reported similar goals to those who typically do not attend a gymnasium. Future studies should sample from a wider range of recreational exercisers.

Researcher effects. Patton (1990) stated the 'trustworthiness of the data is tied directly to the trustworthiness of the evaluator who collects and analyses the data' (p. 476). It is important to establish the credibility/objectivity/neutrality of the researcher in any study, but particularly important in qualitative research. In the area of motivation, I have experience in both goal orientation and participation motivation research. I conducted a minor thesis looking at task and ego orientation in gymnasium participants for my Masters degree and was involved in a project looking at achievement goals and motivational climate in junior basketball players. I have also read widely on the topic for the current research. I was involved in collecting and analysing data and writing the report for a large (2,601 participants) study on participation motivation across 14 sports. Although as the interviewer in the present study, I did not have a great deal of experience in interview research I had done training in psychological counselling as part of a Masters of Educational Psychology, using many similar skills. Prior to conducting interviews, I read widely on the subject of qualitative interviewing techniques. Two trial interviews were conducted with friends who volunteered to participate, to obtain interview practice and familiarisation with the interview questions. Experiences in these practice interviews were discussed with my supervisor, as were the principles that emerged from my reading on the topic.

During the interview, researcher bias was minimised by reading the interview questions exactly as they were written. Any supplementary comments I made, as the

interviewer, were limited to probes directly related to or repeating a statement by the participant in order to clarify or gain further insight into their response. This standardised interview format reduces interviewer effects by asking the same principal questions to all respondents and making these questions available for inspection (Patton, 1990). Subjective judgement was used in determining when to employ probes. The wording of these was not pre written. It usually involved repeating what the interviewee had said and/or asking them to expand on or explain their statement.

Peer review. Peer review, or using multiple analysts to review findings is one form of triangulation that can be used to enhance the validity of qualitative analysis (Miles & Huberman, 1994; Patton, 1990). Triangulation is the process of combining multiple observers, theories, methods, and data sources to overcome the intrinsic bias that arises from a single method, observer, or theory (Patton, 1990). Peer review was used at several stages in the analysis of the interview transcripts. The credibility of the initial analysis was enhanced by using two reviewers who independently read the transcripts and then grouped the raw data themes, thereby giving two different perspectives on the data. In most cases, both reviewers came up with the same groups, indicatig high inter-rater reliability. Where there were differences of opinion, the final themes were arrived at through a process of consensus. His same process of inter-rater review and assessment was used when grouping the raw data themes into integrated concepts. Multiple reviewers were consulted in grouping the integrated concepts into more general factors. In reducing the thirteen integrated concepts, several possible groupings were considered. The groupings arrived at seemed the most logical to my supervisor and myself. The thirteen concepts were then presented to two of our peers for independent grouping. The factors they arrived at were very similar to those we had generated, confirming the seven-category framework.

Rival explanations. The testing of rival explanations to those derived from qualitative analysis is important when establishing the credibility of a study (Patton, 1990). The most obvious rival explanation for the current data is that the data represent motives of participants rather than achievement goals of participants. The questions participants were asked used the words ' what do you hope to achieve...', 'how do you think these activities can help you achieve...' and 'how successful have you been at achieving...'. Achievement goal theorists maintain that to understand a behaviour, the function and meaning of that behaviour must be understood. Success and failure for the individual can only be understood in terms of the goal for that person; that is, by asking what the person is trying to achieve by the behaviour (Ames, 1984a; Duda, 1996; Dweck, 1986; Maehr, 1984; Nicholls, 1984a; Roberts, 1993). The Task and Ego Orientation in Sport Questionnaire (TEOSQ) and the Perception of Success Questionnaire (POSQ), which measure achievement goals, ask participants to respond to statements about feelings of success such as 'I feel most successful when...' (Duda, 1992; Roberts & Balague, 1989). Given these definitions of achievement goal theory and the questions used in past questionnaires, I feel confident that the questions in the interview were asking about achievement goals rather than motives. Each question asked either directly about the achievement or success perceived by the participants. Following conclusion of the analysis, the transcripts of the interviews were reread to check that the questions in the interviews were asked verbatim and that no other questions or statements were made that might lead the participant to respond with participation motives rather than achievement goals. I am confident that both of these criteria were satisfied. The questions were asked directly as written and further, when probing responses to those initial questions, I largely used the words 'goals', 'achievement', and 'success'. In two cases, while probing. I did

use the word 'reason' instead of goal. Both of these were near the end of the interview, after the participant had already outlined their goals and responded to the written questions. It is not felt that these two instances had any noteworthy effect on the outcome of the study. Therefore, I am confident that, the participants were asked about achievement goals, and that if their answers reflected motives rather than goals, it was for some other reason.

Another possible rival explanation is that although a wide variety of goals were cited represent only a small proportion of the goals mentioned by participants, the vast majority of responses being classed as task and/or ego goals. The percentage of times each of the thirteen concepts was cited in the study suggests that this is not the case. Mastery goals represented 13% of responses and ego goals represented 3% of responses. Anti- competitive statements represented 5 % of interview responses. Of the remaining interview responses, 16% reflected fun goals, 14% represented fitness and health, 14% were appearance-related, 11% related to social goals, 10% were relaxation and stress release oriented, 5% were social comparison, and the remaining 9% of goals referred to others expectations, extrinsic rewards, self esteem, medical, and psychological well-being. Although statistics such as these are not usually mentioned in qualitative analysis, in this study, they are useful in providing the frequency of referral to each type of goal by participants. It is clear that task and ego goals represent only a small proportion (16%) of participant goal statements, and therefore are not likely dominate perceptions of the participants about their exercise.

Discussion

Summary and Main Conclusions

Past researchers have developed achievement goal orientation questionnaires on the basis of goals hypothesised by specific theories. Although they have been used in exercise settings (Fox, Goudas, Biddle, Duda, & Armstrong, 1994; Lloyd & Fox, 1992), these measures were developed in the context of education and competitive sport. The purpose of this study was to gain additional insight into the achievement goals of recreational exercise participants by asking them to nominate what they wanted to achieve from the exercise they are doing. These nominated achievement goals were then to be used, in addition to knowledge derived from past research and theories on achievement goal orientations, in the development of a measure of achievement goal orientations in recreational exercise participants.

Initial analysis of the data produced 13 groupings (integrated concepts) containing the goal theme statements of participants. As anticipated, the variety of achievement goals that emerged on analysis of the qualitative interviews could not be adequately described by the two achievement goal (task/ego) theory used in much of the sport and education research to date (e.g., Duda, 1986, 1988,1989b, 1996; Gill, 1986; Lochbaum & Roberts, 1993; Vealey & Campbell, 1988). Neither did they fit into the four goals outlined in Maehr and Braskamp's Personal Investment Theory (Maehr, 1984, 1991; Maehr & Braskamp, 1986). Further inductive content analysis grouped the integrated concepts into successively more general factors in several stages. The penultimate reduction included the six factors competition/ego, extrinsic reward, social, health, mastery, and enjoyment. The final reduction produced two factors; intrinsic and extrinsic motivation.

Linking the initial 13 integrated concepts. As expected, both ego and mastery goals emerged from the data as integrated concepts. An integrated concept uniting social themes formed the expected social goal. In addition to the aspects of making new friends and being with friends that were anticipated to be part of the social goal, the social goal also included the desire to please others.

It was anticipated that recreational exercise participants would cite instrumental goals for their exercise behaviour. Although instrumental goals did emerge from the data, their nature was too diverse to be classified as a single factor. Medical and fitness related goals were seen to represent physical components of health and combined and labelled physical condition. Goals of stress release, relaxation, self-esteem, and psychological well-being/balance were thought to represent mental aspects of health and were grouped together as psychological condition. I thought it was important to maintain a distinction between mental and physical aspects of health initially as they were both quite extensive and rich factors in their own right. The distinction would also assist in questionnaire development in later studies. Later, in the second phase of grouping, physical condition and psychological condition were joined to form an overall health factor. A frequently cited goal, enjoyment, was maintained as a factor in its own right. The goal of extrinsic reward such as monetary payment was similarly kept separate from other concepts at this stage. The presence of this goal indicated that the participant was doing exercise partly for money or other external reward, such as prizes or praise. A participant who cited money or prizes as a motivating goal could not be classified strictly as a recreational exercise participant. This factor was included because the participants who did cite it all gave it as an additional goal or bonus on top of other, more important goals for participation. It might also be useful in making the results applicable to a wider range of sport and

exercise participants. The integrated concept of social comparison referred to comparing and competing with others in aspects other than ability at the exercise being undertaken. This included competition in body related aspects, such as size and shape. Social comparison also included competition about the amount of or type of participation, exercise being thought of as a 'proper' thing to do by some participants. The social comparison concept was linked to the competition/ego concept because of the competitive nature of both the goals. Participants who cited social comparison goals competed with others in terms of looks or behaviour, those who cited competition goals competed directly in terms of frequency, duration, or intensity of the activity being done.

Finally, competition, ego, extrinsic reward, social, and health factors were grouped together as extrinsic goals. These categories all reflected goals for exercise that were external to the exercise itself. Mastery and enjoyment were grouped as intrinsic goals, reflecting goals satisfied directly from the activity. Deci and Ryan (1985) defined intrinsic motives as needs for competence and self-determination that relate to the motives of interest and enjoyment, and promote interactions with the environment that seek to challenge ones-self. They defined extrinsic motives as behaviours where the motive for doing the activity is something other than the activity itself. The seven second-order themes clearly fall into these two general factors.

Relationship of Results to Theory and Research

At the outset of this study, I intended to investigate the different types of achievement goals people had for recreational exercise. The range of responses of participants to questions on their achievement goals has lead me to look beyond achievement goal theory to other work on motivation for an explanation of the results. Therefore, in relating the results to previous theory and research in this section, I will

look first at how well achievement goal theory is able to accommodate the results. I will then compare the present results to those obtained using the descriptive approach to the identification of motives for participation in physical activity that is exemplified by the Participation Motivation Questionnaire. Finally, I will examine the fit of the present data to Deci and Ryan's (1985) self-determination theory and related research into exercise motivation.

Relationship of results to achievement goal theory. The penultimate reduction in the inductive content analysis produced six themes: competition, extrinsic reward, social, health, mastery, and enjoyment. Competition and mastery are analogous to the two most cited achievement goals, referred to in the introduction as ego and task. Ego-involved individuals compare their own ability to that of others, attempting to outperform others or do better, preferably with less effort (Ames, 1992b; Ames & Archer, 1988; Duda, 1992, 1993; Roberts, 1984, 1992a; Thorkildsen, 1988). Task-involved individuals have a self-referenced perception of success, attempting to master or improve a skill, learn something new, or improve on their own past performance (Ames, 1992a, 1992b; Duda, 1992, 1993; Roberts, 1984a, 1992). Both task and ego goals clearly emerged in the present study, however, there were more goals given by participants that could not be explained simply in terms of task and ego achievement orientations.

The third goal labelled as affiliation here is not a newly discovered goal. Urdan and Maehr (1995) suggested that social goals should be included in motivation studies, arguing that two goals were not sufficient to explain behaviour. Maehr and Braskamp (Maehr, 1984, 1991, Maehr & Braskamp, 1986) included an affiliation goal in their Theory of Personal Investment. Individuals with an affiliation goal achieve success through pleasing others, gaining social approval, and gaining pleasure from being in the

company of others. Whitehead (1992) also added a social aspect to achievement goals listing three goals: beating others, personal progress, and pleasing others.

The goals themes of extrinsic reward, health and enjoyment are all goals that have not previously been discussed in the achievement motivation literature. Finding them lends support to the original premise of this study that recreational exercise participants have a wider range of goals than have been measured previously in achievement goal research. The goals of extrinsic reward and health are both extrinsic instrumental goals; that is, they are indirect outcomes of exercise. Enjoyment is an intrinsic goal that is similarly indirectly related to exercise. These goals, along with the social goals and the appearance aspect of the competition theme differ from task and ego goals measured by the TEOSQ in the nature of their relationship to the activity. Both task and ego goals refer to achievement goals that are directly related to the activity and therefore can only be obtained through participation in that activity. The other goals are all indirectly related to the activity, that is they can be achieved through participation in recreational exercise, but there are also other ways to achieve them.

Relationship of results to research involving the Participation Motivation Questionnaire. An area of research that has delivered some results in common with the present study is studies involving the Participation Motivation Questionnaire (PMQ). Gill, Gross, and Huddleston (1983) designed a questionnaire in which participants rated the importance of a number of participation motives. Thirty-seven questions were designed following a review of youth sport participation literature and asking 750 adults about their participation in an open-ended questionnaire. After a pilot study the number of items was reduced to 30 and tested on a large group of youth participants in a sports summer camp. Factor analysis identified eight factors underlying the PMQ: achievement/status, team orientation, fitness, energy release, skill development,

affiliation, fun, and a miscellaneous factor. The main motives of participants were to improve skills, have fun, learn new skills, meet a challenge, and be fit.

Several subsequent studies have used the PMQ and modified versions of it to investigate motives of participants in other sports and age groups (Clayton, Morris, Power, & Jin-Song, 1995; Gould, Feltz, & Weiss, 1985; Klint & Weiss, 1986, 1987; Longhurst & Spink, 1987; Brodkin & Weiss, 1990; Morris & Han, 1991, Morris, Clayton, Power, & Jin-Song, 1995). The main motives and factors or groupings of motives for participation have varied slightly in each study. This result is most likely due to the different activities and age groups investigated. Morris and associates (Clayton et al., 1995; Morris et al., 1995) looked at a range of activities using an expanded 50 item PMQ and found that this was the case. The top motives in their study were to stay healthy, have fun, stay in shape, enjoyment, challenge, skill improvement, and learning, but the importance of each varied across age, gender, and activity type. The factors underlying the questionnaire were mental relaxation, status, skill improvement, challenge/win, health/fitness, affiliation, environment, be occupied, and fun. Morris et al. (1995) found that as with the motives, the relative importance of each factor varied according to gender, activity type, and age of participant.

The factors found in studies using the PMQ look very similar to the 13 integrated concepts and subsequent groupings that resulted from the present study. The only integrated concepts from the current study not covered in the PMQ studies adequately are those of social comparison and self-esteem. In the PMQ, participants are asked to rate a range of motives for participation in physical activity on a 3- or 5-point Likert scale. These motives are then grouped into factors. The observation that the motives listed in the PMQ are very similar to the goals in the present study suggests that the same underlying concept is being investigated. A weakness of the

PMQ approach is that it is descriptive and not supported by any underlying theory of motivation.

Relationship of results to research involving the Motivation for Physical Activities Measure (MPAM). The achievement goals found in the present study have much in common with participation motives described by Frederick and Ryan (1993). Frederick and Ryan (1993) designed the Motivation for Physical Activities Measure (MPAM) to examine three types of reasons for engaging in physical activity, derived on the basis of a literature review, pilot studies, and Deci and Ryan's (1985) self-determination theory. The three types of reasons were competence, body-related, and interest-enjoyment reasons. The competence factor included motives relating to skill development, competition, and challenge. The body-related factor included items concerned with improving appearance and fitness. The interest-enjoyment factor contained items about the activity being fun, interesting, stimulating, and enjoyable. The integrated concept of enjoyment found in the present study related closely to the enjoyment factor described by Frederick and Ryan. The competence factor described by Frederick and Ryan corresponds to the integrated concepts of mastery and competition. The body-related factor encompasses the integrated concepts of appearance, fitness, and relaxation. Integrated concepts found in the current study that are not covered by Frederick and Ryan's (1993) questionnaire are social comparison, expectations of others, social/affiliation, medical, self-esteem, psychological well-being/balance, and extrinsic reward.

In revising the MPAM, Ryan, Frederick, Lepes, Rubio, and Sheldon (1997) separated the body-related questions into two factors, fitness and appearance. The revised questionnaire referred to health and fitness, however no questions mentioned any aspects of psychological health. In the initial version there had been an item:

"Because I want to better cope with stress" (Frederick & Ryan, 1993, p. 132), which was not included in the revision, although the reason for the omission was not made clear. The revised MPAM included a group of items relating to social motives for physical activity, added following a review of literature suggesting social goals as important goals for participation. These items reflected being with friends and meeting new people. The item relating to competition in the competence factor of the original questionnaire was dropped in the revised version, leaving the remaining items all reflecting skill maintenance and improvement. Thus, although the revised MPAM included social motives, which it had not done previously, it did not include several of the concepts found in the current study. These were competition, social comparison, expectations of others, medical reasons, self esteem, psychological well-being/balance, relaxation, and extrinsic reward.

Neither the original nor revised versions of the MPAM covers all of the concepts found in the current study. It is a lot less thorough than the recent versions of the Participation Motivation Questionnaire in covering the motives of sport and exercise participants, but, self-determination theory, from which the MPAM was developed, is a well-constructed motivational theory and as such provides a strong basis for further studies.

Intrinsic and extrinsic motivation and self-determination theory. In both the 1993 and 1997 studies using the MPAM, the distinction between factors considered intrinsic reasons for participation and those considered extrinsic reasons was highlighted (Frederick & Ryan, 1993; Ryan et al., 1997). Similarly, the final reduction in the current study resulted in the two factors of intrinsic and extrinsic motivation. Deci and Ryan (1985) described intrinsic motivation as based on the "innate, natural propensity to engage one's capacities, and in doing so, to seek and conquer optimal

challenges" and said that it "emerges spontaneously from internal tendencies and can motivate behaviour even without the aid of extrinsic or environmental controls" (p. 43). They proposed that interest and enjoyment are experienced when people are intrinsically motivated. Intrinsic motivation can be inferred when a person does an activity in the absence of a reward, contingency, or control (Deci & Ryan, 1985). Intrinsically motivated behaviour, therefore, has an internal perceived locus of causality. A person does something for internal rewards such as interest and mastery. In comparison, extrinsically motivated behaviour has an external perceived locus of causality. A person does something to achieve an external reward or comply to an external constraint. The activity in this case is a means to an end rather than an end in itself (Deci & Ryan, 1985). Frederick and Ryan considered interest and enjoyment motives for exercise as intrinsic, because they pertained to satisfaction derived from the activity itself. Body-related motives were considered extrinsic as the activity was done in order to achieve a separate extrinsic outcome. In the revised questionnaire, the MPAM-R, appearance, fitness, and social factors were also considered as extrinsic motives.

The definitions of intrinsic and extrinsic motivation given by Deci and Ryan (1985) are part of a larger theory of self-determination in human behaviour. Deci and Ryan stated that their work is different from cognitive theories of motivation because it addresses the energisation and direction of behaviour, then uses motivational constructs to organise cognitive, affective, and behavioural variables. They argued that intrinsic motivation is based in the need to be competent and self-determining and that rewards often "co-opt people's self-determination and initiate different motivational processes...(and result in a) change in perceived locus of causality from internal to external" (p. 49). This leads to a decrease in intrinsic motivation, less persistence in

the behaviour in the absence of external rewards, and a decrease in enjoyment of the activity. Deci and Ryan (1985) developed a very well thought-out and researched theory on motivation. From this very brief overview of part of their theory, it can be seen that, like achievement goal theory, self-determination theory places emphasis on the importance of showing competence to maintaining motivation. There are other similarities between the theories (as well as differences), making them not completely incompatible.

Summary of relationship of results to research. Achievement goal research has concentrated mainly on two achievement goals, task and ego orientation. These emerged in the current study, but only explained a small number of the goals of participants. Social goals have previously been mentioned in some achievement goal studies, and these too emerged in the present study. As anticipated, there were a number of goals cited by participants that had not emerged in past achievement goal research, in particular, health-related goals and enjoyment. It can be argued that these are not true achievement goals, that is, people with these goals are not trying to achieve at the activity. Therefore, other theory and research in the area of motivation was carefully reviewed.

The results of the current study look very similar to outcomes of studies using the PMQ. Only three of the integrated concepts to emerge from the present study were not found in research involving the PMQ. This leads to the question of whether, in the present study, the responses represent participation motives rather than achievement goals. The PMQ is a descriptive tool, and as such does not provide any theoretical basis to the results obtained.

Self-determination theory, as described by Deci and Ryan, (1985) appears to provide a solid theoretical base from which to understand motivation within

recreational exercise. In particular, the division into intrinsic and extrinsic motivation at the highest level in the current study fits with self-determination theory. The theory is able to explain the classic achievement goals of task and ego as well as the range of other goals found in the current study. Neither the MPAM nor the MPAM-R, which were developed from self-determination theory to measure motives for participation in physical activity, adequately cover the range of goals found in the current study. Although the factors of the MPAM and MPAM-R are similar to the groupings in the present study, they omit some of the present categories. Thus, although self-determination theory provides a solid theory from which to explain the present results, the questionnaires which have been developed from it to date are not broad enough to measure the range of goals found in the current study.

Methodological Issues

The main dilemma of the current results is the question of why, when participants were asked about their achievement goals for recreational exercise, were their responses more consistent with participation motivation research than achievement goal research. Possible causes for this outcome are interviewer bias and the types of questions asked. Interviewer interference and question validity were dealt with in the results section. I am confident that I did not lead the participants to responding with motives rather than achievement goals through any words or actions prior to or during the interview. I am also confident that the questions asked were those on the interview transcript and that they related to achievement goals. The questions in the present study asked participants what they hoped to achieve, how the activities could help them achieve their goals, and how successful they have been at achieving their goals in recreational exercise. There is no doubt that these questions asked participants about achievement goals. A major difference in these questions from questions in most previous research is their open-ended nature. The TEOSQ, for example, asks participants to respond on a Likert scale to a number of statements beginning 'I feel most successful when...' (Duda, 1989a, 1992). The items that followed reflected task and ego goals. The SPECTRUM questionnaire uses a similar method (Tammen, 1995). The obvious problem with the closed question format is that participants are limited to the goals presented to them. They may have other goals in addition to those presented, which may even be more important to them, but if they are not asked about them, they are unlikely to volunteer them in a closed questionnaire format. In the current study, task and ego goals did emerge from the interview in addition to other goals, indicating that perhaps this closed questionnaire format is too limiting in the recreational exercise environment. In competitive environments, such as

sport or education the two goals may account for a substantial portion of goals people have. It is concluded that the interview process was conducted in an appropriate manner and that it generated a relatively wide and representative range of appropriate responses.

The transcription and analysis process involved independent analysis by two or more people at several stages. The transcripts were read by myself and another reviewer to identify goal statements of participants. These were discussed and any differences resolved. The inductive content analysis similarly, was conducted by two reviewers independently and then discussed. A third reviewer was also asked to conduct the process of inductive content analysis and his results proved very similar to the agreed groupings. By the use of multiple reviewers and analysts in this way, the likelihood of researcher bias influencing the results was minimised.

Like most qualitative studies, the sample size in the current study was small. Interview studies such as the one conducted are very time consuming. Each interview takes up to an hour and must be transcribed and then analysed in detail. It is impractical to do large scales studies using such methods unless you have a very large team to do them. The aim of conducting an interview study is to gain information that might not be gained using quantitative methods. Although the sample size was small, it included participants of both sexes with a range of ages, to get a diversity of opinions. Obviously the sample size limited the number of people in each age group that could be questioned. The sample was also biased because of the nature of collecting the sample; relying on friends of friends. It is very difficult to get strangers to participate in such a long study without offering some sort of reward. Despite the problems of sample size and bias, I feel that it provided a useful insight into the motives of the participants. Although not useful as a quantitative measure of different

achievement goals within the community, the study is able to be used to highlight the range of goals people have.

Motives and Goals

It might be argued that the 'goals' participants have cited in the present study are not truly achievement goals. The demonstration of competence is said to be the primary purpose of any achievement behaviour (Ames, 1984a; Duda, 1986; Dweck, 1986; Maehr, 1984; Nicholls, 1984a; Roberts, 1993), and it could be argued that the primary purpose of a goal such as to have fun is not to demonstrate competence. If this is the case, some exercise participants in this study, when asked about achievement goals, have answered with something other than or in addition to achievement goals. In the TEOSQ (Duda, 1989a) and POSQ (Roberts & Balague, 1993) participants are asked to indicate when they feel most successful at an activity; feeling successful being used as an indication of achievement goals. Does feeling successful mean that you have achieved your goal for that activity and therefore that you have demonstrated competence? I would argue that feeling successful at an activity does not necessarily imply demonstration of competence. It will only apply if your goal is to demonstrate competence. People can feel successful at an activity without having demonstrated competence. If your goal is to have fun or make friends by participating in exercise the demonstration of competence in the activity is not necessary to feel successful. The TEOSQ finds only task and ego goals when people are asked this question because they are only asked about task and ego goals.

It is important that some distinction between goals and motives be made. Goal orientation theorists generally refer to the task and mastery goals; being things such as winning a race or getting a personal best. Participation motivation researchers on the

other hand refer to things such as winning or learning new skills as motives. In the dictionary of psychology Reber (1985) defines a motive as a "state of arousal that impels an organism to action" or "a rationalisation or excuse that a person gives as the reason for his or her behaviour" (p. 455). A goal, Reber says, implies some end result or object, although he notes that "occasionally there is a loss of clarity in the distinction between the actual, objective goal and some internal, subjective motivational state" and also that "while it is probably true that there can be no goal unless there is some motivational state, purpose is still 'internal' and goal...external and operational." (p. 304). According to these definitions a goal is a specific external target whereas a motive is an internal drive influencing behaviour. In this case, the goals in achievement orientation theory such as skill improvement, winning are really motives, as they are driving the achievement behaviour. When a specific external target such as to reach a particular speed is identified, then goal would be an appropriate term. For the remainder of this dissertation, I shall refer to motives people have for exercise behaviour unless there is a specific external goal stated.

In the current study participants were asked to state their achievement goals and responded with a range of motives. One might then ask how important the distinction between goals and motives is, if it is not evident to the individuals involved. I suspect that what occurred was that participants responded with a range of motives for exercise as this is a much easier task than giving specific goals. As I have shown and Reber (1985) pointed out, psychologists can and often do confuse the two. Why should we expect our participants to correct us?

Although both achievement goal research and participation motivation research are measuring motives I think there is a difference between the two lines of study. The research on task and ego orientations is examining achievement motives, where

achievement refers to achievement directly related to the activity itself, whether it be to perform better than an opponent or than your own past performance. The other motives found in the present study, such as fitness, health, socialising, and relaxing all refer to achievements that are attained through the activity and do not relate directly to the activity being undertaken. Ultimately, one could say that ego orientation related to being better than others and task orientation relates to a sense of accomplishment or mastery. The important aspect which distinguishes the motives within goal orientation theory is that the beating of others or mastery of a task only relates to the activity being done. Thus, motives within achievement goal theory are a subset of a broader set of motives that govern behaviour in contexts like exercise or physical activity generally.

Implications for Future Research

The results of the present study indicate that the two-goal theory, based on task and ego orientation, does not sufficiently explain the variety of goals of recreational exercise participants. There is obviously need for further interview and other non questionnaire-based research on the goals of recreational exercise participants to replicate the current findings and identify any further goals or motives not found in the present study. Leading on from this could be research to investigate whether participants in different types of exercise activity place emphasis on different motives. This research could be done using interview techniques, but could also be done using a questionnaire approach, allowing a larger number of participants to be sampled quickly and easily. Another possibility for future research would be to test an expanded achievement goal theory that includes a wider range of goals, as has been suggested by researchers who have nominated social goals as one of these additional goals. A problem if this direction is taken is the appropriateness of calling enjoyment motives

achievement goals. Given the similarity of the present results to participation motivation research, modification of questionnaires in this area seems to be a more logical direction, because most of the categories identified here have been included in validated measures. Although the widest range of motives has been identified by use of the PMQ, especially by Morris and colleagues (e.g. Morris, Clayton, Power & Jin Song, 1996), the PMQ is not supported by a theory. Ryan, Frederick, and associates (Frederick & Ryan, 1993; Ryan, Frederick, Lepes, Rubio, & Sheldon, 1997) provide the basis for this work with the MPAM and MPAM-R, developed from the theory of self-determination (Deci & Ryan, 1985). The Sports Motivation Scale (SMS) (Fortier, Vallerand, Brière, & Provencher, 1995; Pelletier, Fortier, Vallerand, Tuson, Brière, & Blais, 1995; Vallerand, Pelletier, Blais, Brière, Senécal, & Vallières, 1992) was also developed on the premise of self-determination theory. The MPAM and the revised MPAM will be used a starting point for examining the motives of recreational exercise participants in the current thesis because the theoretical structure used in its development of the MPAM concurs with the results of Study 1. Further work is needed to encompass the range of motives found in the present study.

Implications for Practice

Before making recommendations for practice I will qualify my statements with the reminder that this is only a single study which needs to be replicated before the results are acted upon. The results of this study suggest that those organising recreational exercise need to consider a range of goals, rather than concentrate on two, as achievement goal orientation theory might suggest. Further research might also show that a wider range of goals is also be more appropriate for recreational sport environments. Practitioners should be aware that people participate in exercise for a range of reasons and that a large number of these are extrinsic motives. Things such as

body toning, looking better than others and meeting people are all extrinsic motives. Since self determination theory (Deci & Ryan, 1985) says that intrinsic motives will usually lead to greater persistence at an activity, the encouragement and promotion of these motives should be high on the agenda of trainers and other sports practitioners.

Concluding Remarks

This study began with the aim of examining the range of achievement goals of recreational exercise participants by asking them to nominate their goals rather than agree or disagree with a list of goals pre-selected by the researcher, as is traditionally done in achievement goal research. The results indicated that the two-goal theory of achievement motivation, most commonly used in achievement goal studies, could not adequately account for all the goals nominated by participants. These goals were better encompassed by questionnaires used in participation motivation research. Unfortunately, these questionnaires are descriptive only, lacking a substantial theoretical basis to help explain participant motivation. Such a basis was provided by Deci and Ryan (1985) in their theory of self-determination. Deci and Ryan described behaviour in terms of intrinsic and extrinsic motives and the interactions between the various types of rewards available in any situation. This theory can be used to explain behaviour in achievement situations, as well as situations in which participants may not be entirely achievement-oriented.

In the current study participants cited many goals that can be categorised in terms of the most cited achievement goals of task and ego orientation; goals such as skill improvement, skill learning, and competing with others. A second group of goals were cited that could be encompassed under an expanded achievement goal theory. These are goals such as social goals and the goal of looking better than others. A third set of goals nominated by participants that are less easily explained by achievement

goal theory are those related to health, although a health goal could still be argued to be a type of instrumental achievement goal. Goals such as fun, enjoyment, and doing an activity for its own sake do not fit into an achievement goal theory. When citing these goals in exercise situations, the participant is not trying to achieve anything or prove competence in any way. In the current study, participants frequently cited enjoyment and fun as goals for recreational exercise. Recreational exercise, therefore, cannot be classified as an environment that is entirely achievement-oriented, there are other motives of participants which are not achievement goals. Although the self-determination theory has been well-constructed and expounded, description of how motives cited by participants, such as those found in the present study, fit into the theory is less well established. Lacking too is a questionnaire that can measure the broad range of goals of participants.

Self-determination theory is much broader than achievement goal theory. It explains the wider range of motives of persons in achievement and other environments. Even classical achievement environments, such as sport and education, are likely to include persons whose goals extend beyond those that can be adequately or even substantially explained by achievement goal theory. Self-determination theory can explain achievement goals as well as motives such as enjoyment. For this reason, it provides a stronger foundation for research into the goals or motives of recreational exercise participants than achievement goal theory, but the measurement of the range of intrinsic and extrinsic motives needs to be reviewed in the light of current findings.

CHAPTER 4: DEVELOPMENT OF A QUESTIONNAIRE TO MEASURE MOTIVATION IN RECREATIONAL EXERCISE

Introduction

This dissertation began by proposing the development of an assessment device to measure achievement motivation in recreational exercise participants based on achievement goal orientation theory. Study 1 was interview-based and asked recreational exercise participants to nominate their achievement goals for exercise. I felt that it was important to collect qualitative data to fully understand the participant motives of exercisers and that Study was a critical component of the process of questionnaire development. Analysis of the results led to the conclusion that achievement goal theory could not adequately explain all of the goals cited by participants, and that the responses they gave would be more appropriately labelled as motives. It was proposed that self-determination theory provides a more suitable basis for interpreting these motives. Ryan, Frederick and colleagues (Frederick & Ryan, 1993; Ryan, Frederick, Lepes, Rubio, & Sheldon, 1997) have already developed a questionnaire (MPAM, MPAM-R) to measure motivation in exercise participants using self-determination theory as a basis. The categories of motives identified in Study 1 extend beyond that instrument. Using knowledge gained from Study 1, as well as past research on participant motivation, the aim of the next phase of this thesis was to develop a more comprehensive measure of motivation for sport and exercise that is consistent with self-determination theory.

Achievement Goal Theory versus Self-Determination Theory

This thesis began with a thorough review of achievement goal orientation research. As such, is important, that, prior to developing a questionnaire in which self-determination

theory provides the underlying theoretical construct, there is further description of self-determination theory. One aim of this section is to contrast and compare achievement goal theory and self-determination theory.

As mentioned in Chapter 2, achievement goal theory is a social cognitive theory of motivation and as such puts emphasis on understanding how thoughts and cognitions govern behaviour (Urdan & Maehr, 1995). Deci and Ryan (1985) claimed that self-determination theory differs from such theories, because it looks at the energisation of behaviour and uses motivational constructs to organise cognitive, affective, and behavioural variables. They stated that self-determination theory also differs from cognitive theories in asserting that "only some, rather than all, intentional behaviours (those with an internal perceived locus of causality) are truly chosen" (p.7). They assume that some behaviours, such as reinforcement determined behaviours, are automatic and do not involve genuine choice.

Achievement goal theorists have maintained that the primary goal of any achievement behaviour is to demonstrate competence (Ames, 1984a Duda, 1986; Dweck 1986; Maehr, 1984; Nicholls, 1984a; Roberts, 1993). They have suggested that success or failure for an individual in any activity can only be understood in terms of the goal for that individual in that activity. While no one theory is right or wrong and each is likely to be most suitable in different situations, for the purpose of explaining motivation in exercise self-determination theory is probably most appropriate. The most important element that distinguishes self-determination theory from achievement goal theory and a number of other motivation theories is the emphasis on the individual's need for self-determination or autonomy and relatedness with others. This need is proposed in addition to the need to

feel competent (Frederick, 1999; Frederick & Ryan, 1995), self-determination being the need and capacity to choose and have choices (Frederick & Ryan, 1995). Self-determination theory puts an emphasis on the role of intrinsic motivation (in addition to other forms of motivation) in guiding behaviour. In particular, the intrinsic needs for competence and self-determination are thought to motivate a person to continue to seek optimal challenges (Deci,1975; Deci & Ryan, 1985, Frederick & Ryan, 1995). Intrinsic motivation is described by Deci and Ryan (1985) as an inherent quality, which, although strong and persistent, is vulnerable to the influence of environmental forces. Frederick & Ryan (1995) reported a number of studies supporting the hypothesis that sports participation and enjoyment are influenced by factors that affect either perceived locus of causality (self-determination) or feelings of competence. They also showed that support for both self-determination and efficacy feedback is required for intrinsic motivation to be strong.

In cognitive evaluation theory, a sub-theory of self-determination theory, the impact on motivation of an event or feedback from an event such as rewards, praise, or other communications is determined by the psychological meaning or functional significance of the event to the individual. Whether an event is interpreted as informational (effectance relevant), controlling (attempts to direct behaviour) or amotivating (conveying incompetence and helplessness) is unique to each perceiver and determined by his or her background, sensitivities, and the configuration of the event (Deci & Ryan, 1985; Frederick & Ryan, 1995). In a similar way, goal orientation theorists have proposed that how each person perceives any motivational climate is dependent upon their background, their position within the environment, and their sensitivities (Ames & Archer, 1988;

Nicholls, Patashnick, & Nolen, 1985). Goal orientation theory places emphasis on motivational climate and its compatibility with the individual's goals; that is, whether the climate promotes task or ego goals, how this climate agrees or conflicts with the individual's goals, and which becomes the prominent goal for the individual. Self-determination theory takes a slightly broader prospective on the interaction of the environment with the individual, asking whether it is controlling, informational, or amotivating and the subsequent effect on intrinsic motivation.

Deci and Ryan (1985) hypothesised that sport and physical activity is generally engaged in freely and allows a person to stretch their capacities and build skills. They proposed that in young participants (at least), the satisfaction and purpose of sport and physical activity appears intrinsic. Observe any playground and children will be seen running, jumping, climbing and conducting other physical activities without any extrinsic pressure or reward for doing so. Sport and exercise, like other leisure activities, allows for self-determination and creative expression that are often absent at work. Deci and Ryan qualified their remarks by pointing out that although people initially sought sport for fun and to be free of extrinsic pressures that are often associated with work, these pressures have increasingly been found in the world of sport. This idea of intrinsic interest and enjoyment as a motive for sport puts self-determination theory into conflict with achievement goal theory. Enjoyment as a motive for sport or exercise does not fit into achievement goal theory, which views the primary purpose of behaviour in any achievement context being to demonstrate competence (Ames, 1984a; Duda, 1986; Dweck 1986; Maehr, 1984; Nicholls, 1984a; Roberts, 1993). Having fun does not demonstrate competence. Participants in Study 1 were asked what they wanted to achieve

from exercise and most nominated fun as the prime outcome they wished to achieve, indicating that fun was classified as an achievement by participants. This lends support to Deci and Ryan's argument that exercise is often engaged in for enjoyment. Fun has also been found to be an important motivating factor in research on sport and exercise in the past (Gill, Gross, & Huddleston, 1983; Gould, Feltz, & Weiss, 1985, Brodkin & Weiss, 1990, Morris & Han, 1991, Morris, Power, & Pappalardo, 1993).

Achievement goal theory and self-determination theory do have much in common in relation to what is proposed to motivate people to participate in sport and exercise. Both talk of mastery and competition related motives, and the possible conflict between them. This is dealt with in self-determination theory by cognitive evaluation theory that is specifically concerned with how social factors, such as reward, feedback, and competition, influence intrinsic motivation (Frederick, 1999; Frederick & Ryan, 1995). According to cognitive evaluation theory, as extrinsic factors, such as pressure to succeed or improve and rewards, become salient, intrinsic factors motivating participation in sport and exercise are likely to decrease (Deci & Ryan, 1985). Deci and Ryan (1985) wrote much about the conflicts between intrinsic goals involving personal improvement and extrinsic goals of rewards and interpersonal competition, just as goal orientation theorists have warned of the dangers of ego goals that are detrimental to successful learning and achievement (Ames, 1992a; Dweck, 1986, Papaioannou, 1995a). Deci and Ryan (1985) have argued that, when one is in direct competition the reward of winning is needed to persist in the behaviour and, therefore, that "competition and ego involvement represent stable, persistent forms of motivation only for those people who consistently win or meet expected standards" (p. 326). They concluded that winning is not the appropriate focus

for physical education programs and amateur sports, where the aim is to promote lifelong involvement for all participants, not just winners. Unlike some of the achievement goal theorists who have similarly promoted task-oriented environments (e.g. Ames, 1992a; Dweck, 1986, Papaioannou, 1995a), Deci and Ryan acknowledged that competitive goals are not averse when presented in the appropriate (competitive sport) environment (Deci & Ryan, 1985).

Achievement goal orientation theory makes distinctions between different types of achievement goals; in particular, task goals and ego goals. The major distinction made in self-determination theory (Deci & Ryan, 1985; Ryan et al., 1997) is between intrinsic and extrinsic motives. In intrinsic motivation, satisfaction is gained from engaging in the activity itself. In extrinsic motivation, satisfaction is gained from obtaining rewards or outcomes that are separate from the activity itself; that is, for instrumental outcomes (Frederick & Ryan, 1995, Ryan et al., 1997). The concepts of intrinsic and extrinsic motivation are much broader than those of task and ego orientation and are able to include a wider range of reasons for sport and exercise participation. Cognitive evaluation theory (within self-determination theory) is able to incorporate both task and ego goals. Deci and Ryan (1985) proposed that task-involved individuals are likely to enjoy participation and show on-going self-motivation. A high level of ego involvement with low task involvement involves hinging self-esteem on success and is more likely to undermine intrinsic motivation.

The benefits of self-determination theory. A problem encountered in Study 1 was trying to incorporate the large number of motives given by participants into goal orientation theory. First, I had to ask whether the motive could be explained by the

existing goals in the theory. Often it could not; for example, enjoyment and social motives. Secondly, there was a problem in deciding whether the motive fit the achievement goal criteria of reflecting the intention to demonstrate competence. In the case of having fun, for example, it clearly did not. It is questionable that, within achievement contexts people do not aim to have fun or to maintain their involvement based on whether they enjoy the activity, among other factors. In the participant interviews in Study 1 fun was a frequently cited motive. It might be argued that the nomination of fun as a motive occurred because the exercise environment is not a true achievement environment, however, fun has been found to be an important participation motive in competitive sport as well as exercise domains (Gill et al., 1983; Gould et al., 1985; Klint & Weiss, 1987, Morris et al., 1993). In a study of 50 participant motives across a number of sport and exercise activities, fun ranked highest among the participants in the sporting activities (Clayton, Morris, Power, & Jin-Song, 1995). Self-determination theory describes intrinsic motives, such as enjoyment, as of primary importance. It was argued in Chapter 3 that self-determination theory is able to adequately incorporate all the motives found in Study 1. For instance, social motives are classified as extrinsic to the activity, but nevertheless important reasons for engagement in activity (Ryan et al., 1997).

In comparing achievement goal theory and self-determination theory, it is apparent that there are some commonalities between the two theories and the inferences drawn from them by researchers. Both theories emphasise competence demonstration as important in motivation. Both refer substantially to task- and ego- type goals and the importance of each to ongoing motivation. The major differences between the two theories involve achievement goal theory limiting the primary driving force of motivation

to the need for competence. In self-determination theory, it is argued that the need for self-determination and the need for competence are two primary intrinsic driving forces of behaviour. By the restriction only to the need for competence, achievement goal theory appears rather narrowly based and inadequate to interpret the responses arising in Study 1. Achievement goal theory is only able to account for some of the goals people have in achievement situations. Although the motives people cite may not all be achievement goals, they are, nevertheless, important, because they influence the behaviour of people within achievement environments. We can not pretend to explain behaviour by measuring a small subsection of motives. Self-determination theory is able to encompass the wide variety of motives of participants.

Previous Questionnaires

The aim of this second study is to develop and test items for a questionnaire to measure motives in recreational exercise participants. The first study showed that achievement goal theory does not provide an adequate theoretical basis for research into motives in recreational exercise participation. Self-determination theory does provide a solid basis for understanding participant motivation in recreational exercise. Several attempts have been made to develop questionnaires to measure participation motivation using self-determination theory. Each takes a slightly different approach and each has its own limitations.

Motivation for Physical Activity Measure (MPAM, MPAM-R). The Motivation for Physical Activity Measure (MPAM) and the revised scale (MPAM-R) were described in detail in Chapter 3. The MPAM is a 23-item scale measuring three types of motives for physical activity, interest/enjoyment, competence, and body-related motives, explaining

8%, 24% and 31% of variance respectively and with Cronbach alpha coefficients between .87 and .92 (Frederick & Ryan, 1993). The MPAM-R, a revision of the MPAM is a 30-item self-report scale, which assesses exercise and sport motivation on five sub-scales. In revising the MPAM, Ryan et al. (1997) wrote items that aimed to differentiate appearance and fitness goals, previously both encompassed in the body-related motives factor. They also added social motives, which had not been included in the MPAM. In the MPAM-R, two scales measure intrinsic motivation: the competence and interest/enjoyment scales, and three measure extrinsic motives: the fitness, appearance-based motives, and social scales (Ryan et al., 1997). The alpha coefficients for the sub-scales range between .78 and .92 and the five factors accounted for 66% of the variance in a reliability study with 155 participants (Ryan et al., 1997). As with questionnaires developed to measure achievement goals, items in the MPAM and MPAM-R were developed by researchers to measure scales that fit a particular theory. As a result, some of the motives nominated by exercise participants in Study 1 have been missed in the scale development. A method of scale development that asks participants to nominate their motives, in addition to drawing on theoretical background is likely to include a wider range of relevant motives.

Sport Motivation Scale (SMS). The SMS was developed based on the theoretical conceptualisations within self-determination theory of intrinsic motivation, extrinsic motivation, and amotivation in sport (Fortier, Vallerand, Brière, & Provencher, 1995; Pelletier, Fortier, Vallerand, Tuson, Brière, & Blais, 1995; Vallerand, Pelletier, Blais, Brière, Senécal, & Vallières, 1992). The scale measures three types of intrinsic motivation: to know, to accomplish things, and to experience stimulation, three types of extrinsic motivation: external, introjected, and identified regulation, and distinguishes

amotivation from intrinsic and extrinsic motivation (Fortier, Vallerand, Brière, & Provencher, 1995). These seven scales were derived from self-determination theory and represent different points along the self-determination continuum. Intrinsic motivation to know relates to learning and understanding. Intrinsic motivation toward accomplishment is engaging in the activity to master it or accomplish certain things and is analogous to mastery motivation. Intrinsic motivation to experience stimulation is engaging in an activity to experience aesthetic pleasure, as well as excitement and fun. External regulation is extrinsic motivation for material rewards or to receive praise from others. Introjection occurs when a formerly external source of motivation is internalised, so that material rewards are no longer needed. Instead, internal pressures, such as guilt or anxiety, drive behaviour. In identification, the behaviour is still done for extrinsic reasons, such as achieving personal goals, but occurs when an individual judges a behaviour as important and so performs it out of choice. Amotivation is when a person is neither intrinsically nor extrinsically motivated. Amotivated individuals do not perceive any relationship between their actions and the outcomes of their actions and consequently feel incompetence and lack of control (Fortier et al., 1995; Pelletier et al., 1995; Vallerand et al., 1992).

Development of the SMS followed development of a similar scale, the Academic Motivation Scale (AMS) for use with college students in educational settings (Vallerand & Bissonnette, 1992; Vallerand, Pelletier, Blais, Brière, Senécal, & Vallières, 1992). The AMS (Vallerand & Bissonnette, 1992) was an adaptation of the Self-Regulation Questionnaire, developed by Ryan and Connell. Both the SMS and AMS were initially developed in French, then translated to English. Pelletier et al., (1995) confirmed the

factor structure of the English version of the SMS and found internal consistency values between .74 and .80 for the seven sub-scales. Test-retest correlations over a one-month period ranged from .58 to .84. Like the MPAM and MPAM-R, the SMS was constructed on the basis of theory to measure seven hypothesised scales.

A major problem with this method of scale construction is that it is less likely to cover all motives for exercise than if participants are asked to nominate their motives. It is not surprising when experienced psychometric researchers write items to fit into seven predetermined scales, that factor analysis reveals that they fit into these scales. Another problem with the SMS is that many of the items are unnecessarily long and complicated or confusing. Participants are asked to say to what extent each item corresponds to one of the reasons they are practising sport. Some of the items are: "I often ask myself; I can't seem to achieve the goals that I set for myself", "For the pleasure of discovering new performance strategies", and "I used to have good reasons for doing sports, but now I am asking myself if I should continue doing it" (Pelletier, Fortier, Vallerand, Tuson, Brière, & Blais, 1995, p.53). Some of these problems in language are likely to be a reflection of the fact that the scale was originally developed in French and then translated to English.

Exercise Motivation Inventory (EMI). The EMI was developed by Markland and Ingledew (1993, as cited by Markland & Hardy, 1997). It comprises of 12 scales, labelled stress management, weight management, recreation, social recognition, enjoyment, appearance, personal development, affiliation, ill health avoidance, competition, fitness, and health pressures. The EMI-2 (Markland & Hardy, 1997) added a positive health scale and split the fitness scale into strength and endurance and nimbleness, as well as adding 25 further items to the 44 of the EMI.

The EMI-2 (Markland & Hardy, 1997) appears to be an interesting measure of motivation, which was recently developed. The EMI is primarily a measure of participation motivation and Markland and Hardy pointed out that it suffers from a lack of theoretical underpinning, although it does have very loose connections with self-determination theory. The original EMI was also lacking in comprehensiveness in several areas (Markland & Hardy, 1997). The EMI-2 is more comprehensive although it is limited in its assessment of others' expectations (doctor only) and psychological aspects (stress). It also does not include the competitive aspects of appearance found in Study 1. It would be interesting to compare participant responses on the REMM and the EMI-2. The EMI as with other measures reviewed was developed in the absence of participant consultation.

Exercise Motivation Scale (EMS). Li (1999) developed the EMS on the basis of a literature review and open-ended responses of college students to two questions about their motives for exercise. The theoretical structure used as a basis for item development was self-determination theory as formulated in the SMS. As with the SMS, the 32 items were constructed to fit eight sub-scales: intrinsic motivation to learn, accomplish and experience sensations, external regulation, introjected regulation, identified regulation, integrated regulation, and amotivation. Confirmatory factor analysis was used to assess the factor structure of the scales, using 371 college-aged participants.

The development of the EMS followed the same theoretical motivation structure used in creating the SMS. This approach is slightly different to that used by Frederick and Ryan (1993) in developing the MPAM. The current study used a theoretical structure more like that of Frederick and Ryan. There is one aspect of the development of the EMS

that makes it particularly inappropriate for use in the current context. This is the exclusive use of college-aged participants for both item development and questionnaire testing. Past research has shown that people of different age groups have different motives for participation in exercise (Brodkin & Weiss, 1990, Morris, Clayton, Power, & Jin Song, 1996). As the current aim is to develop a measure that can be used across the lifespan, it is important that participants with a wide range of ages be used at each stage of development and thus use of the EMS is a poor starting point. Another problem with the EMS and/or MPAM is that although both scales were created on the basis of self-determination theory, they do not correlate with each other (Frederick, 1999).

A New Questionnaire

Neither the MPAM, nor the MPAM-R covers the range of motives found in Study 1 of this thesis. Both scales were constructed by writing items to fit into sub-scales pre-determined by researchers on the basis of self-determination theory, and thus unsurprisingly, the same factors were the outcome of the factor analysis. By using qualitative techniques to assist item development, the range of participant motives accounted for is likely to be more comprehensive. Such a method allows the results to confirm, refute, or add to a theoretical perspective much more convincingly and not simply support the notion that the researcher was able to write items to fit the theory. This was seen in the results of Study 1, which showed the inadequacy of current achievement motivation frameworks for use within exercise domains.

In reviewing research using the MPAM-R, Frederick (1999) pointed to the markedly different approaches taken by the MPAM and SMS to measuring sport and exercise motivation despite their common theoretical basis. She also wrote of the need for a single

comprehensive measure of sport motivation, using a self-determination perspective, and suggested a combined scale might be able to account for a greater amount of variation when motivation is used as a predictor of adherence, personality, and emotion, than either scale alone. Although the questionnaire to be developed here did not combine these two scales, item development drew from the MPAM and MPAM-R, knowledge gained from Study 1, and past research in participation motivation, at the same time, keeping in mind self-determination theory and its ability to explain the constructs developed in the questionnaire. In this way, it should provide a more comprehensive measure of participant motivation, and therefore account for more variation in variables such as adherence.

Questionnaire Development

The new questionnaire was called the Recreational Exercise Motivation Measure (REMM). The development of the questionnaire involved several stages. First, the motivation constructs were established on the basis of Study 1 and previous research. Items were then written to comprehensively cover all aspects of each construct. These items were then reviewed by a panel of experts in the field and adjusted in accordance with their recommendations. A final set of items was assembled by combining the new items with items from previous questionnaires and assessing the total set of items for representation of each construct and consistency language.

Establishing the Constructs

The first, critical step in test item writing is to develop a precise definition of the target construct or domain of assessment (Angleitner, John, & Löhr, 1986; Clark & Watson, 1995; Kastner, 1986; Reckase, 1996). Clark and Watson (1995) suggested that it is useful to write a brief, formal description of the construct. The items that are

subsequently developed should cover all relevant aspects of the construct. For the purpose of item writing in this study, a brief description of each of the seven, level two categories from Study 1 was written. These descriptions included divisions into the 13 integrated concepts of the initial, inductive content analysis. The seven level two categories are: (1) Competition: This category includes competitive elements directly relevant to the activity and social comparison related to fitness or other aspects related to physical activity. The concept of comparing one's appearance with that of others is also grouped under the competition heading. (2) Extrinsic rewards: This category concerns any physical rewards or payments, but also includes praise from others and status-related rewards. (3) Social: This category is divided into two groups; motives such as affiliation and friendship, and motives relating to meeting others' expectations. (4) Physical condition: This category includes fitness and strength aspects, and health and medical aspects. (5) Psychological condition: Motives related to psychological well-being, such as self esteem, avoiding depression, and leading a balanced life, were grouped separately to those related to stress release and relaxation in this category. (6) Mastery: Although the mastery category was not originally sub-divided during the first study, when item writing began it was clear that there were two distinct aspects to this category. The first involved learning new skills and improving on current skills or performances. The second aspect was seeking challenges and achieving goals in the activity. (7) Enjoyment: This category involved participating in exercise for fun or excitement.

Writing Items

On the basis of the results of Study 1, items were writing that related to the seven categories. The items were written to cover all the different aspects of each concept

nominated by participants in their statements from the interviews in Study 1. By thoroughly describing each construct and including each aspect in item writing, all motives nominated by participants in Study 1 were included, thus minimising the likelihood of omission of any motives for participation in exercise. Before constructing test items, guidelines for item writing were collected, which were a combination of recommendations made by Angleitner, John, and Löhr (1986), Clark and Watson (1985), Kaplan and Saccuzzo (1997), Kastner, (1986), Kline (1986), and Reckase (1996). These guidelines are listed in Table 4.1.

The fourth guideline in the Table 4.1 refers to listing all the characteristics of a trait prior to writing items. This was done with respect to the 13 categories and then items were written to cover all these characteristics. I decided that the guideline recommending keying items in both directions was not appropriate for the current questionnaire, as very few of the items would adapt well to be worded in the negative direction. A question such as "to avoid competition" would have been appropriate, but things such as "to decrease fitness" would not be a good item, as it reflects a motive that are probably not socially desirable. Because only a few items would adapt well to being keyed in the opposite direction, all the items were coded in the same direction. It was hoped that by mixing up items from the different constructs, acquiescence to would be minimised. Also, the main purpose of the REMM is to examine the relative levels of different motives in various groups and typical levels can be identified through norms over a period of time. Guideline 10 was not appropriate to the current questionnaire because no attempt was being made to conceal the nature of the items or questionnaire. It was hoped that socially desirable and lie responses would be minimised by the participant information sheet. This informed

Table 4.1

Guidelines for Questionnaire Item Construction

Guideline	Description
No ambiguity	Write clear unambiguous items. Language should be simple, straight-forward, and appropriate for the reading level of the scale's target population. It should avoid colloquialisms and trendy expressions. It should only require readily available information and not need any complex processing.
Be specific	Write items that refer to specific rather than general behaviour.
Simplicity	Keep items simple. Ensure that each item asks only one question or makes only one statement. Avoid items that convey two or more ideas at a time.
Comprehensiveness	Try to list all characteristics or traits included in each factor and turn them into items. Sample systematically and broadly all the content potentially relevant to the target construct. In this respect, Clark and Watson (1985) advised that the trial items should be more comprehensive than the final set and contain items that will later be shown to be tangential or unrelated to the core construct.
No idiosyncrasies	Avoid idiosyncratic items.
Avoid frequency expressions	Avoid, as much as possible, terms of frequency that are usually subjective and highly ambiguous.
No universal items	Avoid items that virtually everyone will either agree or disagree

	with, unless they are part of a lie scale.
Key items both directions	Try to limit response set acquiescence (tendency to agree with items regardless of content) by writing clear unambiguous items with some being keyed in each direction of the scale.
Avoid socially desirable items	Avoid items that are clearly either socially desirable or undesirable and use a lie scale to detect participants who may be answering with socially desirable responses.
Conceal intent	Try not to make the purport of each item too obvious.

respondents that informed that the results were for research purposes only and would be treated confidentially, that they were not required to put a name on the questionnaire, that there were no correct or incorrect responses, and they could withdraw from the project at any time. Apart from the exceptions just outlined, the guidelines were taken into consideration in the development of new items for the questionnaire. The term "new items" will be used to refer to items developed during the current study for the questionnaire, not to items included or adapted from the already existing questionnaires that already exist.

Expert Review

Following a review of the new items by my supervisor (a lecturer in sport psychology), 90 items were sent to 16 experts in sport psychology from around Australia for review. These people were either academics or practising psychologists working in the area of sport psychology. The experts were asked to assess the items in terms of face

validity, comprehensibility, ambiguity, repetitiveness, personal relevance, and social desirability. After two reminders, nine responses were received.

The responses of these nine experts were combined and each item was assessed independently. Items that were generally rated positively were kept and those that were generally rated negatively were discarded. Most items that were discarded were rejected because they were regarded as ambiguous. Some items were also discarded because they were considered to be identical or almost identical to another item. At the suggestion of reviewers, a few items were reworded to improve clarity of expression. At the end of this process, there were 55 new items that were considered to be suitable for inclusion in the questionnaire.

Assembling a Final Set of Items

Incorporating previous items from the MPAM and MPAM-R. The items from the Motivation for Physical Activity Measure (MPAM; Frederick & Ryan, 1993) and the revised Motivation for Physical Activity Measure (MPAM-R; Ryan et al.; 1997) were grouped into the 13 integrated concepts derived from Study 1. The MPAM and MPAM-R items were combined with the new items in several steps. First, identical items from the three lists (new items, MPAM and MPAM-R) were deleted, leaving only one version of the item. Second, where items were very similar, the item that was thought by myself and my supervisor to have the clearest and simplest wording was retained and the others discarded. Third, items from the MPAM and MPAM-R that reflected concepts not covered by the new items were added to the item bank under the appropriate integrated concept.

Incorporating concepts from participation motivation. Morris et al., (1996) conducted a participation motivation study across a range of 14 exercise and sporting activities, involving 2,601 participants. They employed a 50-item version of the Participation Motivation Questionnaire (PMQ), including all motives from preceding studies using the PMQ. These items and the factors that resulted from that study were reviewed to see if there were any concepts not included in the item bank. Two items were found that related to aspects of concepts not covered by existing items. The first of these items related to gaining status and recognition from sport, and the other referred to winning. These were added to the item bank.

Balance and consistency. The item bank was independently reviewed by my supervisor and I several times to ensure that each of the 13 constructs was comprehensively covered by the items within it, without being repetitive. During this process some slight modifications were made to the divisions of the concepts. It was felt that the self-esteem concept was not strong enough to warrant its own category, so self-esteem was included within the psychological well-being and balance concept. The mastery construct was divided into two aspects, skills and challenge. The skills construct reflected learning or trying new activities and improving skill level at current activities. The challenge concept included motives such as reaching personal goals, improving on past performances, and participating in challenging tasks. The number of items in each construct was monitored to ensure a similar number of items was included for each construct. The number of items in each construct differed slightly, depending on the number it was felt was needed to sufficiently cover of the construct. The aim was to make sure that no construct was over-represented by items, yet reflect the breadth of each

construct with the number of items it contained. It was also important to restrict the length of the final questionnaire to avoid participant boredom. In the final item bank, the constructs contained between four and eight items.

Items were reviewed with particular emphasis on clarity, ease of expression, and that each related to only a single motive. Finally, the wording of each item was reviewed to ensure consistency across the item bank and enable each item to be attached meaningfully to the end of the statement: "I exercise...". The final item bank consisted of 73 items. One item was taken from the MPAM, 19 were drawn directly from the MPAM-R, six were MPAM-R items that were slightly modified, two items came from the PMQ, and 45 were new items. Items were assigned numbers for the purpose of sequencing them. They were then placed in random order on the final questionnaire using a random number table. The items, the constructs to which they were hypothesised to belong, and their source are presented in Appendix D.

Choice of Scale

The response format chosen was a 5-point Likert scale. Participants were asked to indicate how much their motives for exercise agreed with those expressed in each item on a scale with endpoints of strongly disagree at one, and strongly agree at five. The choice of a 5-point Likert scale was based on recommendations of several authors. Comrey (1988, p. 758) argued that multiple choice formats "give more stable results, and produce better scales" than dichotomous scales. It has been demonstrated (Kline, 1993) that the more points there are in a Likert scale, the more reliable it is. Reliability quickly increases up to a scale with seven points and then levels out. Vernon (1961, as cited by Kline, 1993) found that nine categories was about as much as a person could hold in their head.

If participants are unable to make the more subtle distinctions between points required for a larger scale, reliability and validity do not necessarily increase (Clark & Watson, 1995). Comrey (1988) recommended at least five points on a scale and wrote that this would be sufficient. Both 5- and 7-point Likert scales have been used successfully in motivation questionnaires in the past. The PMQ produced reliable results using a 5-point scale, while the MPAM and MPAM-R used seven point scales. It was decided that five points would be sufficient and would be simpler for participants. Each point on the scale was labelled making it clear to participants what each represented. Numbers and associated labels were: (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree.

Testing the Questionnaire

Issues of Sampling

An important part of developing a questionnaire is assessing its value as a measuring instrument in the population with which it is to be used. There is minimal value in testing a questionnaire only on university students, if it will be used with a broader section of the community. Important considerations when doing this include the constitution and size of the sample from which data is collected. The first sampling issue regards the type of respondent. The general agreement among writers in the area of test development is that the sample should be representative of the people with whom the scale will ultimately be used (Gorsuch, 1997; Kline, 1986; 1993, Nunnally, 1978). An attempt to gather a diverse sample of exercise participants was made in the current study.

Opinions on the issue of sample size vary greatly. Traditionally, for example, the sample size needed has been measured as a function of the number of items on the scale, (Gorsuch, 1997). At one extreme, Nunnally (1978) recommended at least ten times as

many participants as items, at least up to 70 items, with an absolute minimum of five participants per item. Tabachnick and Fiddell (1989) proposed that, as a general rule of thumb, there should be at least five cases per item. Guilford (1956, as cited by Kline, 1993) recommended two cases for every item. Guadagnoli and Velicer (1988) used simulation studies across a variety of conditions and concluded that component saturation (magnitude of factor loadings) and absolute sample size, rather than the number of variables was of primary importance when determining sample size. If component saturation was low sample size was important for determining comparability, however, if component saturation was high minimal improvements could be made once a certain minimum sample size was achieved. If a priori component saturation could not be accurately predicted, they suggested that 150 participants were sufficient for 40 or 50 items. If the solution contained components with only a few variables, then a sample size of at least 300 was suggested. Kline (1993) concluded that a representative sample of at least 100, with a participant to variable ratio of at least 2 to 1 was required for good factor analysis. Comrey (1988) recommended that sample sizes should never drop below 200 for factor analytic work. He advised a sample size of at least 200 for 40 or fewer items, with larger samples for more variables. Gorsuch proposed that the required sample size should be a function of the stability of a correlation coefficient (which is a function of the square root of the sample size) without any correction needed for the number of variables. The lower the expected correlation (factor loadings), the greater the sample size required for factors to stand out from error variance. He recommended that for up to 50 previously untested items, a sample size of 300 would be appropriate if loadings of .4 are of interest. Given the diversity of opinion on sample size requirements, a decision was made to lean to

the conservative side of recommendations in the current study. The aim at the outset was to gather a sample of 10 times the number of items, that is, 730 participants.

Previous Related Research

In developing items for the questionnaire previous motivation research was considered. The factor structure expected to emerge in testing the questionnaire was been hypothesised following review of Study 1 and prior research. The other things to be investigated in this study were the relative importance of different motives for exercise participants in general, and for different genders and age groups. The REMM draws items from the MPAM, MPAM-R and PMQ. It was thus, expected that the results of research using these questionnaires, as well as other studies measuring motivation in recreational exercise participants, would give an indication of what to expect in the present study. Although there has been a large amount of research on motivation for participation in sport there is much less on participation in recreational exercise.

Using the MPAM-R, (Ryan et al. 1997) reported that the highest mean factor score for those showing a high level of adherence to exercise was on the fitness factor. This was followed in decreasing order of importance by the mean factor scores on the appearance, competence, enjoyment and social factors. Using the Participation Motivation Questionnaire (PMQ), Morris et al. (1996) found that the highest-ranked motives of aerobics and weight-training participants were to stay in shape, health, like to exercise, and to increase energy. Together, these results suggest that in the current study items relating to health and fitness within the physical condition concept will be most important to participants. Following this are likely to be items relating to appearance within the physical condition and competition concepts.

Ryan et al. (1997) found that women beginning an exercise program were more motivated by extrinsic motives of appearance and fitness than males. Frederick and Ryan (1993) found that women had higher scores on physical attractiveness and appearance motives, and males had higher competence motivation. Frederick (1999) found the only difference between male and female exercise participants was in fitness motivation, with women scoring significantly higher than men. Morris et al. (1996) found only small differences in the top ten ranking items for male and female exercise participants, but did find some significant differences between the genders on factor scores. They found that the factor relating to challenge and win was more important to male participants with the item relating to competition showing the largest difference between genders. Other factors to show significant differences between the genders were the team/friendship, health/fitness factors, on which females had higher scores, and the status and fun factors on which males had higher scores. From these results, it was expected that, in the present study, males would score higher than females on items relating to competition and competence within the activity, whereas females would score higher on appearance and affiliation items.

Frederick (1999) used the MPAM-R to assess age-related differences in motivation and found that interest, competence, appearance, and social motives all decreased with age. Fitness motives were uncorrelated with age. Morris et al. (1996) found that skills and friendship/team participation were the most important motives discriminating 6 to 14 year-olds from the older participants. Health and fitness were found to be more important and status, skills, atmosphere, and fun less important to participants aged between 23 and 39 than the rest of the sample. In the 40 to 59 years group, status, skills, challenge,

friends, fun, atmosphere and team friendship were all less important than to the rest of the sample. There is only a minimal amount of research available on difference in motivation between age groups, although what there is indicates that some differences may exist. Developing skills and team participation appear to be more important to youth participants, whereas health motives increase in importance with age. These results suggest that most motives, except health and fitness typically decrease in strength with age.

Aims

Having developed the REMM on the basis of interviews with exercise participants, previous motivation measures and past research, the primary aim of Study 2 was to assess the factor structure and reliability of the REMM. It was proposed that the factor structure would indicate the applicability of self-determination theory as a basis for understanding motivation in recreational exercise can be assessed. Reliability measures were be used to determine the consistency of the factors, to discard any ambiguous or poorly defined items, and to assess the stability of the test over a two week interval. Construct validity was also be examined by comparing the results of the present research to past motivation studies. In addition, the variation in motives of different gender and age participants was investigated.

Method

Participants

The sample consisted of 750 recreational exercise participants. A total of 1,807 questionnaires were handed out and a return rate of 42% was achieved. There were 238 male (32%) and 439 female (59%) participants. The remaining 73 participants did not

indicate their gender. The age of participants ranged from 14 to 84 years, with a mean of 38.5 years (SD = 13.2). There were 17 participants who did not indicate their age.

The occupations of participants was requested in an attempt to gain a profile of the type of people involved in the exercise activities sampled. The question was answered by 720 participants, 47 of whom wrote down two occupations. Occupations were grouped with others that were similar, to get a final list of 64 occupational categories. The eight most frequent occupations listed were home-maker (90 participants), student (87), sales/ marketing/ administration manager (68), teacher (46), clerk/office duties (44), retired (42), manager/director (35), and accountant/financial analyst (33). The full list of occupations, with the number and percentage of participants listing each is presented in Appendix F.

The ANU3 socioeconomic status scale (Jones, 1989) was used to estimate socio-economic status for each occupational classification. The average ANU3 value of the 536 occupations stated by participants, for which scores could be calculated (excluding home makers, students, retired, and twelve others), was 52.8 (SD = 20.1). The ANU3 scale is positively skewed and has a mean of 34.8 and a standard deviation of 23.4. The current sample therefore, has higher than average socio-economic status, but is still within one standard deviation of the mean value. High scores on the scale tend to be among administrators and professionals and low scores among labourers. The observation of higher socio-economic status in the current sample than in the population at large can be explained by several factors. First, previous research has demonstrated that exercise adherence tends to be lower among blue collar workers and those with lower socio-economic status than among white collar, high socioeconomic status individuals (Department of Human Services, Victoria, 1999; Egger & Champion, 1990), so it might

be expected that exercise participants in general have a higher average ANU3 score than the total population. Second, since most participants were recruited from gymnasiums and gymnasium membership is generally costly, it might be expected that those attending gymnasiums are more affluent than the general population. Lastly, although different types of gyms were visited in different suburbs, the general region of Melbourne in which most of these gyms were located was moderately to highly affluent.

Measures

Descriptive information. A brief section was attached at the start of the main questionnaire in which participants were asked to record their age, gender, and occupation, and fill in an exercise profile table. The exercise profile table provided space for recording frequency, duration, intensity, and level of play for each physical activity and sport participated in. At the end of the main questionnaire, in an open ended question, participants were asked to record any motives they had for exercise that had not been included in the 73 motivation statements. A copy of the questionnaire is presented in Appendix C.

Recreational Exercise Motivation Measure. The Recreational Exercise Motivation Measure (REMM) consisted of 73 items, measuring 13 general motives for participation: direct competition (5 items), social comparison (6 items), appearance (7 items), extrinsic rewards (5 items), affiliation (7 items), others' expectations (4 items), fitness (5 items), health/medical motives (5 items), psychological well being/balance (5 items), stress release/relaxation (6 items), skills (5 items), challenge (5 items), and enjoyment (8 items). Participants were asked to indicate how much each statement corresponded with their

motives for exercise on a 5-point Likert scale that ranged from 1 (strongly disagree) to 5 (strongly agree).

Procedure

A number of gymnasiums around Melbourne, Australia were visited to access participants. Gymnasiums were selected to try to sample a range of different types of participant. One gym was in the central business district and part of a large workers organisation, which subsidised it. One gym was situated within a university. Data was collected from two established centres that had both been operating for more than ten years. One was a large family-oriented leisure centre and the other a very small family-oriented centre with relatively cheap membership. Data was also collected from two newly developed complexes, which had been open less than five years. One was a medium sized gymnasium attached to a large swimming pool complex and the other a large modern club, aimed primarily at adults, within a very affluent suburb. The centres used were: the Australian Post-Tel Institute (API) Fitness Centre, Exhibition Street, Melbourne; the Monash University Gymnasium, Clayton; the King Club Family Leisure Centre, Sandringham; Trackside Sports and Fitness, Hampton; Waves Leisure Centre, Cheltenham; and Brighton Beach Health Club, Brighton. About ten questionnaires were completed by work and social contacts of family and friends.

The manager at each centre was approached to gain permission to hand out questionnaires at that centre. In no case was permission refused. The questionnaires were handed out in person by me as participants entered or left classes, or the centres, or occasionally, while they were exercising. Each exercise participant approached was told that the questionnaire related to research on motives for participation in recreational

exercise and asked if they would participate. Any questions they had about the study were answered and they were thanked for their participation. Participants were able to take the questionnaire home with them, with provision being made for them to be returned to either the reception desk or to a box placed in a prominent position. Data was collected between 11.30am and 2.00pm at the city gym and university gym. These times were chosen at these gyms because, being situated in work places, lunchtime was a busy time. At the other centres, questionnaires were handed out at various times between 6.30am and 8.00pm, although I concentrated on peak times between 6.00am and 10.30am, and 5.00pm and 7.00pm were concentrated on. Attempts were made to attend each centre at a range of times throughout the day, over one to two weeks.

Upon agreeing to take part in the study, participants were given a questionnaire that contained the demographic questions and exercise profile table, the 73 motivation items, and an open-ended question at the end asking them to nominate any motives they had for participation not covered by the items. They were also given a single sheet that briefly outlined the study, stated that participation was voluntary and their name was not required, and gave contact telephone numbers for any queries or complaints. It was stressed that completion and return of the questionnaire would be considered to reflect informed consent and that all information would be totally confidential.

Some participants were asked if they would complete a second questionnaire two weeks after the first questionnaire had been completed. The purpose of this was to assess the test-retest reliability of the questionnaire. Initially all participants were asked to complete a second questionnaire, then later, only those who showed interest in the research were asked, as experience showed that these were the participants who would be

willing to complete a second questionnaire. If a participant agreed, they were given a second copy of the questionnaire and a stamped, addressed envelope to return it. They were instructed to answer each questionnaire without referral to the other, so each reflected how they felt at that time.

Results

The results section begins with a summary of the information given in the activity profile table. Following this is an analysis of the individual items. The results of factor analysis of the items is then presented. Reliability analysis examining stability over time, as well as internal consistency of the total scale and the sub-scales, follows. The data was analysed using the statistics programs SPSS (1996, 1999) and SYSTAT (1997).

Activity Profiles

Patterns for the demographic questions referring to age, gender, and occupation were reported in the participants section of the method. The remaining demographic item was the activity profile table. The activity profile table was filled in by 733 participants, each of whom recorded between one and seven activities. Involvement in a single exercise activity was reported by 82 participants, involvement in two activities was cited by 214 participants, three by 220 participants, four by 144 participants, five by 58 participants, and involvement in six or seven by 15 participants. A total of 34 different activities were classified. The ten most often cited activities were weights (382 participants), running (224), walking (217), aerobics (192), cycling (161), circuit/boxercise classes (144), general cardiovascular training (138), swimming (117), team sport (101), and gym program (79).

It can be seen that involvement in a sport activity was indicated by a number of participants. These participants were included in the general analysis of recreational exercise motivation, because it was felt that sufficient emphasis had been placed on asking participants to nominate motives for their exercise activities and due to the fact that of the data was collected at gymnasiums.

The mean duration of a session in any activity was .99 hours (SD = .80). The mode and median duration of participation where both 1 hour, reflecting the usual length of exercise classes. The mean intensity level of exercise on a scale of 1 to 5 (where 1 represented slow or light and 5 reflected fast or heavy) was 3.3 (SD = 1.1). The mode and median levels of intensity were both 3. It appears that participants generally worked at a moderate intensity level. Of the 2,092 activities listed, participants reported that 1,957 were performed at a social level of participation, 105 listed club level, 21 listed state, national or international level, 4 listed school competition and 2 reported their involvement to be as coaches.

Researchers have used various methods of assessing the amount of physical activity undertaken by individuals. Frederick and Morrison (1996) measured adherence in terms of hours per week and number of days per week of exercise. One method of assessing adequate physical activity is to sum the number of hours of exercise performed each week (Department of Human Services, Victoria, 1999). The Department of Human Resources in Victoria defined adequate exercise as being 30 minutes of exercise on five days. This would be represented as a total of 2.5 hours exercise per week. A requirement that stipulates exercise for 30 minutes on seven days is 3.5 hours per week. The amount of activity in terms of total number of hours per week of exercise of each participant in the

study was calculated by multiplying together the frequency and duration of each activity and summing across activities. This calculation was made for the 700 participants for whom complete activity data was provided. The mean amount of activity of participants was 6.9 hours per week (SD = 5.0). The lowest recorded number of hours was .6 hours and the maximum was 45 hours. There were 38 participants who stated that they did less than 2.5 hours exercise per week. Despite not meeting the minimum exercise requirement for health proposed by the Victorian Department of Human Services (1999) and the United States Department of Health and Human Services (1998), these people were included in the remaining analysis as they were motivated to do some regular exercise and motivated enough to complete the survey.

Item Analysis

This section reports on the statistical characteristics of the 73 items in the REMM. These are important because they can indicate the range of item scores and whether any items are very poorly distributed. For example, if an item had two peaks, rather than one, as in the normal distribution, then it might be suspected that the item was ambiguous and would best be discarded. Individual item analysis can give an indication of any overall patterns emerging in the data. It can also provide construct validity, if the trends follow those that would be expected on the basis of previous research.

Table 4.2 contains the mean, standard deviation, skewness, and kurtosis values for each of the 73 items. The items are listed in order of decreasing mean, as this information will be used in discussing participation motives in the section to follow. The mean item values ranged from 1.68 to 4.64, with standard deviations between 0.60 and 1.22.

Skewness values for the items ranged between -1.44 and 1.42 and kurtosis values fell between -0.92 and 3.89.

Multivariate normality is an assumption of factor analysis. Tabachnick and Fidell (1989) recommended that although normality of linear combinations cannot be tested, normality of single variables should be assessed. They noted, that in large samples, a variable with significant skewness or kurtosis often does not deviate enough from normality to make a realistic difference to the analysis. Item histograms with the normal curve displayed were drawn for each item. Following examination of the visual appearance of the histograms and the values of the skewness and kurtosis coefficients in Table 4.2, as well as the mean values of each item, it was decided not to delete any of the items prior to the factor analysis, on the basis of departure from normality. None of the item curves were drastically different from the normal curve. Several of the items had large skewness or kurtosis values because nearly everybody rated them highly. This was the case with item 12, to maintain a healthy body, item 19, keeps me healthy, item 31, to be physically fit, item 21, because I feel good about myself after exercise, item 34, to improve cardio-vascular fitness, and item 70, to maintain physical health. On the basis of skewness and kurtosis values alone, most of these items might be deleted and yet they were the most important motives for participation for exercise reported by participants in this study.

Table 4.2

Basic Statistics for Each Questionnaire Item in Rank Order

Item No.	M	SD	Skewness	Kurtosis	Item
12	4.64	0.54	-1.44	3.23	Helps maintain healthy body
19	4.54	0.60	-1.41	4.14	Keeps me healthy
31	4.48	0.61	-1.26	3.38	to be physically fit
21	4.46	0.65	-1.36	3.54	After I feel good about self
34	4.42	0.68	-1.25	2.64	Improve c.v. fitness
70	4.35	0.62	-1.13	4.09	Maintain physical health
6	4.29	0.78	-1.11	1.43	Helps keep mind healthy
56	4.22	0.65	-1.10	3.89	Helps me stay in shape
42	4.19	0.69	-0.97	2.45	To have more energy
14	4.17	0.75	-0.93	1.61	Improve strength
13	4.15	0.81	-1.09	1.78	Improve appearance
20	4.14	0.78	-1.04	1.92	is stimulating
24	4.13	0.81	-0.87	0.96	Improve mental health
23	4.09	0.85	-0.94	1.07	Stress release
48	4.06	0.87	-1.13	1.80	I enjoy exercising
51	4.06	0.79	-0.98	1.83	Maintain trim, toned body
69	4.06	0.76	-1.15	2.75	Maintain strength
32	4.05	0.81	-0.89	1.31	Helps me relax
28	4.00	0.90	-1.15	1.67	Improve body shape

59	3.94	0.84	-0.95	1.57	Makes me happy
45	3.86	0.92	-0.97	1.20	it is fun
3	3.83	0.89	-0.63	0.37	to do my personal best
22	3.83	0.88	-0.51	0.07	Helps achieve other things
15	3.79	1.02	-0.85	0.42	Define muscle, look better
11	3.78	1.02	-0.78	0.18	Cope better with stress
58	3.75	1.06	-0.91	0.41	Lose weight, look better
55	3.72	0.93	-0.85	0.94	I have a good time
16	3.65	0.98	-0.58	0.13	Like the physical challenges
71	3.65	0.96	-0.64	0.23	Get better at the activity
2	3.64	0.94	-0.67	0.33	Like challenging activities
62	3.64	1.04	-0.72	0.09	Less physical effects ageing
30	3.61	1.04	-0.66	-0.05	Takes mind off other things
1	3.59	0.99	-0.60	0.09	Keep current skill level
17	3.57	0.99	-0.57	0.02	Perform well compared self
26	3.57	0.96	-0.50	0.04	Achieve exercise goal I set
18	3.37	0.97	-0.38	-0.18	New skills/try new activities
52	3.35	0.99	-0.51	-0.08	it is interesting
41	3.34	0.99	-0.49	-0.18	Improve skills
53	3.34	1.03	-0.57	-0.19	Improve skill/technique
33	3.28	1.15	-0.38	-0.60	Stops me feeling depressed
65	3.28	1.20	-0.38	-0.79	Escape other pressures

43	3.22	1.08	-0.27	-0.55	Be attractive to others
4	3.07	1.22	-0.18	-0.90	I get rewarded
10	3.06	1.00	-0.27	-0.26	Activities are exciting
68	3.03	1.10	-0.19	-0.60	Like excitement of partic.
8	2.88	1.19	0.05	-0.85	More for fitness than others
67	2.88	1.15	-0.10	-0.91	Enjoy time with others while
36	2.83	1.11	0.02	-0.70	Appearance better than others
40	2.79	1.10	-0.12	-0.97	to do activity with others
5	2.76	1.17	0.04	-0.93	in common with friends
57	2.73	1.11	-0.05	-0.92	to be with friends
63	2.72	1.18	0.20	-0.88	More toned than others
7	2.70	1.03	-0.06	-0.68	Meet new people
64	2.65	1.17	0.27	-0.81	Body better than others
25	2.64	1.02	-0.01	-0.62	Make new friends
35	2.63	1.17	0.21	-0.80	I like to win
44	2.53	1.08	0.22	-0.70	Compete with others
37	2.52	1.06	0.22	-0.70	Talk with friends
27	2.46	1.14	0.33	-0.78	Someone close approves
54	2.44	1.12	0.40	-0.65	Achieve looks others expect
39	2.41	1.19	0.48	-0.71	Help manage medical cond.
38	2.40	1.11	0.53	-0.40	Required to be fit for job

61	2.36	1.15	0.44	-0.81	to be fitter than others
50	2.30	1.07	0.52	-0.44	Work harder than others
29	2.25	1.01	0.43	-0.42	Helps me gain status
73	2.18	1.11	0.69	-0.32	Perform better than others
49	2.10	1.03	0.72	-0.06	to be best in group
72	2.07	1.11	0.89	0.07	Prescribed by doctor/physio.
66	1.99	1.00	0.83	0.00	People tell me I need to
46	1.86	0.96	1.08	0.87	Earn a living
47	1.84	0.95	1.07	0.76	to beat my friends
9	1.68	0.82	1.07	0.67	Friends want me to
60	1.61	0.85	1.42	1.89	I get paid to

Important Motives for Participation

In Table 4.2, items are listed in order of decreasing mean value obtained for the total sample. The highest ranked motives were mainly about physical and psychological health and fitness. The seven items ranked lowest by participants included items about earning, competition and doing something another person wants.

Motive differences between males and females. The means and rank of the top ten ranked items for males and females are shown in Table 4.3. It can be seen from the table that most of the highest ranked items for both males and females were similar and were those relating to health and fitness. There were two notable exceptions. The item "to improve my appearance" was more important to females (rank 8) than males (rank 18). The motive "because I enjoy exercising" was more important to males (rank 10) than

females (rank 19). The mean rating by female participants on items of any rank are higher than the ratings given by males for the equivalent rank item. For example, both males and females rated item 12, "helps me maintain a healthy body" most important yet

Table 4.3

Ten Highest Rated Items for Males and Females.

	Males		Females	
Item	Rank	M	Rank	M
12. helps me maintain a healthy body	1	4.59	1	4.66
19. because it keeps me healthy	2	4.48	2	4.58
31. to be physically fit	3	4.42	4	4.50
70. to maintain physical health	4	4.38	6	4.34
34. improve cardiovascular fitness	5	4.37	5	4.46
21. after exercise I feel good about myself	6	4.33	3	4.52
6. exercise helps keep my mind healthy	7	4.23	7	4.31
56. it helps me stay in shape	8	4.15	10	4.25
20. because exercise is stimulating	9	4.05	13	4.19
48. I enjoy exercising	10	4.04	19	4.08
42. to have more energy	12	4.02	9	4.27
13. to improve my appearance	18	3.87	8	4.29

the mean value given by females was 4.66 and the mean value given by males was 4.59. This pattern continues throughout the items and probably reflects a tendency for females to give higher ratings in general than males, however, it s not a huge difference

There were other items outside the top ten for which there were noticeable differences between the ranks for male and female participants. The item with the greatest difference in importance between males and females was "because I like to win". It was rated much higher by males (rank 42) than females (rank 61), but not high at all by either gender. The items "like the physical challenges", "it makes my physical appearance better than others", and "to compete with others around me", "to be fitter than others", "I am required to stay fit for my job" were all rated at least eight places higher by males than females. Males rated "to keep up current skill level", "to do my personal best", and "to perform better than my own past performance" seven places higher than females. Females rated the items "it is something I have in common with my friends", "to make new friends", "to talk with friends while I exercise", "to better cope with stress", "because exercise stops me from feeling depressed", "to improve appearance", and "to lose weight, look better" at least eight places higher than males. The items "to improve my body shape" and "because exercise helps me take my mind off other things" were rated seven places higher by females than males.

Motive differences for different age groups. Participants were divided into age groups corresponding to developmental and life stages. These were under -18 years (adolescents, at school), 18 to 24 years (young adults, in higher education or starting work), 25 to 34 years (adult, establishing career/family), 35 to 44 years (mid adult, settled), 45 to 54 years (adult/mid-life, experienced worker), and over-54 years (older adult, retired or thinking about retirement). The rank and mean of the ten highest ranked items for each age group are shown in Table 4.4. The ranks and means of these items for other age groups are also shown in the table. The under 18 age group had higher mean

scores on their most important motives than other groups did on items with the same ranks. Other than this, there does not appear to be any systematic differences in the mean scores of items with the same rank between different age groups. From observation of the table, it can be seen that there are some age-related differences in the importance of items. The under 18 group rated " to improve body shape", "to lose weight, look better", and "to take mind off other things" much more important than other age groups. The item "to maintain a healthy body" rated tenth in this age group but was first for all other age groups. These results should be treated cautiously, because of the small number of participants in the under-18 age group. The item "to improve body shape" decreased in importance progressively as age increased, from a ranking of 3 in the under-18 group to a ranking of 30 for those over 54. The opposite trend was apparent for the item "lessens the physical effects of ageing", which increased in importance from a rank of 61 in the under-18 group to a rank of 9 in the over-54 group. There were many items that were rated important by all age groups. Items that rated consistently in the top ten motives across all age groups were "to be physically fit", "to keep healthy", "after exercise I feel good about myself", and "maintain a healthy body". The items "to improve cardiovascular fitness" and "to maintain physical health" rated in the top ten for all groups except the under 18 category, where they ranked 12 and 13. The over-54 age group ranked at 12 the item "it helps me stay in shape", which was in the top ten for all the other groups.

Table 4.4

Ten Highest Rated Items for Different Age Groups.

	Rank (M)					
Item	Age <18	Age 18-24	Age 25-34	Age 35-44	Age 45-54	Age >54
31. to be physically fit	1	2	4	4	4	4
	(4.73)	(4.59)	(4.52)	(4.42)	(4.48)	(4.39)
19. it keeps me healthy	3	5	2	2	2	2
	(4.64)	(4.48)	(4.56)	(4.50)	(4.62)	(4.57)
28. to improve my body shape	3	10	18	18.5	23	30
	(4.64)	(4.31)	(4.14)	(4.04)	(3.80)	(3.43)
21. after I feel good about myself	3	3	3	3	7	6
	(4.64)	(4.58)	(4.52)	(4.49)	(4.32)	(4.27)
51. maintain trim, toned body	5	11	12	18.5	18	22
	(4.55)	(4.22)	(4.69)	(4.04)	(3.95)	(3.65)
58. lose weight, look better	8	25	25.5	30	24	26
	(4.45)	(3.89)	(3.86)	(3.64)	(3.77)	(3.52)
30. take mind off other things	8	32	27	33.5	32	35
	(4.45)	(3.87)	(3.81)	(3.57)	(3.47)	(3.09)
56. helps stay in shape	8	8	8.5	8	10	12
	(4.45)	(4.38)	(4.29)	(4.21)	(4.15)	(3.98)
45. it is fun	8	17	23	23	26	20.5
	(4.45)	(4.09)	(3.92)	(3.88)	(3.69)	(3.68)
12. maintain healthy body	8	1	1	1	1	1
	(4.45)	(4.65)	(4.69)	(4.65)	(4.64)	(4.58)

14. improve strength	18	4	14	10	16	18
	(4.18)	(4.49)	(4.22)	(4.19)	(4.02)	(3.79)
34. improve cardio-vascular fit.	12.5	6	5	5	3	5
	(4.36)	(4.45)	(4.46)	(4.38)	(4.52)	(4.37)
13. improve appearance	12.5	7	8.5	11	14	24.5
	(4.36)	(4.40)	(4.29)	(4.17)	(4.04)	(3.59)
70. maintain physical health	12.5	9	7	6	5	3
	(4.36)	(4.32)	(4.42)	(4.28)	(4.41)	(4.39)
6. keep mind healthy	26	16	6	7	6	8
	(3.91)	(4.10)	(4.45)	(4.27)	(4.38)	(4.20)
24. improve mental health	34	22	10	13.5	9	11
	(3.82)	(3.91)	(4.27)	(4.14)	(4.19)	(4.04)
42. have more energy	15.5	12	11	9	8	10
	(4.27)	(4.19)	(4.24)	(4.20)	(4.22)	(4.06)
20. exercise is stimulating	18	19	15	13.5	13	7
	(4.18)	(3.96)	(4.19)	(4.14)	(4.10)	(4.22)
62. lessens physical ageing	61.5	56	36	26.5	11.5	9
	(2.45)	(2.81)	(3.47)	(3.77)	(4.11)	(4.19)
N	6	78	123	163	95	85
Age M	16.5	21.3	29.6	39.3	49.1	63.8

Factor Analysis

The aim of factor analysis of the present data was to explore the factor structure. Although the groups into which each item might belong had been hypothesised during the development stage, I did not want to force the items into these groups, but permit the relationship between them to emerge in the analysis. Floyd and Widaman (1995) recommended that when doing exploratory factor analysis, principal component analysis should be used for data reduction and factor analysis should be used to understand the relations among a set of measured variables. Gorsuch (1997) wrote that if a component analysis is appropriate, common factor analysis will produce it, but that the reverse is not true. He recommended principal axis common factor analysis. The next decision to be made was on the number of factors to retain in the solution. The most frequently used criterion is number of eigenvalues greater than 1.0. This criterion is prone to overestimating the number of meaningful factors, particularly when data have low correlations. It tends to lead to the retention of trivial factors that have only a couple of variables and these often load highly on other factors (Gorsuch, 1997). Gorsuch recommended restricting the analysis to those factors having salient variables and suggested running several analyses beginning by adopting the eigenvalues greater than 1.0 criterion, then dropping any trivial factors, while checking that no dramatic changes to the outcome occur. On the basis of these recommendations, it was decided to conduct several principal axis common factor analyses, restricting the number of factors differently in each, looking for trivial factors and major changes between runs. Following extraction, retained factors are usually rotated to make them interpretable (Floyd & Widman, 1995, Tabachnick & Fidell, 1989). Rotations can either be orthogonal or oblique. In orthogonal

rotations, the factors are uncorrelated and in oblique rotations they may be correlated (Tabachnick & Fidell, 1989). As it was hypothesised that higher order factors of intrinsic and extrinsic motivation would exist, oblique rotation was chosen.

The initial analysis, restricting the number of factors to the number of eignevalues greater than 1.0 (20 factors), failed to converge in 35 iterations. Trying to restrict the number of factors to anything greater than eight was unsuccessful. An analysis that restricted the number of factors to seven successfully converged, although two factors appeared to be large and cumbersome and not easily interpreted. Restricting the solution to eight factors also produced a successful convergence of the rotated solution in 23 iterations, with all of the items loading with values of 0.3 or higher onto the pattern matrix. The pattern matrix weightings of the major items contributing to each of the factors in this eight factor solution are given in Table 4.5. Item loadings are listed for the highest loading of each item on any factor and for loadings on any other factor that were greater than 0.3. The factors in Table 4.5 are presented in the order they were presented in the factor analysis.

In developing the questionnaire, the items had been divided into 13 constructs, which were then grouped together at successively higher levels. The original 13 groups are shown in Appendix D. In comparing the factors obtained in the current study to the hypothesised groupings I will return to the order in which they were originally presented.

It had been originally thought that the items within the competition, ego factor might separate into those referring to competition directly related to the activity and those items that concerned social comparison, which are indirectly related to participation in exercise. This did not occur. All of the items that were hypothesised to belong to the direct

Table 4.5

Factor Analysis of Data for Recreational Exercise Participants.

	Highest Factor Loading							
Factor	F1	F2	F3	F4	F5	F6	F7	F8
Percentage of variance	21.1	10.2	6.9	5.2	3.8	2.8	2.3	2.2
17 perform well compared to				**Mastery**				
own past performance	.60#	-.00	-.02	-.00	-.20	.01	.00	.11
41 improve existing skills	.56#	-.11	-.30	-.00	.06	.05	.04	-.03
3 to do my personal best	.56#	-.07	-01	.06	.06	-.06	.06	.11
2 like challenging activities	.53#	-.03	.05	.07	.12	-.07	.20	.16
16 like physical challenges	.51#	-.01	.09	.07	-.06	-.06	.27	.14
53 improve skill/ technique	.49#	-.03	-.24	.03	-.05	.04	.17	.01
18 obtain new skills/ activities	.49#	.07	-.19	.14	-.13	.05	.07	-.04
1 keep current skill level	.43#	-.13	-.11	.04	.17	-.10	-.05	.11
26 achieve exercise goal I set	.42#	-.02	.01	.02	-.23	.11	.13	-.06
71 get better at an activity	.41#	-.21	-.17	-.02	-.14	.09	.07	.05
19 it keeps me healthy	.03	.60#	.02	.03	-.05	-.03	.12	-.05
12 helps maintain healthy body	-.03	.59#	.06	.06	-.05	-.02	.13	.03
70 to maintain physical health	.14	.56#	.04	-.01	-.07	.03	.11	.02
34 improve c.v. fitness	.22	.52#	.01	-.02	-.19	.05	.04	-.07
31 to be physically fit	.13	.48#	.05	-.03	-.19	-.01	.22	-.01
69 to maintain strength	.30	.43#	-.02	-.01	-.20	.04	.00	.05

62 exercise lessens the physical				**Physical Condition**				
effects of ageing	-.10	.37#	-.07	.22	.03	.08	-.12	.15
42 to have more energy	.15	.34#	-.01	.21	-.16	-.00	.15	-.11
57 to be with friends	-.03	.03	.82#	-.06	.01	.01	.09	.01
40 to do activity with others	.01	-.05	.77#	-.05	.08	.07	.07	-.04
67 enjoy spending time with					**Affiliation**			
others doing exercise	-.04	-.04	.76#	-.01	.06	-.01	.18	.02
37 talk with friends exercising	-.03	.07	.71#	-.01	-.03	.01	.05	.05
25 make new friends	.14	.01	.70#	.13	-.01	.01	-.02	-.05
7 meet new people	.14	.02	.65#	.12	.01	-.04	-.05	-.01
5 in common with friends	-.01	.03	.57#	-.05	-.02	.12	.09	.03
68 like excitement of participat.	.21	.02	.40#	.02	.04	.03	.34*	.14
23 it acts as a stress release	.02	-.01	.04	.81#	.01	-.02	-.00	-.06
11 to better cope with stress	.00	-.02	.01	.75#	.04	.13	-.06	-.15
24 helps improve mental health	-.07	-.31	.12	.63#	.12	.07	.11	-.00
30 take mind off other things	.09	.13	-.12	.60#	-.11	-.02	.02	.04
32 helps me relax	-.00	-.11	.00	.59#	-.02	-.01	.16	-.09
65 get away from pressures	.01	.14	-.06	.58#	-.09	.02	.00	.10
33 stops me feeling depressed	.01	.12	-.05	.48#	-.16	.02	.03	.05
6 helps keep mind healthy	-.02	.35*	.04	.42#	.15	-.04	.09	.02
22 helps me achieve other				**Psychological Condition**				
things in life	.14	-.22	.00	.37#	-.02	.02	.07	.05

13 improve appearance	.07	-.03	-.01	.14	.72#	-.07	-.02	.00
28 improve body shape	.00	-.04	.01	.06	.69#	-.04	.03	-.01
15 define muscle, look better	.18	-.00	.05	.08	.59#	-.10	.01	.14
Appearance								
51 maintain trim, toned body	.03	-.19	.06	-.20	.56#	-.04	.15	.12
58 lose weight, look better	-.10	-.06	-.02	.06	.55#	.13	-.22	.01
43 be attractive to others	-.07	.04	-.12	.06	.52#	-.03	-.02	.36*
56 helps me stay in shape	-.06	.31*	.02	-.09	.49#	-.07	.29	.04
14 to improve strength	.28	-.28	-.01	.07	.40#	-.06	.08	.04
4 I get rewarded for it	.16	.10	.02	.10	.20#	.09	.12	.10
72 prescribed by doctor, physio.	-.03	-.13	-.05	-.03	.01	.66#	-.06	-.12
39 manage medical condition	-.01	-.21	-.04	.05	.04	.66#	-.14	-.13
46 to earn a living	.14	.14	.11	.08	.09	.55#	.14	.24
Others' Expectations								
60 because I get paid to do it	.05	.16	.02	.01	.08	.50#	.16	.24
38 required to be fit for job	.11	-.00	-.00	.13	-.03	.46#	.03	.09
66 people tell me I need to	-.17	.07	-.14	-.01	-.05	.45#	-.07	.06
9 friends want me to	-.09	.14	-.29	.03	-.01	.40#	-.06	.07
27 someone close approves	-.08	.01	-.20	.01	-.07	.33#	-.03	.02
55 because I have a good time	.00	.03	-.18	-.00	-.06	-.00	.78#	-.06
45 it is fun	-.04	-.07	-.19	-.03	.00	-.07	.78#	-.02
48 I enjoy exercising	.01	-.13	-.02	.12	.04	-.16	.67#	.02
52 it is interesting	.06	-.05	-.15	.02	-.00	.07	.59#	.04
59 it makes me happy	.02	-.07	-.05	.26	-.17	-.03	.50#	-.04

20 exercise is stimulating	.02	-.26	-.03	.20	.02	-.02	.46#	.00
10 the activities are exciting	.29	.09	-.15	.05	.04	.05	.42#	.01
21 after exercise I feel good			**Enjoyment**					
about myself	-.01	-.28	.03	.19	-.21	-.06	.30#	.00
64 look better than others	-.14	-.08	-.04	.09	-.22	-.11	-.09	.81#
73 perform better than others	.12	.00	.03	-.06	.10	.07	.05	.80#
63 make muscles more toned								
than other people's	-.12	-.08	-.03	.10	-.21	-.11	-.10	.78#
61 be fitter than others	.04	-.04	.02	.00	.06	.08	.03	.78#
36 makes my physical	-.11	-.03	.02	.09	-.28	-.07	-.04	.72#
appearance better than others			**Competition. Ego**					
50 work harder than others	.18	-.03	-.01	-.07	.12	.05	.08	.69#
49 be best in group	.20	.08	.04	-.05	.15	.15	.10	.68#
44 compete with others around								
me	.21	.06	-.17	-.05	.02	.04	.00	.59#
47 to beat my friends	.13	.19	.01	-.06	.10	.33	.09	.51#
35 I like to win	.33*	.05	.07	-.06	.05	.04	.17	.50#
54 achieve looks others expect	-.16	.09	-.05	-.01	-.29	.24	-.01	.47#
8 more for fitness than others	.03	-.11	-.14	.00	-.11	-.04	-.06	.42#
29 gain status, recognition	.02	.12	-.17	.02	-.13	-.17	.04	.40#

highest loading * loading greater than .30 which was not the highest loading for item

competition and social comparison groups were contained within the competition/ego factor obtained in the analysis. Two other items also had their highest scores on this factor, although both were among the lowest scores for items contained in this factor. The first was "to achieve the looks/figure others expect of me" which was originally grouped in the others' expectations concept with which it had a factor score of .24. It had a factor score of .47 on the competition factor. This item also had a noteworthy factor score of .29 on the appearance factor. It is evident that the item is not clearly defined on one factor and should probably be dropped from the questionnaire. The other item that had its highest loading on the competition factor but was problematic was the item "it helps me gain status or recognition". This was originally grouped in an extrinsic rewards factor, a factor that did not emerge from the analysis. This item had the lowest factor score on the competition factor, but did not have factor scores above .17 on any other factor. Looking at this item, it is clear how the idea of status and recognition is linked to the idea of winning and performing better than other people. The item "I like to win" had its highest loading of .50 on the competition factor as expected, but also had a relatively high factor score of .33 on the mastery factor. This is probably a refection of the recreational nature of the sample. The item should be retained as it is a highly relevant item for sports participants.

The first seven items in the appearance factor were the seven items that had been included in the original construct. Two of these items had factor scores above .30 on other factors. The item "to be attractive to others" had a factor score of .52 on the appearance factor and a score of .36 on the competition/ego factor. The idea of being attractive to others was obviously linked to the idea of looking better than others. The

item "it helps me stay in shape" had a loading of .49 on the appearance factor and .31 on the physical condition factor. The phrase "stay in shape" appears to be associated with both appearance and physical fitness by the present sample. The eighth item "to improve strength" was also linked to both physical fitness and appearance. It had originally been included in the physical fitness construct for which it had a factor score of .28. It had a factor score of .40 on the appearance construct. The final item to be grouped in this factor was "I get rewarded for doing it". This item had a factor score of only .20. It did not score highly on any factor in the study. It was originally included in the extrinsic rewards construct, which did not emerge as a factor in this analysis.

The extrinsic rewards construct hypothesised during the construction of the questionnaire did not emerge as a factor in the present study. Two of the items have already been discussed: the item relating to achieving status loaded onto the competition factor and the item on receiving a reward did not load highly on any factor. The other three items originally included in the extrinsic rewards construct were "to earn a living", "because I get paid to do it" and "I am required to be fit for my job." All had their highest factor scores on the factor labelled others' expectations here.

The factor labelled others' expectations in Table 4.5 is comprised of items from several sources. The three items relating to employment, loaded on this factor as did the two items from the health/medical construct "prescribed by my doctor, physiotherapist" and "to manage a medical condition". Three items from the original others expectations construct three items from the original others expectations construct "people tell me I need to", "friends want me to", and "someone close to me approves of my exercise activities" completed this factor. The fourth item originally listed in this construct "to

achieve the looks/figure others expect of me" was included in the competition factor. The factor was labelled others' expectations because of the common concept of the exercise activity being encouraged or expected by another person, a friend, employer, or medical professional. Although these items were not grouped together originally, the conceptual link between them is clear.

The seven items listed in the original concept of affiliation all loaded onto a single factor. In addition the highest loading of the item "I like the excitement of participation" of .40 was on this factor. This item had originally been grouped in the enjoyment concept and it displayed a factor loading of .34 on that factor. The loading of the factor on to the affiliation factor indicates that people were probably equating excitement of participation with enjoyment of participating with others, as well as simply enjoyment of the activity. The double loading of the item suggests that it would best be discarded.

The construct of physical condition had been divided into fitness and health/medical aspects during questionnaire development. These two sets of items grouped together as a single factor in the analysis. Eight of the eleven items originally included within the physical condition construct loaded most highly onto this factor in the factor analysis. Two of the other three items, "helps me manage a medical condition" and "because it is prescribed by a doctor, physiotherapist", fell in the others' expectations factor and "to improve my strength." had a high score in the appearance factor. These items have been discussed in relation to those factors.

Like the physical condition construct, the psychological condition construct had been divided into two during the item development stage. It also emerged as a single factor in the analysis. Nine of the ten items originally listed in the two elements of this

concept had their highest factor score on the psychological condition factor. One, the item "exercise helps keep my mind healthy" had a factor score of .42 on the psychological condition factor. It also had a high score of .35 on the physical condition factor, indicating it was not acting as a general health motive indicator and was not a good discriminator between physical and psychological health. It also had a high factor score on a second factor. The item "because after exercise I feel good about myself" had been included in the psychological condition construct prior to the study, but loaded most highly on the enjoyment factor. This item did not fit well into any single factor. It had a factor score of .30 on the enjoyment factor, .28 on the physical condition factor, and .21 on the psychological condition factor.

The mastery construct had been divided into the concepts of skills and challenge. All the ten items initially included in the mastery construct had their highest factor scores on the mastery factor, which emerged from the analysis of the data. No other items loaded highly on this factor. The factor that was generated in the analysis was, therefore, exactly as hypothesised.

The enjoyment factor that emerged from the factor analysis was very similar to that hypothesised prior to the study. Seven of the eight items originally listed in the construct loaded most highly on this factor. The eighth was the item "because I like the excitement of participation". As already reported, this item did load highly on the enjoyment factor (.34) but showed its highest factor score (.40) on the affiliation factor. Also mentioned already, the item "after exercise I feel good about myself" demonstrated its highest loading on the enjoyment factor, but was poorly defined, with similar loadings on three factors.

The factor structure to emerge from the analysis was very similar to that hypothesised prior to the study, although with fewer factors. The factors of mastery, enjoyment, and affiliation were produced as separate factors as expected. Prior to the study it was hypothesised that the factors of competition, physical condition, and psychological condition would each split into two separate factors, representing different aspects of the concept. This did not happen. Each emerged as a single factor, comprising both aspects. The hypothesised factor of extrinsic rewards was not found, with most of the proposed items loading weakly on other factors. The factor labelled "others' expectations" was originally hypothesised to relate to meeting the expectations of friends and family, but emerged from the analysis containing these items as well as items that also reflected meeting the expectations of health professionals and employers.

Most of the items loaded most highly on the factors with which they were expected to identify. A small number of items loaded highly on two factors and a few did not fit well into any of the factors. The items that loaded highly on more than one factor were (a) 43, "to be attractive to others"; (b) 56, "because it helps me stay in shape"; (c) 14, "to improve my strength"; (d) 68, "because I like the excitement of participation"; (d) 54, "to achieve the looks/figure others expect of me" and (e) 6, "because exercise helps keep my mind healthy". The items that did not fit well into any factor were: (a) 4, "because I get rewarded for doing it"; and (b) 21, "because after exercise I feel good about myself". These items should be considered for removal from future versions of the questionnaire.

The eight factors accounted for 54.5 per cent of the variance, which is slightly low although is still considered acceptable (Floyd & Widaman, 1995) The PMQ used by

Morris et al. (1996|) explained 59.1 per cent of variance and the MPAM used by Ryan et al (1997) explained 66 per cent of variance

Second Order Factor Analysis

At the outset, it was hypothesised that higher order general factors of intrinsic and extrinsic motivation might exist. It was, thus appropriate to conduct hierarchical factor analysis. Higher order analysis allows a more detailed interpretation of the factor structure (Gorsuch, 1983).

Gorsuch (1983) recommended that the choice between a correlated and uncorrelated factor model for second order factor analysis should be decided on the basis of quality of the result in an exploratory analysis. He recommended the use of common factor analysis for higher-order analysis, because it allows the higher order factors to emerge, at the same time giving the primaries a role to play. Gorsuch suggested the number of factors extracted should be decided in a similar manner to that for first order factors. Initially, the eigenvalues greater than 1.0 or the scree test criteria should be used, then the different rotated solutions examined for non-trivial results (those that have more than two relatively small loadings after rotation). Following these recommendations, several analyses were conducted using the first-order factor scores and different rotation techniques. Restricting the number of factors to those with eigenvalues greater than 1.0, produced three non-trivial solutions. Restricting the number of factors to two did not produce a clearer result. The different rotation techniques produced very similar results. The principal axis common factor analysis solution, with factors restricted to the number of eigenvalues greater than 1.0, followed by oblique rotation, is reported here.

The factor loadings for each of the first-order factors on to the second-order factors are presented in Table 4.6. There were no factor loadings above .30, other than the main loadings of each first-order factor onto a second-order factor. The first factor to emerge from the analysis contained the first-order factors of mastery and enjoyment. This was labelled intrinsic motives as it was the same as the intrinsic factor that had been hypothesised prior to the study. On the basis of self-determination theory, it had been hypothesised that the remaining first-order factors would group together as extrinsic motives. Instead they have emerged as two second-order factors. The first was labelled social motives. This second order factor contains the first-order factors of others expectations, affiliation, and competition; all motives involving other people. The negative loading of affiliation means that participants who score high on affiliation are likely to score low on others expectations and competition, and vice versa. The final second order factor, called body/mind motives, consists of three first order factors all related to the body: physical condition, psychological condition, and appearance. Scores on psychological condition were negatively related to scores on physical condition and appearance.

Table 4.6

Second Order Factor Analysis of Data for Recreational Exercise Participants

	Highest Factor Loading			
Second order Factor	$F_2$1	$F_2$2	$F_2$3	
% of variance	29.9	19.6	13.5	
Factor				
Mastery	.78			**INTRINSIC**
Fun	.67			**MOTIVES**
Others' Expectations		.75		
Affiliation		-.45		**SOCIAL**
Competition, Ego		.40		**MOTIVES**
Physical Condition			.68	**BODY/**
Psychological Condition			-.66	**MIND**
Appearance			.42	**MOTIVES**

Performance of Items Drawn from Previous Questionnaires

A number of items were drawn from existing motivation questionnaires. There were 25 items either drawn directly or slightly modified from the MPAM-R. The five items that were in the appearance factor of the MPAM-R fell into the appearance factor in the REMM. Three of the items drawn from the social factor emerged in the equivalent factor, affiliation, in the current questionnaire. The fourth social item question 9, "because my friends want me to", emerged in the others expectations factor. The three items from the MPAM-R fitness/health factor and the six from the competence/challenge factor emerged

in the physical health and mastery factors respectively in the current analysis. Six MPAM-R enjoyment items emerged in the enjoyment factor of the REMM. The seventh, question 68, "because I like the excitement of participation" had its highest loading on the affiliation factor, but also loaded highly on the enjoyment factor. The item drawn from the MPAM body-related factor, "to better cope with stress", emerged in the psychological condition factor as anticipated. From the PMQ, question 35 "because I like to win" emerged in the competition factor as expected, but also loaded on the mastery factor. This is probably a reflection of the non-competitive nature of recreational exercise. Question 29, "it helps me gain status or recognition" was also from the PMQ. It was expected to load highest on the extrinsic rewards construct that did not emerge as a factor of the REMM. Instead it loaded as the lowest item onto the competition factor.

Factor Scores for the Total Sample and Different Genders

Factor scores for each person on each factor were derived using the factor weights in Table 4.5. The factor scores were calculated by summing all of the products of the factor weight and score for each item that had a weight greater than .3 on the factor, then dividing by the number of items in the factor and the mean factor weight. Where a participant had a missing score on one of the items in a factor, the factor score was not calculated. The mean factor score on each of the eight first order factors for males, females, and the total sample are presented in Table 4.7. The highest mean factor scores for the total sample were in the physical condition ($\underline{M}$ = 4.33), appearance ($\underline{M}$ = 3.92), and psychological condition ($\underline{M}$ = 3.82) factors. Following these in descending order were the factors of enjoyment ($\underline{M}$ = 3.57), affiliation ($\underline{M}$ = 2.73), mastery ($\underline{M}$ = 2.78), competition ($\underline{M}$ = 2.72), and others expectations ($\underline{M}$ = 2.05).

There was some observable difference in the mean factor scores of males and females for the factors of others expectations, physical condition, mastery, and enjoyment. Males had a higher mean factor score for competition ($\underline{M}$ = 2.95) than females ($\underline{M}$ = 2.58). Females had higher mean factor scores than males on the appearance ($\underline{M}_F$ = 3.99, $\underline{M}_M$ = 3.77), affiliation ($\underline{M}_F$ = 2.82, $\underline{M}_M$ = 2.60), and psychological condition ($\underline{M}_F$ = 3.90, $\underline{M}_M$ = 3.67) factors.

Table 4.7

Mean Factor Scores for Males, Females, and Total Sample

Factor	Total Sample			Males			Females		
	M score	SD	N	M score	SD	N	M score	SD	n
Competition	2.72	.87	674	2.95	.85	219	2.58	.84	388
Appearance	3.92	.65	715	3.77	.65	222	3.99	.63	413
Others Expectations	2.05	.65	700	2.07	.66	221	2.05	.65	409
Affiliation	2.73	.85	690	2.60	.83	223	2.82	.85	401
Physical Condition	4.33	.45	713	4.28	.45	225	4.35	.45	418
Psychological Cond.	3.82	.66	699	3.67	.67	222	3.90	.64	407
Mastery	2.78	.53	694	2.81	.54	224	2.76	.52	401
Enjoyment	3.57	.65	702	3.48	.61	223	3.63	.69	412

Discriminant function analysis was carried out to investigate whether any of the factors were useful predictors for distinguishing between males and females (Tabachnick

& Fidell, 1996). The discriminant function produced is shown in Table 4.8. The classification correctly classified 70 per cent of participants, correctly grouping 71 per

Table 4.8

Results of Discriminant Function Analysis of Factors to Predict Gender

Factor	Canonical Discriminant Function*	F to Remove	p
Competition	1.02	62.03	$p < .01$
Appearance	-0.77	37.71	$p < .01$
Others' Expectations	-0.14	1.37	$p > .10$
Affiliation	-0.47	14.52	$p < .01$
Physical Condition	0.22	2.58	$p > .10$
Psychological Condition	-0.20	2.84	$p > .05$
Mastery	0.20	1.69	$p > .10$
Enjoyment	-0.23	2.13	$p > .10$
Eigenvalue	0.26		
Canonical R	0.46		

* standaridised by within variance

cent of males and 69 per cent of females. The probability of correct classification by chance based on the number of participants in each category was 54 per cent. A significant value of Wilks' lambda indicated that the function was a good predictor of gender, $\Lambda = 0.72$, $F(8, 477) = 15.71$, $p = 0.00$. The three factors of competition,

appearance, and affiliation significantly separated males from females. Scores on the competition factor were significantly higher in males than females, $F(1, 470) = 62.03$, $p < .01$. Females scored higher on the appearance factor, $F(1, 470) = 37.70$, $p < .01$, and the affiliation factor $F(1, 470) = 14.53$, $p < .01$.

Factor Statistics for Different Age Groups

The mean factor scores and standard deviations for different age groups are presented in Table 4.9. Participants with missing data for any of the items in a factor were omitted from the calculation of mean factor score for that factor. From the table some general trends in age for the factors can be observed. The mean score for the competition factor decreased as age increased, from 3.15 for the under 18 group to 2.49 for the over 55 age group. The large standard deviation values for this factor (between 1.31 and .95) indicate that there was a lot of variation in scores within each age group. The mean factor score for appearance decreased gradually from 4.36 in the under 18 age group to 3.41 in the over 55 group. This represented a difference greater than one standard deviation across the age range. The slight increase in the mean score for the others expectations factor across the age groups from 1.91 to 2.19 was only one third of a standard deviation, and therefore unlikely to be significant. The others expectation factor is probably fairly stable across the different age groups. There was no substantial variation in either the physical condition or affiliation factors in the different age groups. The psychological condition factor did vary with age, although not in a systematic way. The two lowest mean values for the factor were 3.70 for the 18-24 year olds and 3.53 for

Table 4.9

Mean Factor Scores for Different Age Groups.

Factor	< 18			18-24			25-34		
	M score	SD	n	M score	SD	n	M score	SD	n
Competition	3.15	1.31	11	3.06	.87	102	2.77	.80	153
Appearance	4.36	.74	11	4.20	.56	103	4.05	.59	160
Others' Expect.	1.91	.42	11	1.96	.62	105	2.07	.66	162
Affiliation	2.64	.69	10	2.91	.78	102	2.76	.74	160
Physical Condition	4.23	.53	11	4.28	.41	105	4.36	.50	167
Psych. Cond.	3.93	.65	10	3.70	.65	105	3.98	.68	164
Mastery	2.81	.63	9	2.95	.47	99	2.82	.51	160
Enjoyment	3.95	.57	11	3.71	.61	104	3.66	.65	162
	35-44			45-54			> 55		
Competition	2.69	.80	204	2.48	.85	116	2.49	.95	74
Appearance	3.92	.54	220	3.79	.67	121	3.41	.74	77
Others' Expect.	1.99	.62	215	2.12	.69	118	2.19	.71	74
Affiliation	2.71	.81	213	2.63	1.03	119	2.70	.97	76
Physical Condition	4.33	.43	219	4.39	.40	117	4.28	.45	76
Psych. Cond.	3.85	.58	215	3.82	.70	116	3.53	.69	77
Mastery	2.79	.53	214	2.67	.51	119	2.58	.59	76
Enjoyment	3.59	.61	214	3.43	.68	118	3.37	.72	78

the over 55 age group. The highest values were 3.93 for the under 18 age group and 3.98 for the 25-34 year olds. The standard deviation values for this factor ranged between .58 and .70. The mean factor score for mastery decrease slightly from 2.81 in the 18-24 age group to 2.58 in the over 55 age group. The standard deviation for this factor was between .47 and .63. There was a slightly larger decrease with age in mean score for the enjoyment factor from 3.95 in the under 18 group to 3.37 in the over 55 group. Standard deviations ranged between .57 and .72.

To assess the effectiveness of using the factors to predict age group, five logistic regression analyses were performed where each group (except the under 18 age group), in turn, was contrasted with the other five groups, pooled. Logistic regression was chosen to analyse the age differences following the advice of Tabachnick and Fidell (1996) that highly unequal sample sizes are better handled by logistic regression than by discriminant function analysis. Logistic regression answers the same questions as discriminant function analysis, but is more flexible, because it makes no assumptions about the distribution of the predictor variable. No analysis was done to investigate the under 18 age group, because of the small number of participants in this group. Unless there is a substantial cases-to-independent variable ratio the solution will have no meaning. With more independent variables than participants a regression solution that perfectly predicts the dependent variable for each case will emerge but be meaningless (Tabachnick & Fidell, 1996). There were eight independent variables and only seven participants in the under 18 age group.

The results of the comparison of 18 to 24 year-olds with the rest of the sample are shown in Table 4.10. A test of the full model versus the constant only model with all eight

predictors was statistically reliable, $\chi^2(8, 541) = 61.54$, $p < .001$, indicating that the predictors as a set reliably predicted between 18 to 24 year-olds and the rest of the sample. The variance accounted for is small, with McFadden's Rho = 0.13, indicating that 13 per cent of the variance in age grouping was accounted for. The model successfully predicted group membership 74.3 per cent of the time, only slightly better than the chance likelihood of 71 per cent when group size is taken into account. Table 4.10 shows regression coefficients, Wald statistics and significance levels.

Table 4.10

Logistic Regression of Participants aged between 18 and 24 using Factor Scores as Independent Variables

Factor		Wald test	
	Estimate	t-ratio	p
Competition	0.17	0.89	.376
Appearance	1.47	4.66	.000
Others' Expectations	-0.36	-1.61	.107
Affiliation	0.32	1.73	.083
Physical Condition	-1.47	-3.39	.001
Psychological Condition	-0.62	-2.67	.008
Mastery	0.57	1.45	.148
Enjoyment	0.302	1.03	.305

The Wald statistics indicate that appearance ($t = 4.66$, $p < .001$), physical condition ($t = -3.39$, $p = 0.01$), and psychological condition ($t = -2.67$, $p < .01$), were reliable predictors

of age group. The 18 to 24 age group had higher mean scores on the appearance factor and lower scores on the physical and psychological condition factors than the remainder of the participants.

The results of the test of the full model versus the constant only model in the logistic regression analysis performed to separate 25 to 34 year-old participants from the remainder of the sample was not statistically significant, $\chi^2(8, 541) = 14.60$, $p > 0.05$. The model to logistic regression equation obtained to separate 34 to 45 year-old from the remainder of the sample was not significant either, $\chi^2(8, 541) = 2.376$, $p > .50$. These results indicate that the eight factors could not be used to discriminate between 25 to 34 year-olds and the remainder of the sample, or 34 to 45 year-olds and the rest of the participants.

The logistic regression of participants aged 45-54 versus the remainder of the sample using the factors as predictors was significant. A test of the full model versus the constant only model with all eight predictors was statistically reliable, $\chi^2(8, 541) = 26.97$, $p < .005$. The variance accounted for is small, with McFadden's Rho = 0.05, indicating that only five per cent of the variance in age grouping was accounted for. The model successfully predicted group membership 72.4 per cent of the time, only slightly better than chance likelihood of 71.0 per cent when group membership size is taken into account. Table 4.11 shows regression coefficients, Wald statistics and significance levels, and odds ratios. The Wald statistics indicate that appearance ($t = -2.22$, $p < .05$), physical condition ($t = 3.05$, $p < 0.05$), and enjoyment ($t = -2.36$, $p < .05$), were reliable predictors of age group. Participants aged between 45 and 54 had higher mean scores on the physical

condition factor and lower mean scores on the appearance and enjoyment factors than the rest of the sample.

Table 4.11

Logistic Regression of Participants aged between 45 and 54 using Factor Scores as Independent Variables

Factor	Wald test		
	Estimate	t-ratio	p
Competition	-0.45	-1.46	.144
Appearance	-0.91	-2.22	.026
Others' Expect.	0.76	1.87	.062
Affiliation	0.14	0.53	.598
Physical Condition	2.42	3.05	.002
Psychological Cond	-0.05	-0.13	.895
Mastery	0.37	0.66	.510
Enjoyment	-1.11	-2.36	.018

The final logistic regression analysis used factor scores as predictors to separate participants over the age of 54 from the rest of the sample. Table 4.12 provides the results of this analysis. The resulting function was statistically reliable, $\chi^2(8, 541) = 57.36$, $p < .001$. McFadden's Rho = 0.16, indicating that the function accounted for 16 per cent of the variance. The model successfully predicted group membership 84.4 per cent of the time, compared with 82.0 per cent expected by chance, calculated taking group size into consideration. The Wald statistics indicate that the appearance factor was significantly less

important (t = -5.43, p < .001) and the physical condition factor was significantly more important (t = 2.67, p < 0.01) to over 54 year olds than the rest of the sample.

Table 4.12

Logistic Regression of Participants aged over 54 using Factor Scores as Independent Variables

Factor	Wald test		
	Estimate	t-ratio	p
Competition	-0.02	-0.05	.960
Appearance	-2.91	-5.43	.000
Others' Expectations	0.84	1.47	.141
Affiliation	0.32	0.92	.360
Physical Condition	2.54	2.67	.008
Psychological Condition	-0.37	-0.79	.428
Mastery	-0.97	-1.38	.168
Enjoyment	-0.37	-0.58	.560

Although three out of the six logistic regression analyses to distinguish age groups, using factor scores as independent variables, were significant, none of these explained more than 16 per cent of the variance. Neither were any of the analyses much better than chance at predicting group membership. The three significant analyses were for the youngest (18-24) and two oldest (45-54 and 55+) age groups. The youngest group placed more emphasis on appearance and less on physical and psychological health than the rest of the sample. The two older groups placed more emphasis on physical health and less on

appearance than the rest of the sample. Enjoyment was also less important to the 45 to 54 year-old group. Although barely significant, these results indicate a trend of decreasing emphasis on appearance and increasing emphasis on health, particularly physical, with increasing age.

Reliability of the REMM

The traditional method of measuring test reliability in the form of internal consistency is to use coefficient alpha (Kline, 1993). One problem with this method is the use of the terms internal consistency and homogeneity as though they were synonymous. Internal consistency refers to the degree to which items in a scale are intercorrelated, whereas homogeneity refers to the unidimensionality of the scale; that is whether it measures a single underlying construct (Schmitt, 1996). Internal consistency is, therefore, a necessary, but not sufficient, condition for homogeneity (Clark & Watson, 1995; Schmitt, 1996). Coefficient alpha is a measure of internal consistency and thus of limited use in establishing the homogeneity of a scale. It is also a function of the number of items on the test, with alpha increasing as the number of items on the test increases (Clark & Watson, 1995; Schmitt, 1996). A second problem with striving for a high internal consistency is that maximising internal consistency is likely to produce a scale that is very narrow in content with many strongly inter-correlated items. Highly inter-correlated items are redundant and likely to reduce the construct validity of the scale (Clark & Watson, 1995). Clark and Watson recommended that in addition to alpha coefficients, inter-item correlations be reported. They advise that alpha be at least .80 for a new scale or subscales. Item intercorrelation is a more straightforward measure of internal consistency. Schmitt advised that intercorrelations and corrected intercorrelations be presented in

addition to alpha coefficients. Corrected correlations are correlations corrected for attenuation due to unreliability and are consequently a better indication of the "true" relationship between the constructs. Schmitt pointed out that levels of alpha lower than .70 can be acceptable in some circumstances.

The alpha coefficient for the total scale was $\alpha = .94$. As alpha is a function of the number of items in the scale a high value would be expected in a scale containing 73 items and is therefore of little use in assessing reliability. The correlation coefficients for 73 individual items ranged from .004 to .85. As with the alpha coefficient, these values provide little useful information. A large range of values would be expected when 73 items are correlated with each other. A large variation is also expected because the scale is made up of eight sub-scales, each measuring different aspects of motivation. Item intercorrelation and alpha coefficients for the sub-scales are likely to be more useful for assessing scale reliability than values for the full scale.

For each sub-scale several measures of reliability are reported in a number of tables. The alpha coefficient for each sub-scale is given, as well as squared multiple correlations and corrected item-total correlations for each item, and the alpha level for the scale, if the item is deleted (which shows whether removal of the item will improve the alpha level). Squared multiple correlations and corrected item-total correlations were chosen rather than inter-item correlations and corrected correlations for ease of interpretation and reporting and because they effectively summarise the inter-item values in a manner useful for assessing item reliability.

The correlations and deleted alpha values for the items in the competition factor

Table 4.13

Correlation and Deleted Alpha Values for Items in the Competition Factor.

Item number	Squared multiple correlation	Corrected item total correlation	Alpha if item deleted
64	.83	.76	.91
73	.70	.79	.91
63	.79	.72	.92
61	.66	.77	.91
36	.61	.70	.92
50	.61	.71	.92
49	.68	.74	.92
44	.55	.69	.92
47	.52	.61	.92
35	.48	.59	.92
54	.42	.58	.92
8	.26	.46	.93
29	.35	.56	.92

Alpha for sub-scale = .92

are presented in Table 4.13. The alpha value of .92 did not increase after deletion of any item except item 8, the deletion of which caused the value of alpha to rise slightly to .93. Item 8 also had the lowest squared multiple correlations and corrected item-total

correlation values of .29 and .35 respectively. Together the correlation and alpha values suggest removal of item 8, "to do more for my fitness than other people", from this sub-scale of the questionnaire. The next lowest squared multiple correlations and corrected item total correlation values were .35 and .56 for item 29. The remaining items in the factor had squared multiple correlations values between .42 and .83, and corrected item total correlations values between .58 and .79. The deleted alpha values of the items in the competition sub-scale suggest that it might be a bit narrow in focus, however, the range of correlations suggest that there is value in the different items.

Table 4.14 shows the correlations and deleted alpha values for the items in the appearance factor. The alpha value for the sub-scale is .83. This value decreased slightly to between .80 and .82 with the deletion of any of the items except item 4, "because I get rewarded for doing it". The deletion of item 4 causes an increase of the alpha coefficient for the factor to .86. The squared multiple correlation of .08 and corrected item total correlation of .27 for item 4 were both extremely low. These values indicate that item 4 is not consistent with the other items in this factor and should be removed. The next lowest squared multiple correlation and corrected item total correlation values of .36 and .52 were for item 14. The other items had squared multiple correlation values between .45 and .60, and corrected item total correlation values between .58 and .74. Overall the deleted item and correlation values for the appearance sub-scale indicated that (with the exception of item 4), the scale contained a reasonable range of items with an overall consistent theme.

Table 4.14

Correlation and Deleted Alpha Values for Items in the Appearance Factor.

Item number	Squared multiple correlation	Corrected item correlation	Alpha if item deleted
13	.60	.74	.80
28	.51	.68	.80
15	.52	.67	.80
51	.51	.62	.81
58	.33	.48	.83
43	.32	.55	.82
56	.45	.58	.82
14	.36	.52	.82
4	.08	.27	.86

Alpha for sub-scale = .83

The item correlations and deleted alpha values for the others' expectations factor are presented in Table 4.15. The alpha coefficient for the scale is .77. Deletion of any item did not cause the alpha coefficient to increase. The squared multiple correlation values for the items in the scale were fairly low, ranging from .20 for question 27 to .56 for question 46. The corrected item total correlation values were correspondingly low, falling between .38 for question 27 and .53 for question 72. The alpha and item correlation values for this scale suggest that it is a less regular sub-scale than the other sub-scales in the

questionnaire. This probably reflects the different aspects of the scale of meeting the expectations of others within the work, medical, social, and family arenas.

Table 4.15

Correlation and Deleted Alpha Values for Items in the Others' Expectations Factor.

Item number	Squared multiple correlation	Corrected item total correlation	Alpha if item deleted
72	.45	.53	.73
39	.41	.50	.74
46	.56	.51	.74
60	.52	.51	.74
38	.28	.44	.75
66	.28	.43	.75
9	.29	.48	.74
27	.20	.38	.76

Alpha for sub-scale = .77

The alpha coefficient for the affiliation factor is .90. It is shown in Table 4.16 with the correlation and deleted alpha values for each item in the factor. The alpha coefficient either remains at .90 or drops slightly to .88 or .89 upon deletion of any question. Most of the squared multiple correlation values are above .50. Questions 5 and question 68 were the only two items not to reach this level and both have a squared multiple correlation of .39. The corrected item total correlation values are also relatively high, ranging from .57

for question 68 to .81 for question 57. The alpha and correlation values here suggest that although the affiliation sub-scale may be slightly narrow in focus there is a reasonable amount of variation in the items.

Table 4.16

Correlation and Deleted Alpha Values for Items in the Affiliation Factor.

Item number	Squared multiple correlation	Corrected item total correlation	Alpha if item deleted
57	.68	.81	.88
40	.57	.73	.89
67	.65	.77	.88
37	.50	.70	.89
25	.72	.71	.89
7	.67	.64	.89
5	.39	.59	.90
68	.39	.57	.90

Alpha for sub-scale = .90

The correlation values and deleted alpha values for the items in the physical condition factor are contained in Table 4.17. The alpha coefficient for the sub-scale is .80. Deletion of any of the items, except item 62, "because exercise lessens the physical effects of ageing", lowers the alpha coefficient to .76 or .77. Deletion of item 62 lifts alpha to .84. Item 62 also has very low squared multiple correlation and corrected item total

correlation values of .11 and .29. Having such low correlation with the remainder of the sub-scale and causing such an increase in the internal consistency of the scale with its deletion suggests that item 62 does not fit into the sub-scale well and should be removed. The remaining items have squared multiple correlation values ranging from .31 to .48 and corrected item total correlation values between .53 and .62. With the exception of item 62, the items in this sub-scale show good correlations and internal consistency.

Table 4.17

Correlation and Deleted Alpha Values for Items in the Physical Condition Factor.

Item number	Squared multiple correlation	Corrected item total correlation	Alpha if item deleted
19	.42	.55	.77
12	.39	.58	.77
34	.45	.60	.76
70	.41	.62	.76
69	.34	.53	.77
31	.48	.59	.77
42	.31	.54	.77
62	.11	.29	.84

Alpha for sub-scale = .80

Table 4.18 shows the correlations and deleted alpha coefficients for items within the psychological condition factor. The alpha coefficient for the sub-scale is .85. Deletion of any single item causes a decrease of the alpha coefficient to between .82 and .84. The squared multiple correlation values range from .27 for question 22 to .60 for

Table 4.18

Correlation and Deleted Alpha Values for Items in the Psychological Condition Factor.

Item number	Squared multiple correlation	Corrected item total correlation	Alpha if item deleted
23	.60	.71	.82
11	.50	.64	.82
24	.56	.65	.83
30	.46	.61	.83
32	.44	.62	.83
65	.38	.53	.84
33	.28	.48	.84
6	.40	.47	.84
22	.27	.46	.84

Alpha for sub-scale = .85

question 23. The corrected item total correlation values are between .46 for question 22 and .71 for question 23. All of the items within the psychological condition sub-scale

demonstrate sound item correlations and internal consistency, indicating that they form a coherent factor with no need for deletion of any item.

The deleted alpha coefficients and correlation values for questions in the mastery factor are contained in Table 4.19. The alpha coefficient for the sub-scale is .88. This drops to .86 for the deletion of any one item except item 1, "to keep up current skill level", for which it remains at .88, and question 26, "to achieve an exercise goal I have set myself', for which it drops to .87. These two questions also have the lowest squared multiple correlations and corrected item total correlation values of the sub-scale. The squared multiple correlations and corrected item total correlation values of item 1 are .35 and .44. The values for item 26 are .34 and .51. The squared multiple correlations values for the other questions range between .40 and .56. The corrected item total correlations values are between .59 and .67. Overall the items in the mastery scale appear to have reasonable internal consistency. The scale is relatively large, containing 10 items. Deletion of the two weakest items, 1 and 26 could reduce the size of the sub-scale with very little effect on internal consistency.

The deleted alpha coefficients and correlations for the items in the enjoyment factor are presented in Table 4.20. The alpha coefficient for the sub-scale is .88. This coefficient does not change with deletion of item 21, "after exercise I feel good about myself'. Deletion of any other item leads to a lowering of the alpha coefficient to between .85 and .87. The lowest squared multiple correlation in the sub-scale of .28 is for question 21. The other questions had squared multiple correlation values of between

.35 and .66. The lowest corrected item total correlation value of .46 was also for question 21. Other corrected item total correlation values ranged between .54 and .77. The lack of influence of deletion of item 21 on the alpha coefficient and the low squared multiple correlation and corrected item total correlation values suggest that this item does not fit into the sub-scale very well.

Table 4.19

Correlation and Deleted Alpha Values for Items in the Mastery Factor.

Item number	Squared multiple correlation	Corrected item total correlation	Alpha if item deleted
17	.49	.66	.86
41	.55	.65	.86
3	.47	.60	.86
2	.56	.63	.86
16	.52	.63	.86
53	.56	.67	.86
18	.39	.59	.86
1	.35	.44	.88
26	.34	.51	.87
71	.40	.59	.86

Alpha for sub-scale = .88

Table 4.20

Correlation and Deleted Alpha Values for Items in the Enjoyment Factor.

Item number	Squared multiple correlation	Corrected item total correlation	Alpha if item deleted
55	.65	.76	.85
45	.66	.77	.85
48	.52	.70	.86
52	.48	.67	.86
59	.42	.63	.86
20	.43	.61	.87
10	.35	.54	.87
21	.28	.46	.88

Alpha for sub-scale = .88

The alpha coefficients for the eight factors ranged from 0.77 to 0.92. Analysis of the deleted alpha coefficients and item correlation values indicated that deletion of a few items would substantially improve the reliability of a sub-scale and therefore, the scale as a whole. These items were: item 4, "I get rewarded for doing it", item 62, "it lessens the physical effects of ageing, and item 21, " after exercise I feel good about myself". Two items in the mastery sub-scale performed less well but adequately for inclusion. Because the mastery sub-scale was very long, it is proposed that these items also be removed. The

items were: item 1, "to keep up current skill level", and item 26, "to achieve an exercise goal I have set myself".

Test-Retest Reliability

A sub-sample of 82 participants completed a REMM questionnaire for a second time two weeks after the first. This group had a mean age of 38.4 years (SD = 11.1). It consisted of 65 females (81.5 %) and 15 males (18.8 %) and two participants who did not indicate gender. The mean ANU3 rating for this group was 52.8 (SD = 20.2). The mean ANU3 rating and age for the sub-sample was the same as that for the total sample (age differed by 0.1 years). The ratio of females to males completing the second questionnaire was more skewed than for those completing only one questionnaire. The sub-sample was 81.5 % female and the total sample was 59 % female. The ratio of females to males who completed a second survey was obviously not ideal and certainly not deliberate. It was most likely due simply to the differences in gender of those willing or with time to do both surveys. Ideally, the gender ratio of the sub-sample used for the test-retest reliability estimate should be the same as for the larger sample, however, the high proportion of females should not affect the result of the analysis.

The Pearson product-moment correlation for the total test score was .82. Although this is a reasonably good correlation, a high coefficient should be expected in such a long test, as reliability increases with test length (Ferguson, 1981). Kline (1993) recommended a minimum test-retest reliability of .8 and wrote that ideally it should never fall below .7. He also advised that there be at least three months separating testing times. This was not possible due to time restraints and because it was not thought that a large enough group would remember to complete and return a questionnaire three months after receiving it.

The gap of two weeks meant that I was often still handing out or collecting questionnaires in the gym when the two weeks came around and my presence reminded participants to complete the second questionnaire.

Pearson product-moment correlation coefficients were also calculated for each item and for each factor. The correlation coefficients for each item are shown in Appendix G. Values ranged from .33 to .82. These values are not of great use with such a large number of items. Chance would produce large and high correlation coefficients among 73 variables. The Pearson product-moment correlation coefficients for each of the eight factors were calculated using the sum of scores of items in each factor. These coefficients are displayed in Table 4.21. Coefficient values ranged between .84 for the competition factor and .58 for the psychological condition factor. Two test-retest correlation coefficients were below .70. They were .64 for the physical condition factor and .58 for the psychological condition factor. Although the test-retest reliability of these factors falls below the .7 recommended by Kline (1993), Kline based his recommendations on measurements of whole tests of at least ten items. The mastery factor is the only factor in the current questionnaire to contain ten items, the physical and psychological condition factors contained eight and nine items respectively. The relationship between item numbers and reliability means that the smaller the number of items, the lower the reliability coefficient (Ferguson, 1981). Therefore, the obtained reliability coefficients of .6 and above are reasonable for sub-tests.

Table 4.21

Mean Scores on each Factor and resulting Pearson Product-Moment Correlation Coefficients for Two Test Times

Factor	First Trial M	Second Trial M	r
Competition, Ego	29.75	30.71	.84
Appearance	16.35	15.84	.71
Others' Expectations	21.65	22.04	.83
Affiliation	33.21	34.79	.71
Physical Condition	33.77	34.49	.64
Psychological Condition	34.59	35.14	.58
Mastery	35.41	36.28	.78
Enjoyment	29.89	30.56	.69

Other Motives for Exercise

There were 46 participants who wrote in the space provided for other motives for exercise participation. Many of these participants volunteered motives that had already been covered in the questions. Some people nominated decreasing ageing effects, general health, treating particular medical conditions, increasing energy, and weight loss or maintenance. Also mentioned were challenge and competition.

Some people did nominate motives that were not specifically covered in the questions. Several people said they exercised as part of a healthy lifestyle. Some also said

that it was just part of life, something they had always done. Two people said they exercised so that they could eat what they liked and two said they participated to get the most out of their gym membership. One person said she exercised to keep up with her husband and children and another to regain her shape after pregnancy. The idea of exercise being part of a lifestyle or habit was the most common motive cited by participants that had not been included in the questionnaire. As such, this idea warrants consideration in future versions of the questionnaire. The motives of regaining shape after pregnancy and eating what you like are already covered indirectly in items on body tone and weight loss/maintanance. The idea of exercise to keep up with someone else is indirectly covered in the fitness items. As these three motives are already indirectly referred to in the questionnaire and because they were each only mentioned by one participant, they will not be considered for inclusion in the questionnaire items at present.

Discussion

The Results section of this chapter was presented in an order that logically followed the analysis of the data. First items were studied in terms of individual item statistics, followed by observation of item patterns for the whole sample and age and gender groups. Factor analysis was then conducted on the items and a detailed analysis of the outcome presented. The factors were then used to further investigate age and gender differences. Reliability of the questionnaire was reported in terms of internal consistency and test-retest reliability of each of the eight factors. Finally, responses to the open-ended question on other motives for exercise were reviewed.

The Discussion section will be presented in a slightly different order to the Results section that logically draws together the investigation. First, the performance of the 73 items will be reviewed. Following this the factor structure of the questionnaire will be discussed and related to the structure hypothesised prior to the study and to theoretical underpinnings. Test reliability will be discussed to conclude the section on the questionnaire's construction. Next, the results of the study in terms of motivation to exercise for the total sample, each gender and different age groups will be discussed and compared to results of previous research. Methodological issues arising in the current study will be then be discussed. Finally possible directions for further research and implications for practice will be considered.

Construction of the Questionnaire – Items

The majority of the items on the questionnaire fell within the factors hypothesised prior to the study. Only one item "I get rewarded for it" failed to achieve a factor loading of .30 on any factor. Sixty-five of the 73 items loaded clearly onto a single factor, indicating that these items were explicit, clearly defined items. Seven items loaded onto more than one factor indicating they were ambiguous. Sixty-one of the items loaded most highly onto the factors expected prior to the study and eight items combined to form the new "others' expectations" factor. Only five items loaded highest onto an existing factor other than that predicted prior to the study. Thirty-five of the 46 new items loaded onto the factors as predicted prior to the study and seven loaded onto the new factor. Only four new items had their highest factor loading on a factor other than predicted and one had no factor loadings above .30. The generally good performance of new and existing items gives strong support to the construction of these items and the factors into which

they grouped. It also gives support for the existence of the factors of competition and psychological condition not present in the MPAM-R, and thus to the additional concepts included within factors, for example making new friends within the affiliation factor. The emergence of the new factor highlights the importance of maintaining an exploratory method that allows new factors to emerge. It also supports the proposition presented at the outset that existing questionnaires do not cover all the motives people have for exercise.

Although the majority of items fell within the factors hypothesised prior to the study, a small number of items loaded highly on more than one factor, or onto an unexpected factor. In the case of one item, there was no noteworthy factor loading. The poor performance of some items is not an unexpected occurrence in a new questionnaire containing previously untested items. One of the aims of the current study was to identify these "poor" items, so that they could be omitted from future versions of the questionnaire. The items that should be deleted from future questionnaires are shown in Table 4.22. Table 4.22 also includes the origin of the item, its item number, and the reason for deletion. A total of eight items are recommended for deletion because they did not fit well into the factor structure.

Observation of skewness and kurtosis values indicated that there was a range of values over the 73 items, although none varied a great deal from normality. The largest variations from the normal were seen in those items involving concepts of health and fitness that were rated highly by most participants. Although these items are almost superfluous, reflecting motives that were important for nearly everyone, they are vital for completeness of the questionnaire. Anyone given a questionnaire on motivation in

Table 4.22

Items Recommended for Deletion following Factor Analysis

Item	Origin	Reason for Deletion
54. To achieve the looks/figure others expect of me	New	Not clearly defined on a single factor
43. To be attractive to others	MPAM-R	Not clearly defined on a single factor
56. Helps me stay in shape	New	Not clearly defined on a single factor
14. To improve my strength	New	Not clearly defined on a single factor
4. I get rewarded for doing it	New	Did not load on any factor
68. I like excitement of participation	MPAM-R	Not clearly defined on a single factor
6. It keeps my mind healthy	New	Not clearly defined on a single factor
21. After exercise I feel good about myself	New	Not clearly defined on a single factor

exercise not including health and fitness would probably dismiss the questionnaire as limited or poorly constructed because of the absence of these fundamental motives. The inclusion of health and fitness items is therefore vital for the face validity of the questionnaire. For the purposes of interpretation, an individual score should be considered in relation to appropriate norms.

Construction of the Questionnaire – Factors

In constructing the REMM, the 73 items were grouped into 13 constructs: direct competition, social comparison, appearance, extrinsic rewards, affiliation, others' expectations, fitness, health/medical, psychological well-being, stress release/relaxation, skills, challenge, and enjoyment. Some of these constructs were proposed to group together into broader themes. Direct competition and social comparison made up a competitive theme. A social theme was comprised of affiliation and others' expectations. Fitness and health/medical combined to form a physical condition theme, and psychological well-being and stress release constituted a psychological well-being theme. A mastery theme contained the skills and challenge constructs. Figure 4.1 shows the hypothesised constructs and relationships between them.

The constructs were all then hypothesised to fall within either the general dimension of intrinsic or extrinsic motivation. This structure was very similar, but not identical, to the structure hypothesised at the end of Study 1. The slight differences arose following writing and peer review of items. The mastery factor was thought to be too complex for a single construct. It seemed to contain two distinct aspects, skills and challenge, whereas psychological well being seemed clearly linked to self-esteem.

The factor analysis of items resulted in eight factors that were very similar to the constructs hypthesised prior to the study. This result included all the original 13 concepts, except for extrinsic rewards, although some of the 13 concepts were grouped together to form larger constructs in the final eight factors. These were the mastery, psychological condition, physical condition, and competition factors. The second order factor analysis grouped the eight first-order factors into three broader constructs.

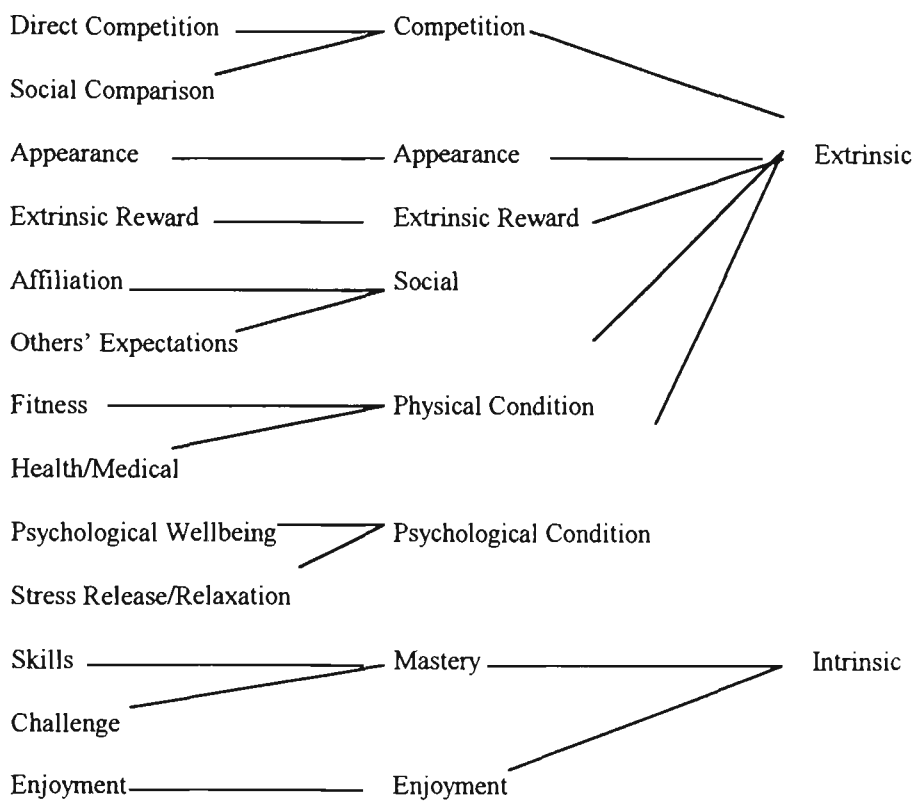


Figure 4.1. Hypothesised construct structure prior to Study 2

The first and second order factors resulting from these analyses are shown in Figure 4.2. These larger concepts again were generally consistent with the grouping hypothesised prior to the study.

The items within the extrinsic reward construct loaded on the competition factor and the others' expectations factors. The others expectations factor was broader than the original hypothesised construct with this label. It included satisfying others, such as employers and medical professionals, as well as friends and family, containing some items originally included in the health or extrinsic reward factors.

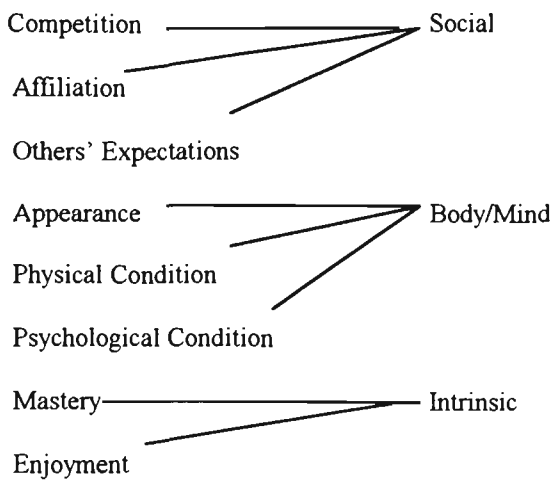


Figure 4.2. Factor structure resulting from Study 2.

The second order factor analysis was important for determining the theoretical structure of motivation in recreational exercise. Before the study, it was hypothesised that mastery and enjoyment constructs would group together as intrinsic motives and the remaining constructs would group together as extrinsic motives for exercise. Rather than two factors, three have emerged from the second order factor analysis. Figure 4.2 shows the structure resulting from the analysis. Mastery and enjoyment did group into a single factor that has been labelled intrinsic motives. The second factor at the more general level, called social motives for participation, contained the first-order factors of others' expectations, affiliation, and competition. The inclusion of the competition factor in social motives reflects the fact that competition is closely associated with interactions with other people (at least for these recreational exercisers). The competition factor included items referring to competition within the activity and competition in terms of looks each involving a comparison with others. The linking of this factor with the other first order social factors supports the assumption that the appearance items within it such as, "to look better than others" are about competition with others and not linked to the more general

appearance factor. The third factor at the second order level included the first-order factors of physical condition, psychological condition, and appearance. It was called body/mind motives for participation. Although a third factor analysis was not conducted here, and therefore is not in Figure 4.2, the social and body/mind second order factors are all extrinsic motives and could be grouped as such.

The study verified the existence of a range of motives for recreational exercise and a factor structure similar to that hypothsised, the eight factors emerging from the study being a combination of the level one and level two constructs that were hypothesised at the start. The order of importance of the factors in terms of mean ratings given by the total sample was: physical condition, appearance, psychological condition, enjoyment, affiliation, mastery, competition, and others' expectations. The diversity of the factors indicates the value of using a questionnaire such as the REMM that measures a range of motives. The eight first-order factors grouped into three second-order factors. One of these was intrinsic motivation, hypothesised to be a general dimension underlying motivation at the outset of the study. The others were social and body/mind motives, which can be distinguished. Body/mind motives concern improving physical or mental attributes and social motives are about association with and perceptions of and by other people. These two second-order factors reflect extrinsic motives, and support the existence of the second general dimension predicted. The divisions that emerged from the second order factor analysis are very similar to the divisions that were used in construction of the MPAM-R (Ryan et al., 1997). Ryan et al. constructed a measure of intrinsic motivation in terms of competence (termed mastery here) and enjoyment, corresponding to the composition of the second-order intrinsic factor in the current study. The extrinsic

motives in the MPAM-R were divided into fitness, appearance, and social scales. In the current study fitness and appearance grouped together with psychological condition (not in the MPAM-R) to form the second order body/mind motives factor. The other second order factor was the social motives factor. In the MPAM-R this included affiliation items only, whereas in the present study competition and others' expectations items (not present in the MPAM-R) were included in the social motives factor.

The fact that most of the items drawn from the MPAM-R emerged from the factor analysis into equivalent factors provides support in terms of concurrent validity for the equivalent factors in the current study. Further validity was provided by the finding that the one item from the MPAM-R that emerged in a different factor was "because friends want me to" which fell into the others' expectations factor as predicted. The item from the MPAM "to better cope with stress loaded onto the psychological condition factor as expected. The factor analysis also verified the new factors of the REMM (containing items generated in Study 1) as predominantly concepts not a covered by the MPAM-R.

Construction of the Questionnaire – Reliability

The internal reliability of the eight factors varied from satisfactory to very good. Deletion of several items should increase the reliability of some of the sub-scales. These items were: 1 "to keep up current skill level", 4 "because I get rewarded for doing it", 21 "because after exercise I feel good about myself", 26 "to achieve an exercise goal I have set myself, and 62 "because exercise lessens the physical effects of ageing". Two of these items had already been recommended for deletion following factor analysis. Item 4 was suggested for deletion because it did not load significantly onto any factor and item 21 because it loaded onto more than one factor.

Test-retest reliability coefficients of the eight factors were satisfactory, indicating that the questionnaire was reasonably stable over a two-week time period. Future investigations should investigate the reliability of the questionnaire over a longer time span.

Following the reliability and factor structure analysis of the REMM, it is suggested that 10 poorly performing items be deleted from future versions of the questionnaire (8 from factor analysis, 4 from reliability analysis, with 2 overlapping). Deletion of these items will result in a more reliable questionnaire with a clear factor structure and no ambiguous items. Participant feedback supported the inclusion of items relating to being part of a healthy lifestyle as a motivation for exercise in future versions of the REMM.

Motives for Participation in Recreational Exercise

Importance of motives in the whole sample.

Observation of item mean values suggested that items related to health and fitness were the most important to participants in recreational exercise. The lowest mean values were in items about competition, pleasing others, or employment. Mean factor scores were used to further investigate the importance of different motives. The order of factors from most to least important according to mean factor score were: physical condition, appearance, psychological condition, enjoyment, affiliation, mastery, competition, and others' expectations. This high rating of physical condition and psychological condition corresponds with the observations of individual items related to health and fitness (physical and psychological condition) related items were rated highest. The finding that health, fitness, and appearance motives were the most important to exercise participants is in agreement with previous studies (Morris et al., 1996; Ryan, et al., 1997).

Motive differences between males and females.

Although there were some strong consistencies, such as in the health area, there were also some clear differences between the main motives of male and female exercise participants, with both sexes placing emphasis on health and fitness. The two notable differences were that the item "to improve my appearance was rated inside the top ten items ranked by females but much lower by males (18) and the item "I enjoy exercising" was rated in the top ten items by males (10) but not by females (19). Some differences were observed in items outside the top ten ranked items that concurred with these two differences observed within the top ten. Appearance and social items were rated as more important by females, whereas competition, challenge, and enjoyment items were rated higher by males. Discriminant function analysis using the factors to predict gender indicated that competition, appearance, and affiliation were the factors that significantly separated males and females. The competition factor was more important to males, whereas the appearance and affiliation factors were more important to females than males. The present finding that men score higher on competitive motives is in agreement with the research by Morris et al. (1996). Past research also concurs with the finding of females scoring higher than males on appearance and affiliation motives (Frederick & Ryan, 1993; Morris et al., 1996; Ryan et al., 1997). Although the observed difference between males and females on some enjoyment and mastery items was not significant in the discriminant function analysis, the trend for male exercise participants to score higher than females again agrees with past findings (Morris, Clayton, Power, & Jin Song, 1996).

The present findings, in addition to the results of previous studies strongly support the conclusion that there exist several significant and consistent differences in the motives

of male and female recreational exercise participants. Males are more likely to cite competitive motives for exercise and females are more likely to cite appearance and affiliation motives. The addition of appearance related competition items in the competition factor of the REMM suggests that males value these aspects of competition more highly than females. Past research and the observed item trends in this study indicate that enjoyment and mastery motives may also be stronger in males than females. The difference between genders on these motives is not as large as for competition, affiliation, and appearance motives.

Motive differences between age groups.

The lack of research on the effect of age on motivation for exercise made prediction in this area difficult prior to the study difficult. The research that did exist suggested there would be a general decrease in strength of all motives for exercise, except for health and fitness related motives, with advancing age (Frederick, 1999, Morris et al., 1996). Past research also indicated that skill and affiliation motives might be highest in youth participants (Morris et al.).

Observation of item mean scores for different age groups provided some indication of motivation trends across the life span. Appearance items were rated more important by youth participants and one item on improving body shape showed a decrease in importance across the life span. Physical condition items referring to fitness and health were rated highly in all age groups, except for the item "lessens the physical effects of ageing" which increased in importance as age increased. On inspection of mean factor scores for the different age groups it appeared that motivation in terms of competition, appearance, and enjoyment all decreased with age. Logistic regression analysis to separate

each age group from the remainder of the sample was not significant for the 25-34 year-olds or the 34-45 year-olds and was unable to be conducted for the under 18 year-olds due to insufficient numbers in this group. Participants aged between 18 and 24 had higher scores on the appearance factor and lower scores on the physical condition and psychological condition factors than the rest of the sample. Participants aged between 45 and 54 had higher mean scores on the physical condition factor and lower scores on the appearance and enjoyment factors than the remainder of participants. Participants aged 55 and above were very similar to those aged between 45 and 54, having higher scores on the physical condition factor and lower ratings on the appearance factor than the rest of the sample.

The results of the logistic regression predominantly support the trends noted from the mean scores and are in agreement with general trends observed in previous studies (Frederick, 1999, Morris et al., 1996). They confirmed that participants in different age groups placed emphasis on varying motives for exercise participation. Appearance motives decreased as age increases, whereas physical condition motives increased with age. Of the new factors to emerge in the current research, only psychological condition had any variation with age, with 18-24 year-old participants placing less emphasis on it than the rest of the sample. In conflict with previous research (Frederick, 1999, Morris et al., 1996) that found the enjoyment motive decreased with age, the enjoyment factor shows only a slight decrease with 45-54 year olds and not with the over 55 group in the current study. Observation of the mean factor scores for the enjoyment factor in the current study does show a small but systematic decline with increasing age. The mean score for the over 55 age group was lower than for the 45-54 year olds. The lack of

significance in the regression analysis is probably due to the dilution of the "other participants" by the 40-55 year-olds who also had low scores on the enjoyment factor. Future research will need to look at the enjoyment motive further. Based on previous research, it was predicted that all factors other than health and fitness would decrease in rated importance with age. The results here do not completely agree with this synopsis. The difficulties associated with studying motivation differences with age have already been noted. Further studies will need to be conducted to determine the exact nature of the relationship and precisely which motives decrease with age. It is also important to find out why certain motives decrease and what replaces them if effective strategies are to be developed to motivate older adults to participate in physical activity.

The results of the analysis of the relationship between factor scores and age are not as clear or strong as the analysis of factor scores for the two genders. The different nature of age and gender as variables is likely to be a major reason for this. Gender is a distinct objective unchanging categorisation of each person. Age, however, is a continuous variable that is always changing and at different rates and in different ways for different people. Problems with trying to use age as a dependent variable include decisions about where to divide the sample, a choice that will always be subjective. The different rates at which people are affected by the passing of time is another a problem with using age as a dependent variable. Neither can one be sure whether the observed age differences are a function of age or due to the era in which the person has lived, do cultural changes in time affect people's motivational patterns. The question therefore is whether motivation changes with age or do people born at different times exhibit different motive preferences. Both of these explanations are probably partially true, however, it is

likely that the different rates of physical ageing has the greater influence on the current results. Longitudinal studies could confirm this.

Methodological Issues

This section deals with two issues related to the methodology of the study. It will discuss the benefits of the questionnaire construction method and the problems encountered with measuring age.

Questionnaire design. The method of questionnaire development used in the current study produced a questionnaire with a larger number of factors representing a wider variety of motives for recreational exercise than previous exercise motivation questionnaires. By including feedback from participants of different ages and genders as well as motives gathered by reviewing previous studies, motives not previously measured were covered. The majority of the new items performed well in the factor and item analysis indicating that the items were well constructed. Careful construction of items as well as their review by a number of sports psychologists, my supervisor, and myself resulted in well conceived items. The use of exploratory factor analysis allowed the factors to emerge rather than be forced in the analysis. This process confirmed most of the factors that were hypothesised prior to the study, although in some cases two factors grouped together that had been predicted to be separate. The factor analysis also enabled a meaningful factor, others' expectations that had not been predicted to emerge.

One aim of this thesis was to produce a questionnaire that could more comprehensively measure motives in recreational exercise than existing measures. The thorough method used here was successful in achieving this aim. A vital aspect of the continuing development of the questionnaire is the inclusion of the space at the end of the

questionnaire enabling participants to include any motives they have that were not included in the items. This provides the opportunity for ongoing updating of the questionnaire particularly when it is used with other activities or in other cultures.

Analysis of age differences. The problems associated with the arbitrary nature of dividing into age groups and the continuously changing nature of age has already been discussed. The other problem associated with the age group analysis in the current study is the nature of logistic regression. Logistic regression compares each group with all the rest of the sample lumped together. The results of these analyses need to be interpreted carefully. The results obtained for the appearance factor demonstrate this need for caution. The mean value for the appearance factor displayed a downward trend as age increased, with the mean value for the over 55 age group being lower than for the 45 to 54 age group. The appearance factor was found to be significantly lower for the 45 to 54 year-olds than the rest of the sample, but not for the over 55 year-olds compared with the rest of the sample. Obviously, the addition of the 45 to 54 year-olds to the remainder of the sample lowered the mean appearance value more than the addition of the 55 and over group that was much smaller. A better method of analysis might be to compare each age group to each other age group separately. Although logistic regression provides a useful tool for analysing group differences, results should be interpreted with referral to the observed trends.

Future Research

Although the current study has produced an extensive questionnaire to measure recreational exercise, its comprehensivity needs to be assessed in other populations. Studies should be undertaken on other groups of recreational exercise participants within

Australia as well as in other countries and cultures. If possible, different socio-economic groups should be investigated. The suitability of the questionnaire for recreational sports (low level competition or social) and other types of recreational exercise such as martial arts should be studied. Study 3 examined the performance of the questionnaire with a group of recreational sports participants. That study provided an opportunity to replicate the factor structure established in the present study.

Further research should be undertaken to confirm gender differences observed in this and past studies. It is also of interest to see if the same or other gender differences exist in other cultures. More exploration needs to be undertaken into the nature of age related motivation differences for recreational exercise. Longitudinal studies could follow a group of exercisers observing changes in motives, provided that measuring instruments with sufficient long-term stability are identified. Other studies could inform us of how much motivation preferences reflect the generation in which the person lives.

Concluding Remarks

The overall performance of the REMM questionnaire was good. Although a small number of items were unsatisfactory, this is expected for the initial testing of a questionnaire. Participant feedback indicated that the questionnaire provided a good coverage of motives. The most important motives for participation were physical and psychological health and appearance, with enjoyment, affiliation, mastery, competition and others' expectations being of lesser importance. There was only one idea for additional motives not covered in the REMM. This referred to the idea of exercise as part of a lifestyle. Factor analysis demonstrated that the test structure was similar to that predicted, providing construct validity for the questionnaire. Analysis of the items drawn from the

MPAM-R provided concurrent validity for the REMM in addition to further construct validity. The internal reliability and test-retest reliability measures were good.

Eight factors were identified in the analysis of the REMM: competition, affiliation, others' expectations, appearance, physical condition, psychological condition, mastery, and enjoyment. These in turn grouped into three second-order factors: social motives, body/mind motives, and intrinsic motives. The existence of the eight factors demonstrates that motives for recreational exercise go beyond achievement goals. These results support the use of self-determination theory to provide a sound theoretical perspective to explain motivation in recreational exercise. In self-determination theory, the primary psychological needs motivating human behaviour are autonomy, competence, and relatedness (Deci & Ryan, 1985). When intrinsically motivated, a person has choice in their behaviour, thus satisfying the autonomy need and experiences enjoyment. The mastery component of intrinsic motivation from the REMM addresses the competence need. The extrinsic, social motive of the REMM fulfils the need for relatedness with others. Body/mind-related motives are extrinsic in nature.

According to self-determination theory, adherence should be linked to intrinsic motives such as enjoyment and mastery. Extrinsic motives such as health and appearance only have a short-term motivating potential. This connection has been verified in previous research (Frederick & Ryan, 1993; Ryan et al., 1997). The most important motives for recreational exercise participants in the current study were physical condition, appearance, and psychological condition, followed by enjoyment, affiliation, mastery, competition, and others' expectations. This order of importance of motives should raise concern. The three highest ranked motives are all extrinsic in nature. There is a need to explore whether

the various motives measured by the REMM are related to adherence as predicted in self-determination theory. If they are, it would be predicted that to increase the level of long term involvement in exercise, the intrinsic motives of mastery and enjoyment need to gain more importance.

The variety of motives measured by the REMM, in particular the motives not measured by previous questionnaires, confirms the need for a new and more comprehensive questionnaire than previously existing measures of recreational exercise motivation. The present study gives support to the technique involving interviews in addition to a research review in questionnaire development, as the lack of further motives nominated by participants indicated that the items provided a good coverage of motives held by participants. Further research is needed to confirm the factor structure of the questionnaire and establish its validity in other exercise environments.

CHAPTER 5: VALIDATION OF THE REMM WITH RECREATIONAL SPORTS PARTICIPANTS

Introduction

Following the examination of the reliability and factor structure of the Recreational Exercise Motivation Measure (REMM) with a large sample of recreational exercise participants, it was of interest to assess its potential use in recreational sports participants.

It is very difficult to differentiate those who play sport for the competition from those who play for mainly social reasons. Most organised sport activities involve score keeping, so playing without scoring is an untenable criteria to use to distinguish the groups. The objective of the current study was to gather information from people who were playing more for the social than the competitive aspect. For this purpose, recreational sports participants were defined as people who participate in competitive sport at low to medium grade or social level (with a group of people to make or reinforce friendships). Participants were gathered from "business competitions" and other less competitive nights at the sports stadiums. Examples of recreational sport include people playing sport such as tennis, golf, or soccer during their leisure time, who do not aspire to higher levels of competition.

The main aim of this study was to examine the construct validity of the REMM, by comparing the relative importance of different motives for recreational sport participants and recreational exercise participants (from the previous study). Based on the conceptualisation of the REMM, it was predicted that recreational sports participants would show motive profiles that differed in predictable ways from the motive profiles of recreational exercise participants. In addition, this study provided the opportunity to

investigate the reliability and factor structure of the REMM with a different group. The open-ended question that followed the REMM in which participants were asked to nominate any motives for participation not covered in the REMM was of particular interest in this study. Answers to this question would indicate whether any major motives of sports participants were missing from the questionnaire, which had been developed primarily from the qualitative study of recreational exercise participants.

Recreational sports participants may be expected to have many of the same motives as recreational exercise participants, although the importance of some may vary. There are many similarities between recreational exercise and recreational sports participants. Like exercise participants, recreational sports participants are not paid, and any reward for winning is minimal, especially at lower levels of competition. The activities in both cases are undertaken in the individual's own time, outside work or school hours. Roberts (1993) stated that the essential feature distinguishing sport from recreational exercise is its organisational structure, the formal hierarchical arrangement of roles and positions, a formal history with recognised records and traditions, and a set of rules. Recreational activity is more individually oriented, spontaneous, and subject to the starting and stopping wishes of the individual (Smith & Theberge, 1987).

Previous Related Research

In introducing this thesis, the differences between recreational exercise and sport were discussed. Past research has shown that there are differences in motives of recreational exercise and sports participants. Morris, Clayton, Power, and Jin Song, (1996) found that team sport participants valued team and friendship, and challenge and winning as more important than people involved in recreational exercise activities.

Recreational exercisers rated health and fitness and atmosphere more highly than sports participants. Frederick and Ryan (1993) used the MPAM to compare motivation in individual sports (such as tennis and sailing) with exercise activities (such as aerobics and running). They found that enjoyment and competence motives were more important to sports participants and body-related motives were more important to exercise participants. Frederick (1999) recorded higher interest/enjoyment, competence, and social motivation in individual and team sports participants than in fitness activity participants. On the basis of these studies and the differing structure of recreational sport and exercise it was expected that some differences in strengths of motives would be found. Sport participants would rate competitive, affiliation, mastery, and enjoyment factors higher than exercise participants. Exercise participants were expected to value appearance, physical, and psychological factors more than recreational sports participants. The others' expectations factor is a combination of aspects concerned with medical conditions, employment, and friends' encouragement. The medical condition and employment-related items would be expected to be more important for exercise than sport participants, whereas it was predicted that the friends' encouragement items would be equally rated for sports and exercise participants. This is because friends can encourage a person to go the gym with them or to join the basketball or cricket team.

The differences in motives of different age and gender groups were expected to be similar to those recorded for studies of sports participants in the past and like those observed in Study 2. Morris, Clayton, Power, and Jin Song (1997) found only a couple of notable differences in the top ten motives of male and female sport and exercise participants. They did find that the challenge factor was higher in males than females and

was useful in discriminating between the sexes. In Study 2, there were also only a few noteworthy differences in the highest-ranked items for males and females. Overall, items relating to competition and challenge were rated higher by males than by females, and items relating to appearance and friendship were rated higher by females. When the factor scores were analysed, the competition factor was found to be more important to male participants and the appearance and affiliation factors more important to female participants. This is consistent with other research on motives of males and females (e.g. Morris & Sutherland, 1997)

Few studies have examined sport motivation across the life span. Brodkin and Weiss looked at swimmers and found that participants over 60 years of age were more motivated by health factors than younger participants. Morris, et al. (1997) found that skills and friendship were most important to youth athletes (14 and under). Health, fitness, fun, and friends were most important to 23 to 39 year olds. Relaxation was most important to 40 to 59 year olds, with all other factors except health and fitness decreasing in importance for this age group. Although the results of Study 2 were not easy to interpret, some age differences in motivation appeared strong. There was a tendency for the importance of the appearance factor to fall and the value of the physical condition factor to rise with increasing age. The psychological condition factor was less important for participants under the age of 24 than for the rest of the sample. Based on this previous work it was predicted that mastery motives would be more important for younger participants (under 18). Social and enjoyment motives were expected to be more important for participants in the 25 to 34 and 35 to 44 age bands, and relaxation important

in the 35 to 44 and 45 to 54 age groups. Health was expected to increase in importance with age although still to be main motive for all except the youngest (under 18) age group

Method

Participants

A total of 245 sports participants returned the questionnaire. The sample consisted of 119 (48%) male and 98 (40%) female and 28 participants (12%) who did not indicate their gender. The age of participants in the current study ranged from 17 to 74 years with a mean age of 30.7 years (SD = 7.7 years). This mean was substantially lower than that of the recreational exercise participants in Study 2, who had a mean age of 38.5 years (SD = 13.2 years). This probably reflects a decrease in involvement in sport and increase in participation in exercise activities as age increases. The smaller standard deviation found for the age of sport participants' supports this hypothesis. The sample of recreational exercise participants in Study 2 was 32 per cent male and 59 per cent female. Thus, it can be seen that whereas males outnumbered females in the present study and females greatly outnumbered males in Study 2.

There were 40 different occupations cited by the 235 recreational sport participants who recorded their occupation. The occupations and number and percentage of participants citing each are shown in Appendix F. The seven most frequently cited occupations were student (34 participants), sale/marketing/administration manager (32), clerk/office duties (19), accountant/financial analyst (15), teacher (14), computer related (13), and manager (12). There were several differences between the top-ranked occupations of sports participants and those of the recreational exercise participants in Study 2. Home-maker was the most frequently cited occupation in Study 2, but was

recorded by only four participants in the present study. The sixth most frequently cited occupation in Study 2 was "retired". This category was not recorded by any participants in the present study. These differences are likely to be partially due to the times and venue location of the sports activities, which were all in the evening at an inner suburban sporting venue. It is likely that people who are home-makers would be looking after children or involved with family activities in the evening and so unable to participate in sport, especially if the venue was not close to their home. Retired people might prefer to participate in activities during the day, because they are typically available during this time. They are also less likely to be involved in sport because of the physical demands and risk of injury associated with most sport activities.

The mean ANU3 score of the 195 participants for whom it could be calculated (excluding home-makers, retired, students, and unemployed) was 54.15 (SD = 19.17). This was not significantly different to the mean ANU3 score of the recreational exercise participants in Study 2 (M = 528, SD = 20.1) indicating that there was no difference in socio-economic status between the exercise and sport samples. The differences in demographics between the sport sample and the exercise sample probably reflect differences in the type of participants in the each area of activity and do not invalidate the comparison. The age and gender differences will be taken into account during the analysis, but the main aim of the study is to compare motives of the different activities and demographic variation is expected.

Measures

The Recreational Exercise Motivation Measure (REMM) developed and used in Study 2 was administered in this study. The REMM consists of a brief demographic

section and activities profile table followed by 73 motivation items asking participants to rate motives for activity participation on a 5-point Likert scale. Following this is space for participants to include any additional motives they might have. Appendix E contains the questionnaire. The 73 items remained the same as for Study 2. Although some items performed poorly in the factor or reliability analysis in Study 2, it was decided to keep these items for the current study. This would enable a direct comparison between recreational exercise and sports participants and provide further information to help the decision on whether to discard the items I the future. One alteration was made to the questionnaire to make the questionnaire applicable to recreational sport participants. The word "exercise" was replaced by the word "sport" in the initial statement, so that participants were asked to "think of the motives you have for sport activities you do" when responding to the items. Similar changes were made in the information sheet that accompanied the questionnaire. In addition, a statement indicating the method of return of the questionnaire was added to this sheet. Although the psychometric analyses in Study 2 resulted in the recommendation that deletion of several items could strengthen the REMM, no changes were made to the items for the present study. The REMM was administered with the same 73 items to facilitate comparison between recreational exercise and sports participants.

Procedure

Initially, the same method for distribution and collection of questionnaires was employed that was used for obtaining data from recreational exercise participants in Study 2. Permission for collection of data was obtained from the management of Sandringham Basketball stadium and a collection box was organised for participants to return the

questionnaires. Over three nights, 85 questionnaires were handed out to players arriving and leaving games. Only eight of these were returned the following week. This small rate of return was most likely due to the fact that many players attended the stadium at most, once per week. Asking them to remember to return something the following week relied on them doing the questionnaire, remembering to bring it with them, remembering to put it in the box, and having and being able to attend a game, if they had one that week. Often when I was handing out questionnaires at recreational centres, participants would say things such as "I've done it, but left it at home. I'll bring it next time." If next time is again another week away, remembering becomes even more difficult.

The problem of low return rate needed to be addressed prior to distribution of any more questionnaires. A reply paid address was established and a prepaid, preaddressed envelope was included with each questionnaire handed out. This allowed participants to complete the questionnaire at home and return it easily, free of charge by normal mail. Melbourne Sports and Aquatic Centre was approached and permission was received from the management to distribute questionnaires to participants in a number of sports over a three-week period. The sports played at the centre are basketball, squash, badminton, and volleyball. I approached participants as they entered or left the stadium and asked if they would be prepared to complete a questionnaire on motivation in sport. Those who agreed to participate in the study were handed a package that included an information sheet, the demographic questions, the REMM, and a prepaid, preaddressed envelope. The coach of a university hockey team was given a number of questionnaires to distribute to players. A total of 611 questionnaire packages were distributed this way, 247 of which were returned within one month. Another nine questionnaires were returned after analysis of the data

had commenced. The return of 247 questionnaires out of 611 distributed represented a 40.4 per cent return rate. Ten questionnaires were omitted from the analysis because they were incomplete (missing at least a third of the items) or because they had been completed by a person who did not play sport on a regular basis.

Results

The Results section begins with investigation of the factor structure of the sport data and comparison of it with the structure of the exercise data from Study 2. The internal consistency of the current data is then reported. The activities profile of sports participants is summarised and compared with that of exercise participants in Study 2. The relative importance of different items is reported for the total sample and separately for male and female participants. The ranking of items by sport participants in the present study is then compared with the rankings given by exercise participants in Study 2. Following this, the factor scores for the total group, different genders, and different age groups in the current study are compared with the factor scores for these groups in Study 2. The data was analysed using the statistics programs SPSS (1999) and SYSTAT (1997).

Activities Profile of Sport Participants

The activity profile table was completed in by 243 sports participants, each of whom recorded between one and seven activities. Forty-nine participants reported involvement in only one sport activity, other than these, all participants took part in some form of exercise in addition to their sport. Involvement in two activities was cited by 73 participants, three by 80 participants, four by 27 participants, and five or more by 14 participants. Sports participants cited a total of 31 different physical activities, some of

which were exercise activities. The ten activities listed most frequently by were basketball (211 participants), walking (62), running (52), weights (38), swimming (33), cycling (32), netball (24), tennis (22), golf (19), and gym program (16). The number of sport activities participated in was much higher than in the sample of exercise participants in Study 2. As participants in Study 3 were asked to complete the questionnaire in relation to their sport this should was expected and desired. The other activities in which the two groups participated were similar, with many sport participants also being involved in exercise activities such as walking, running, swimming and cycling.

Of the 246 sport participants, 189 (76.83%) also participated in some form of exercise activity. In Study 2, 101 of the 751 (13.4%) exercisers also engaged in some type of sport. Therefore, there was some overlap in the two groups. Due to the very small number of participants in the sport sample who were engaged in only sport, this overlap would be difficult to avoid. The instruction for sport participants to complete the questionnaire with respect to their sport activity and for exercise participants to complete the questionnaire with respect to their exercise activity would hopefully minimise any problems caused by the group overlap.

The mean duration of participation in any activity was 1.0 hours (SD = .80). The mean intensity level of exercise on a scale of 1 to 5 was 3.3 (SD = 1.1). These duration and intensity levels are not significantly different to those of the exercise participants in Study 2. Of the 606 activities listed, participants reported that 393 were reported to be performed at a social level of participation, 193 at club level, and 10 at state, national or international level. One participant listed level as "school competition", three stated that it was a means of transport, and one reported level of involvement to be as a coach. The

state, national, and international level competitors were included in the analysis because all cited this level of competition as being in a second or third sport, not the one about which they responded to the 73 motive items. The small number of high level participants means that any differences in motives from the remainder of the participants would have an inconsequential effect on the data analysis. A much higher proportion of sport participants recorded club level of participation and fewer recorded a social level of participation than exercise participants. This possibly is a reflection of the organisational structure of sport, in which teams are selected from a pool of club members.

Factor Analysis of Sports Data

The collection of data from sports participants provided the opportunity to cross validate the factor structure of the questionnaire on another sample. Although ideally, confirmatory analysis should also be conducted on a sample of exercise participants, this study acted to replicate the findings of the first study. Gorsuch (1997) said that exploratory factor analysis could be used for confirmatory purposes. Exploratory factor analysis is a multi-tailed test and therefore stronger than many confirmatory procedures. A stronger test was preferred because of small sample size for the number of the items in the questionnaire. Despite the fact that the sample size was fairly small for the number of items, factor analysis was still considered useful for replicating the structure obtained with the exercise data in Study 2. The factoring procedure carried out on the sports data was the same as that conducted on the exercise data, that is, principal axis factoring, restricting the number of factors to eight, followed by oblique rotation. Table 5.1 reports all the factor loadings, highlighting the highest factor scores for each item as well as any other scores above or equal to 3.0. The items are presented in the same order and within the

same factors as resulted from the analysis of recreational exercise participants (Table 4.5). This method of presentation was chosen to provide ease of comparison between the two analyses.

Comparison of the results of the factor analysis of the sports data with the factor analysis of the exercise data must be treated with caution due to the small sample size of the sports group. More importance will be placed on the results obtained from the exercise group. Most of the items fell within the same factors in the two analyses, although the factor scores for items did differ.

Seven out of the ten items that loaded onto the mastery factor in the exercise analysis also had a high loading on the mastery factor for the sports analysis. Item 2, "I like challenging activities" loaded on the mastery factor but had its highest loading on the appearance factor. Item 16, "I like physical challenges" loaded highest on the enjoyment factor in this study. Item 26, "to achieve an exercise goal I have set myself" loaded highest on the appearance factor in the current study, where it seems misplaced. This item demonstrated fit poorly into the factor in Study 2. The other item of interest in the mastery factor was number 17, "to perform well compared with my own past performance". This item had the highest loading (.60) on the factor in the exercise data and the lowest loading (.21) in the sports data. All of the items except one from the physical condition factor in Study 2 also had their highest loading on this factor in this study. Item 69, "to maintain strength" loaded on the appearance factor in this study, suggesting that exercise participants and sports participants see strength maintenance as achieving different purposes. Seven of the eight items that loaded highest on the affiliation factor for the exercise data also had their highest loading on this factor for the sports data. Item 68, "like the excitement of

participation" loaded onto the enjoyment and mastery factors in the current study and onto the affiliation and enjoyment factors in Study 2. This item has already been recommended for deletion and the differences in factor loadings in this study provide further support for that suggestion. All the items in the psychological condition factor in Study 2 also loaded onto the factor in this study. All the items on the appearance factor in Study 2 loaded onto the appearance factor in this study. Items 51, "it helps me maintain a trim, toned body" and 56, "it helps me stay in shape" also loaded onto the physical condition factor. This is likely to be because both represent physical aspects of appearance. Item 56 also loaded on the physical condition factor in Study 2 and was recommended for deletion. Item 4, "I get rewarded for doing it" had a factor score of only .24 and therefore did not fit well into the factor. This occurred in Study 2 also. Six of the eight items in the others' expectations factor loaded clearly onto that factor in the sports data analysis. Item 9, "because friends want me to" loaded onto the affiliation factor, indicating that sports participants viewed the item as a positive contribution to friendship rather than pressure. Item 27, "because someone close to me approves of my exercise activities" had factor scores between .22 and .26 on the mastery, affiliation, appearance, and competition factors in the present study. This item had the lowest factor score (.10) of any item in the others expectations factor in Study 2. The low scores on a range of factors across the two studies indicates that this item did not fit well into any factor and perhaps should be considered for removal from the measure. All except one of the items on the enjoyment factor in exercise sample had their greatest ranking on the factor in Study 3. The exception was item 21, "after exercise I feel good about myself" which had a loading of .25 on the affiliation factor. It was the lowest scoring item on the factor in Study 2 and

Table 5.1

Factor Analysis of Data for Recreational Sports Participants.

	Highest Factor Loading							
Factor	F1	F2	F3	F4	F5	F6	F7	F8
Percentage of variance	2.8	1.8	4.1	3.7	16.6	2.1	8.8	7.1
17 perform well compared to own past performance	.21#	.10	-.03	.05	-.14	.02	.01	.07
41 improve existing skills	.80#	-.01	.13	.01	-.05	.10	-.11	.04
3 to do my personal best	.35#	.18	-.17	-.03	-.08	-.06	.15	.21
2 like challenging activities	.34*	-.18	-.20	.16	.45#	-.08	.47	.09
16 like physical challenges	-.04	.05	-.16	.08	.18	.09	.60#	.10
53 improve skill/ technique	.78#	-.01	.10	.03	-.00	.02	-.02	.12
18 obtain new skills/ activities	.45#	-.08	.07	.04	.10	.16	.07	.00
					Mastery			
1 keep current skill level	.53#	.14	.12	.12	-.02	-.05	.01	.02
26 achieve exercise goal I set	.04	.09	-.08	.16	.32#	.22	.08	.01
71 get better at an activity	.75#	.14	-.03	-.08	.13	.10	-.07	-.06
19 it keeps me healthy	.01	.68#	.07	.06	-.04	-.05	.10	.04
12 helps maintain healthy body	.04	.58#	.04	.15	.15	-.13	-.01	-.03
70 to maintain physical health	.15	.40#	-.15	.14	.20	.04	.13	-.00
34 improve c.v. fitness	.16	.45#	-.03	.06	.23	.04	.06	-.03
31 to be physically fit	.06	.67#	-.03	-.08	.10	.07	.20	.10
69 to maintain strength	.24	.16	-.20	-.08	.45#	.16	.21	-.03

62 exercise lessens the physical				**Physical Condition**				
effects of ageing	.01	.26#	.05	.11	.18	.25	-.20	.09
42 to have more energy	.11	.38#	-.01	.26	.06	.09	.14	-.09
57 to be with friends	.14	-.10	.77#	-.01	-.11	-.05	.09	-.07
40 to do activity with others	.18	.18	.74#	.01	-.16	.01	.02	-.05
67 enjoy spending time with					**Affiliation**			
others doing exercise	.13	-.09	.72#	.16	-.05	-.03	.06	-.05
37 talk with friends exercising	.05	.06	.64#	.03	-.03	.00	-.05	.05
25 make new friends	.28	-.22	.36*	-.06	.39#	.07	.17	-.08
7 meet new people	.34*	-.18	.34#	-.04	.41	.06	.11	-.11
5 in common with friends	-.11	.07	.53#	-.11	-.00	-.02	.14	-.05
68 like excitement of participat.	.30*	-.21	.10	.05	-.02	-.06	.43#	.09
23 it acts as a stress release	-.02	-.04	-.11	.72#	-.14	-.01	.07	.09
11 to better cope with stress	.06	-.05	-.04	.76#	.02	.06	-.16	-.18
24 helps improve mental health	-.03	.03	-.05	.77#	.06	-.03	-.04	-.04
30 take mind off other things	-.03	-.13	.04	.63#	.03	.00	.06	.07
32 helps me relax	.02	.12	-.00	.59#	-.17	-.04	.16	.02
65 get away from pressures	.04	-.04	.16	.64#	-.06	-.05	-.08	-.08
33 stops me feeling depressed	-.02	.00	.03	.53#	.04	.24	-.01	-.01
6 helps keep mind healthy	-.01	.15	-.01	.49#	.03	-.06	.05	.03
22 helps me achieve other				**Psychological Condition**				
things in life	-.05	.12	-.11	.44#	.24	.10	.02	-.00

13 improve appearance	.02	.17	-.02	.07	.75#	-.04	-.10	.03
28 improve body shape	-.05	.20	-.03	.02	.76#	.01	-.04	.02
15 define muscle, look better	-.04	.08	-.19	-.04	.79#	.12	.13	-.00
Appearance								
51 maintain trim, toned body	.03	.33*	-.06	.03	.62#	.09	-.01	-.04
58 lose weight, look better	-.15	.08	.03	.08	.55#	.11	-.23	.10
43 be attractive to others	-.07	.07	.08	.11	.64#	-.08	-.14	.26
56 helps me stay in shape	.13	.40#	.01	-.00	.30*	-.01	.10	.03
14 to improve strength	.14	.09	-.15	.03	.66#	.08	.16	-.05
4 I get rewarded for it	.01	-.04	-.03	.11	.24#	.10	.20	.07
72 prescribed by doctor, physio.	-.00	.04	.06	.03	.02	.59#	-.05	.04
39 manage medical condition	.16	.08	-.00	.17	-.04	.63#	-.11	.00
46 to earn a living	.08	-.08	-.07	-.05	-.04	.79#	.12	-.01
60 because I get paid to do it	.05	-.06	.01	-.1	-.10	.71#	-.01	-.08
Others' Expectations								
38 required to be fit for job	.11	.11	.01	.08	.09	.43#	.07	.07
66 people tell me I need to	-.21	-.14	.16	-.01	.03	.40#	-.10	.10
9 friends want me to	-.10	-.07	.51#	-.00	.08	.20	.00	.14
27 someone close approves	-.25	.01	.26#	.04	.22	.10	.00	.26#
55 because I have a good time	-.10	.11	.22	.03	-.09	-.06	.72#	-.08
45 it is fun	-.04	.12	.14	-.07	-.06	-.01	.66#	-.01
48 I enjoy exercising	-.01	.32*	-.01	.04	-.06	.06	.59#	-.07
52 it is interesting	.14	-.06	.13	.28	-.04	-.05	.35#	.23
Enjoyment								
59 it makes me happy	.06	.15	.19	.10	.01	-.08	.57#	-.09

20 exercise is stimulating	.03	.24	.03	.25	.03	-.11	.34#	.06
10 the activities are exciting	.19	-.12	.11	-.01	.04	-.02	.34#	.27
21 after exercise I feel good about myself	-.10	.26	-.03	.31#	.23	-.06	.21	-.01
64 look better than others	.06	.08	.02	-.02	.42	.01	-.20	.58#
73 perform better than others	.07	.03	.03	.01	-.02	.19	-.08	.74#
63 make muscles more toned than other people's	.02	.09	-.06	-.01	.43*	.02	-.18	.49#
61 be fitter than others	-.05	.18	-.01	-.04	.13	.09	-.03	.67#
36 makes my physical			**Competition, Ego**					
appearance better than others	-.02	.16	.05	.04	.46#	-.09	-.19	.44*
50 work harder than others	.02	-.03	-.17	.05	-.05	.15	.10	.61#
49 be best in group	.06	-.03	-.09	-.00	-.07	.19	-.05	.76#
44 compete with others around me	.21	.00	.17	-.03	-.07	-.12	.10	.55#
47 to beat my friends	-.11	-.04	.05	-.10	-.17	.31*	.08	.64#
35 I like to win	.18	-.09	-.12	.02	-.00	-.16	.26	.52#
54 achieve looks others expect	-.18	-.00	.05	-.05	.40#	.08	-.13	.44#
8 more for fitness than others	.04	.22	.08	.08	.21	.12	.00	.33#
29 gain status, recognition	-.07	-.05	.22	.01	.33*	.20	.02	.36#

highest loading * loading greater than .30 which was not the highest loading for item

has been recommended for removal. All the items on the competition factor in Study 2 loaded into the competition factor in the present study, although some also had factor scores above .30 on other factors. Items 36, "makes my physical appearance better than others" and 54, "to achieve the looks others expect of me" both relate to appearance aspects of competition and both had factor scores of .40 or above on the appearance factor. Item 29, "to gain status, recognition" had a factor score of .29 on the appearance factor. Item 47, "to beat my friends" had a score of .30 on the others' expectations factor, perhaps because of its reference to other people.

Overall, the results of the factor analysis of the sports data support the factor structure reported in Study 2. The majority of the items loaded onto the same factors for both samples. Most of the items that loaded onto different factors in the two studies or that had high loadings on multiple factors had already been noted as poor items and recommended for deletion following analysis of the recreational exercise data. The poor performance of items 4, 21, 26, 54, 56, 62, and 68 in the current sample in addition to their poor performance in Study 2 provides justification for the removal of these items from the questionnaire. One item that was poorly defined in the present analysis that was not previously recommended for deletion was item 27, "someone close to me approves of my exercise activities". This item also had a low factor score in Study 2 and should probably be removed from the questionnaire. The small size of the sports sample means that making changes on the basis of the sample should be done warily. The factor structure of the questionnaire from the sports data largely supports that obtained from the exercise data. Therefore, the factor structure obtained from analysis of the recreational exercise participants will be used for the remainder of the analysis in this study

The small sample size of sports participants meant that the first order factor analysis was conducted as a confirmatory procedure. Analysing this data could not be justified. Therefor second order analysis was not performed here. Future studies with larger groups could be used to confirm the second-order factor structure.

Reliability of Sports Data

The internal consistency for the whole scale measured by Cronbach alpha was .92. As mentioned in Chapter 4, this value increases as the number of items in the test increases, and therefore gives only a vague indication of reliability in a measure with 73 items.

Table 5.2

Reliability (Cronbach Alpha) Scores of Factors using Sports Data

Factor	R
Competition, Ego	.92
Appearance	.83
Others' Expectations	.77
Affiliation	.90
Physical Condition	.80
Psychological Condition	.85
Mastery	.88
Enjoyment	.88

The internal consistency of each of the factors, based on the sports data is reported in Table 5.2. The range of values of Cronbach's alpha for the sports data was between .77 and .90, with six of the eight values .85 or above. This was the same as the range found in Study 2 and supports the conclusion of good reliability of the factors. It was shown in Study 2 how deletion of some items could improve the reliability. This would be expected to similarly increase the reliability of factors using the sports data.

Important Motives for Participation

The rating of different items by participants provides useful information about the motives of participants and the performance of individual items. It may also give an indication of motive differences between the recreational sport participants in this study and the recreational exercise participants in Study 2. The mean, standard deviation, skewness and kurtosis values of all of the items for the recreational sports data are given in Appendix H.

The top ten rating items for both the recreational exercise participants from Study 2 and the recreational sport participants from the current study are shown in Table 5.3. The items that sports participants rated highly, but exercise participants did not were item 45 "because it is fun", item 55 "because I have a good time", item 67 "I enjoy spending time with others doing exercise", and item 59 "because it makes me happy". These items all related to enjoyment: items 45, 55, and 59 are all in the enjoyment factor that emerged in Study 2. Although item 67 was in the affiliation factor, a strong link with enjoyment is clear in that the item has the word enjoy in it. The higher importance of fun to sports participants than exercise participants corresponds with expectations based on prior research (Frederick & Ryan, 1993).

Table 5.3

Mean Scores for Top Ten Ranked Items for Sports Participants and Exercise Participants

	Sport		Exercise	
Item	M	Rank	M	Rank
12. helps maintain healthy body	4.42	1	4.64	1
45. it is fun	4.39	2.5	3.86	21
19. keeps me healthy	4.39	2.5	4.54	2
55. I have a good time	4.31	4	3.72	27
31. to be physically fit	4.25	5	4.48	3
6. keeps my mind healthy	4.21	6	4.29	6
67. enjoy time with others doing exercise	4.20	7	2.88	47
59. makes me happy	4.18	8.5	3.94	20
21. after exercise I feel good about myself	4.18	8.5	4.46	4
70. to maintain physical health	4.16	10	4.35	6
34. to improve cardiovascular fitness	4.10	12	4.42	5
56. because it helps me stay in shape	4.03	13	4.22	8
42. to have more energy	3.57	32.5	4.19	9
14. to improve my strength	3.55	34.5	4.17	10

Items that exercise participants rated in the top ten but sports participants did not were item 34 "to improve cardiovascular fitness", item 56 "because it helps me stay in shape", item 42 "to have more energy", and item 14 "to improve my strength". Two of

these items were from the physical condition factor (34 and 42) and two were from the appearance factor (56 and 14), indicating body condition and appearance may be a more important motivating factor to exercise participants than to sport participants. Although further comparison of differences in ranks for the total sample could be presented, it is unlikely to reveal as much as a comparison between the factors. Factor scores also provide a clear way to contrast the two groups.

Comparison of Recreational Sport and Exercise Participants

One of the primary aims of the present study was to investigate how the questionnaire performed when used with recreational sport participants in comparison to the results obtained with recreational exercise participants. Although the comparison of performance of individual items for the two groups provides some information, a more important comparison is between the scores obtained on the factors for exercise and sports participants. Comparison such a large number of items on an individual basis is long difficult to interpret and likely to contain false correlations. Comparison of factors gives a clear indication of differences between different groups of motives, and is less subject to standard errors within the data. Table 5.4 presents the mean factor scores and standard deviation values for recreational sports participants obtained in the current study as well as the mean factor scores and standard deviation values obtained for recreational exercise participants in Study 2. The factor scores were calculated by summing all of the products of the factor weight and score for each item that had a weight greater than .3 on the factor, then dividing by the number of items in the factor and the mean weight. The number of participants who scores contributed to each factor varies within each study

because data for a participant was included in calculating a factor score if it was complete for all the items within the factor.

Table 5.4

Mean Factor Scores and Standard Deviations for Exercise Participants in Study 2 and Sport Participants in Study 3

	Exercise Participants			Sports Participants		
Factor	M	SD	n	M	SD	n
Competition	2.72	.87	674	2.49	.72	238
Appearance	3.92	.65	715	3.39	.80	244
Others' Expectations	2.05	.65	700	1.86	.55	238
Affiliation	2.73	.85	690	3.46	.66	239
Physical Condition	4.33	.45	713	4.06	.45	242
Psychol. Condition	3.82	.66	699	3.71	.61	239
Mastery	2.78	.53	694	2.87	.43	235
Enjoyment	2.01	.37	702	3.91	.47	241

A logistic regression analysis was conducted to investigate the relationship between the factor scores of the sports participants in the current study and the exercise participants in Study 2. Logistic regression was chosen based on the advice of Tabachnick and Fidell (1996) that highly unequal sample sizes are better handled by logistic regression than by discriminant function analysis. Both methods of analysis answer the same questions, however, logistic regression makes no assumptions about the distribution of the predictor variable. The results of the analysis are shown in Table 5.5. The resulting

function was statistically reliable, $\chi^2(8, 752) = 289.54$, $p < .001$. McFadden's Rho = 0.32, indicating that the function accounted for 32 per cent of the variance. The model successfully predicted group membership 75.0 per cent of the time, compared with 59.6 per cent by chance, calculated taking group size into consideration. The Wald statistics indicate that the affiliation factor ($t = -6.83$, $p < .001$) and the enjoyment factor ($t = -4.84$, $p < .001$) were significantly more important to sports participants than exercise

Table 5.5

Logistic Regression Analysis of Sport and Exercise using Factor Scores as Independent Variables

		Wald test	
Factor	Estimate	t-ratio	P
Competition	0.07	0.45	.653
Appearance	0.86	4.39	.000
Others' Expectations	0.61	3.24	.001
Affiliation	-1.13	6.83	.000
Physical Condition	1.72	4.78	.000
Psychological Cond	-0.08	-0.40	.692
Mastery	-0.02	-0.07	.942
Enjoyment	-1.47	-4.84	.000

participants. Exercise participants had significantly higher mean scores than sports participants on the factors of physical condition ($t = 4.78$, $p < .001$), appearance ($t = 4.39$, $p < .001$) and others' expectations ($t = 3.23$, $p < .001$).

These results, indicating the differences between sport and exercise participants, need to be treated with caution due to the different ratio of males and females in the two groups. The sports group has a higher percentage of males to females. In Study 2, it was found that female participants had significantly higher scores on appearance and affiliation and significantly lower scores on competition than male participants. Perhaps the higher score of the appearance factor in exercise participants is due to the higher number of females in this group.

Due to the observed differences between male and female exercise participants, two further logistic regression analyses were conducted to investigate the motive differences between recreational exercise and sport participants. The first examined whether factor differences existed between male recreational exercise and sport participants and the second explored whether factor differences existed between female recreational exercise and sport participants. The mean factor scores and standard deviation values for male and female exercise participants are presented in Table 4.7. Table 5.9 shows the mean factor scores and standard deviations for male and female recreational sport participants.

The estimate, Wald test value, and probablitiy values from the logistic regression of sport and exercise for male participants are given in Table 5.6. A test of the full model versus the constant only model with all eight predictors was statistically reliable, $\chi^2(8, 281) = 133.73$, $p < 0.001$, indicating that the predictors, as a set, reliably distinguished male sport and exercise participants. The resulting function accounted for 36 per cent of the variance, McFadden's Rho = 0.36. The model predicted group membership correctly 73.9 per cent of the time, comparing favourably with the probability of correct classification of 53.6 per cent by chance adjusted for the different group sizes. Male

exercise participants had higher mean scores on the competition ($t = 2.12$, $p < .05$) and physical condition ($t = 2.06$, $p < .05$) factors than male sport participants. Male sport participants had higher mean scores on the affiliation ($t = -4.74$, $p < .001$) and enjoyment ($t = -2.94$, $p = .001$) factors than male exercise participants.

Table 5.6

Logistic Regression Analysis of Sport and Exercise using Factor Scores as Independent Variables for Male Participants

		Wald test	
Factor	Estimate	t-ratio	p
Competition	0.63	2.12	.034
Appearance	0.45	1.42	.156
Others' Expectations	0.39	1.36	.174
Affiliation	-1.39	-4.74	.000
Physical Condition	1.10	2.06	.039
Psychological Condition	0.26	0.85	.397
Mastery	0.19	0.37	.715
Enjoyment	-1.66	-3.36	.001

Table 5.7 presents the estimate, Wald t-test, and probability values for the logistic regression to determine the differences between female sport and exercise participants with the factors as independent variables. The regression function was statistically reliable $\chi^2(8, 537) = 138.8$, $p < 0.001$, indicating that the predictors, as a set, reliably distinguished female sport and exercise participants. The model successfully predicted group

membership 78.8 per cent of the time compared with a value of 66.1 per cent correct prediction by chance if group size is taken into consideration. Female exercise participants had significantly higher mean scores on the physical condition ($t = 5.94$, $p < .001$), others' expectations ($t = 3.24$, $p = .001$), and appearance ($t = 2.20$, $p < .05$) factors than female sport participants. Female sport participants had higher mean factor scores on the affiliation ($t = -4.51$, $p < .001$) and enjoyment ($t = -2.58$, $p = .01$) factors than female exercise participants.

Table 5.7

Logistic Regression Analysis of Sport and Exercise using Factor Scores as Independent Variables for Female Participants

Factor		Wald test	
	Estimate	t-ratio	p
Competition	0.18	0.66	.507
Appearance	0.68	2.20	.028
Others' Expectations	0.97	3.24	.001
Affiliation	-1.12	-4.50	.000
Physical Condition	2.71	4.53	.000
Psychological Condition	-0.61	-1.84	.066
Mastery	-0.70	-1.44	.151
Enjoyment	-1.19	-2.58	.010

Overall, the separate gender regression analyses support the findings for the regression on the total sample. Affiliation and enjoyment factors are more important for

sports participants than exercise participants for both males and females. Physical condition is more important for exercise participants than sport participants for both males and females. Some factors due appear to show gender effects. The appearance and others' expectations factors are more important for exercise participants than female sport participants for females but not males. The competition factor is more important for male exercise participants than male sport participants but there is no significant difference between female exercise and sport participants on the competition factor.

Table 5.8

Ten Highest Ranked Items of Male and Female Sport Participants

Item	Males	Females
45. it is fun	1	2.5
12. helps me maintain a healthy body	2	1
19. because it keeps me healthy	3	4
21. after exercise I feel good about myself	13	2.5
55. I have a good time	4	5
31. to be physically fit	5	9
20. because exercise is stimulating	6.5	6.5
70. to maintain physical health	6.5	11
59. it makes me happy	8	6.5
6. helps keep my mind healthy	9	8
34. improve cardiovascular fitness	10	12
48. I enjoy exercising	11	10

Differences between Male and Female Sport Participants

The top ten ranked items for male and female sport participants are presented in Table 5.8. From the table, it can be observed that the top ten items for male and female sport participants are very similar. Items that were in the top ten for one gender were all within the top 13 for the other gender. In most cases, the order of ranking of the items varied only slightly between males and females. The biggest difference was seen in item 21, "after exercise I feel good about myself" which was ranked 2.5 for females and 13 for males.

Table 5.9

Mean Factor Scores for Male and Female Sport Participants

	Males		Females	
Item	M	SD	M	SD
Competition	2.62	.71	2.36	.74
Appearance	3.25	.88	3.56	0.68
Other Expectations	1.87	.61	1.81	.47
Affiliation	3.33	.65	3.65	.63
Physical Condition	4.00	.47	4.12	.43
Psychological Condition	3.57	.62	3.84	.59
Mastery	2.84	.42	2.91	.43
Enjoyment	3.89	.46	3.98	.45

To investigate the gender differences further the mean factor scores were used as independent variables in a discriminant function analysis with gender as the dependent variable. The mean factor scores of male and female sport participants are shown in Table 5.9.

Table 5.10

Results of Discriminant Function Analysis of Factors to Predict Gender in Sports Participants

Factor	Canonical Discriminant Function*	F to Remove	p
Competition	-0.90	23.11	P < .01
Appearance	0.99	23.38	P < .01
Others' Expectations	-0.24	2.02	P > .10
Affiliation	0.61	14.15	P < .01
Physical Condition	-0.19	0.75	P > .10
Psychological Condition	0.45	8.09	P < .01
Mastery	0.29	2.42	P > .10
Enjoyment	-0.30	2.56	P > .10
Eigenvalue	0.38		
Canonical R	0.52		

* standaridised by within variance

The results of the discriminant function analysis are displayed in Table 5.10. The analysis correctly classified 78 per cent of participants, correctly grouping 78 per cent of

males and 78 per cent of females. The probability of correct classification by chance, based on the number of participants in each category was 50 per cent. A significant value of Wilks' lambda indicated that the function was a good predictor of gender, $\Lambda = 0.73$, $F(8, 179) = 8.47$, $p = 0.00$. The factors of competition, appearance, affiliation, and psychological condition significantly separated males from females. Mean factor scores on the competition factor were significantly higher in males than females, $F(1, 179) = 23.10$, $p < .01$. Females had higher mean factor scores on the appearance factor, $F(1, 179) = 23.37$, $p < .01$, the affiliation factor $F(1, 179) = 14.15$, $p < .01$, and the psychological condition factor, $F(1, 179) = 8.09$, $p < .01$.

Motives for Different Aged Sport Participants

Motives for sports participants in different age sports participants were analysed by observation and statistical comparison of the mean factor scores for each age category. Although mean item scores were also looked at for the exercise participant data, these did not provide much information in addition to the factor scores and therefore will not be presented. Table 5.11 lists the mean factor scores and standard deviations for four of the six age categories. The oldest age group had only one participant and the youngest age group had three participants, therefore these two groups have been omitted from the data presentation and analysis. Any analysis on such small numbers would be meaningless. These categories are the same as those employed in Study 2 and are based on life stages. Some trends can be observed in the data. Competition appears to be higher in the 18 to 24 year-olds than the rest of the sample. The importance of appearance appears to decrease after the age of 35. The mastery factor had a small but systematic decrease as age

increased. The factors of others' expectations, affiliation, and enjoyment all show a trend to decrease with age, although in all three the mean factor score for the 25 to 34 age group was lower than the mean factor score for the 35 to 44 age group. The physical condition factor showed no variation across the life span and the psychological condition factor was unchanged except for a decrease in the 45 to 54 year-olds.

Table 5.11

Mean Factor Scores for Different Age Groups of Sport Participants.

	18-24			25-34			35-44			45-54		
Factor	M	SD	N	M	SD	N	M	SD	N	M	SD	N
Competition	2.87	.76	44	2.40	.65	121	2.44	.73	53	2.52	.85	10
Appearance	3.43	.86	44	3.47	.74	125	3.26	.76	53	3.10	1.2	11
Others' Exp.	2.07	.61	44	1.79	.50	122	1.87	.56	52	1.55	.40	9
Affiliation	3.62	.49	44	3.45	.71	120	3.53	.56	53	2.86	.70	11
Physical Con	4.12	.44	43	4.06	.46	124	4.02	.42	54	4.08	.50	11
Psychological	3.72	.55	43	3.71	.64	121	3.72	.56	54	3.34	.74	11
Mastery	3.08	.44	44	2.85	.41	118	2.80	.32	52	2.59	.63	10
Enjoyment	4.11	.39	43	3.89	.49	124	3.93	.34	53	3.42	.65	10

A logistic regression analysis was conducted to separate each age group from the rest of the sample. Logistic regression analyses were chosen for this analysis because of the large discrepancy in sample sizes between the groups being separated. The results of the comparison of 18 to 24 year-old participants with the rest of the sample are shown in Table 5.12.

A test of the full model versus the constant only model with all eight predictors was statistically reliable, $\chi^2(8, 211) = 32.61$, $p < 0.001$, indicating that the predictors as a set reliably predicted between 18 to 24 year-olds and the rest of the sample. The variance accounted for is small, with McFadden's Rho = 0.16, indicating 16 per cent of the variance in age grouping being accounted for. The model successfully predicted group membership 73.4 per cent of the time, better than the chance likelihood of 68.9 per cent when group size is taken into account. Table 5.12 shows regression coefficients, Wald statistics, and significance levels. The Wald statistics indicate that competition ($t = 2.84$, p

Table 5.12

Logistic Regression of Sport Participants aged between 18 and 24 using Factor Scores as Independent Variables

Factor		Wald test	
	Estimate	t-ratio	p
Competition	1.05	2.84	.005
Appearance	-0.39	-1.05	.296
Others' Expectations	0.60	1.54	.124
Affiliation	0.10	0.27	.791
Physical Condition	-0.71	-1.02	.309
Psychological Condition	-0.19	-0.49	.624
Mastery	0.85	1.33	.182
Enjoyment	1.46	2.24	.025

< .01), and enjoyment ($t = 2.24$, $p < .05$), were reliable predictors of this age group. Sports participants aged between 18 and 24 had higher mean scores on both the competition and enjoyment factors than the remainder of the participants.

The results of the test of the full model versus the constant only model in the logistic regression analysis performed to separate 25 to 34 year old participants from the remainder of the sample was statistically significant, $\chi^2(8, 211) = 17.08$, $p < 0.05$. The resulting equation was able to successfully predict group membership 53.9 per cent of the time. This was only slightly better than chance percentage of 50.1, calculated taking group size into consideration. The variance accounted for is very small, with McFadden's Rho = 0.06, indicating that 6 per cent of the variance in age grouping being accounted for. Table 5.13 shows regression coefficients, Wald statistics, and significance levels for the logistic analysis of 25 to 34 year-olds against the rest of the sample. The Wald statistics indicate that competition ($t = -3.01$, $p < .01$) and appearance ($t = 2.83$, $p < .01$) successfully separated 25 to 34 year-olds from the rest of the sample. Competition scores were lower than the rest of the sample, although the mean values indicate that this is mainly the difference from the 18 to 24 year-olds. Appearance scores were higher in the 25 to 34 age group than for older participants, mean values indicating no difference between this group and the 18 to 24 year-olds.

The logistic regression equation obtained to separate 35 to 44 year-old participants from the rest of the sample was not significant, $\chi^2(8, 211) = 6.570$, $p > 0.5$. These results indicate that the eight factors could not be used to discriminate between 35 to 44 year-olds and the remainder of the participants. There were only 9 to 11 participants (depending on which factor) in the 45 to 54 age group, whose data was complete. Any analysis using eight independent variables with a sample size of nine would be meaningless and therefore no calculations were made.

Table 5.13

Logistic Regression of Sport Participants aged between 25 and 34 using Factor Scores as Independent Variables

Factor		Wald test	
	Estimate	t-ratio	p
Competition	-0.86	-3.01	.003
Appearance	0.77	2.83	.005
Others' Expectations	-0.11	-0.34	.735
Affiliation	-0.04	-0.15	.882
Physical Condition	-0.60	-1.19	.236
Psychological Condition	0.22	0.83	.409
Mastery	0.39	0.87	.384
Enjoyment	-0.41	-0.95	.341

The problems in analysing age differences in motives for participation that were noted in Study 2 also occur in the present study. Although there do appear to be some differences in the strengths of different motives to participate in sport at different ages, these are weak and not easy to uncover. One reason for this is the continuous and changing nature of the (age) variable. A discrete variable such as sex provides a distinct easily identifiable ways to differentiate participants. With a continuous variable such as age, the researcher must decide the point at which a division between age groups is made. Thus, participants within each age category may vary greatly in age and at either end of the range, will be much closer in age to many participants in the adjoining category than a lot of participants within their own category. This similarity in ages between participants in different groups makes any trends across the life span difficult to uncover. Another reason that it is difficult to find effects with age is the variation in the effect of age on each individual. Although gender is not entirely dichotomous, the two traditional categories are much more clear-cut. Time has different effects on different people. Some 50 year-olds may be as physically healthy as an average 20 year-old, whereas others may have many health problems that limit their physical ability. Such differences would be expected to affect the motives that different people have at the same age. The competition and enjoyment factors were clearly higher in the younger participants (18-24). The appearance factor was important for participants under the age of 34.

Other Motives of Recreational Sport Participants

The question that provided participants with the opportunity to nominate any motives for participation not included in the questionnaire was completed by only nine out of the 245 participants. The responses were: to be part of a team, addiction to

accomplishment, peace with nature, variety, for myself, lifestyle, to get the most out of life, and to eat what like (two respondents). The response, to be part of a team, did not occur in Study 2 and is not generally applicable to exercise environments, but is relevant to the sporting environment and therefore should be considered for future versions of the questionnaire. The lifestyle and eat what I like responses were both also found in Study 2 and should also be considered in future versions. The answer, doing something for myself, was not directly covered in the questionnaire. Inclusion of one or two questions to cover this aspect of motivation should be included in future versions of the questionnaire. The answer, of being at peace with nature is probably a quite uncommon motive that does not make a lot of sense in the sporting environment. The concept referred to in the addiction to accomplishment response is that of mastery and does not warrant a special item, as the items in the mastery factor adequately assess that motive.

Discussion

The discussion section begins by examining the characteristics of the current sample of sports participants in relation to the sample of exercise participants in Study 2. The comparison between motives for sport and exercise participants is then be reviewed and related to existing research. Gender and age findings from the current study will be discussed in relation to Study 2 and past research. To address the main aim of this study and the thesis, the implication of all these findings are considered for the construct validity of the REMM. The section then considers methodological issues related to the study. It concludes with suggestions that emerge from this study for future research and implications for attracting more people to recreational sport and for maintaining their participation.

Participants

The demographics of the recreational sports participants in the current study differed from the demographics of the recreational exercise participants in Study 2. These differences will be considered in discussing the comparison of the two groups. A higher proportion of recreational sports participants were male than female, and a higher proportion of recreational exercise participants were female than male. There are several possible explanations for this. One is the nature of the activity. In Study 2, males scored higher on competitive motives than females. This finding is consistent with previous research in participation motivation and goal orientation (Duda, 1985; Gill, 1986; Olsen & Templin, 1991; Morris et al., 1996; White & Zellner, 1996). It might be that males are naturally more attracted to the competitive aspect of sport than females and are thus more likely to choose to exercise by participation in sport. Another possible reason for the different proportion of males and females in the sport and exercise samples is the timing and organisation of the activities. The sport activities all took place in the evening, whereas the exercise activities occurred throughout the day. A large number of the female exercise participants cited their occupations as housewife. It is likely that these women were available to exercise during the day because they were not engaged in full time work and would find it difficult to exercise at night if they had a young family. Some of the sports competitions from which participants were gathered were designed to attract teams from companies. With more males than females in full-time employment, it might be expected that more males would participate in these competitions. It was observed that on any night of competition there were always more male teams than female teams participating, indicating that the ratio of male and female sports participants sampled was a

reflection of the numbers participating and not a sampling problem. Whatever the reason for the difference in numbers of males and females participating in different activities, these differences should be taken into account when comparing the two groups.

The age range and mean age of sports participants were both lower than for the recreational exercise participants. Both of these were expected, because people are less likely to participate in competitive sport as they get older (unless that competition is specifically designed for older persons). This is due to factors such as slowing of reflexes and speed that make most people unable to be competitive against younger opponents. Indeed, none of the sports participants cited their occupation as retired although a number of recreational exercise participants did. Another reason the age range of recreational exercise participants was larger than that of the sports participants was the inclusion of a number of younger (under 17) participants. The sports competitions attended were aimed at adults. Most teenage sports participants would be involved in age-based junior competitions at school or club level.

It is clear that although the demographic composition of the present sample was different to that of Study 2, these differences reflect actual differences in the types of participants in sport and exercise activities, and not problems in sampling. Recreational sports participants tend to be younger than recreational exercise participants. Slightly more males than females are involved in recreational sport, whereas the reverse is true for gymnasium based recreational exercise.

Factor Analysis and Reliability

Factor analysis and internal consistency reliability analysis of sport participant data in the current study provided strong support for the results obtained in Study 2. Clear

resolution of the same factors with a sport sample, supports the claim that this wider range of factors than has been identified in previous goal orientation and intrinsic-extrinsic motivation research, is important to consider in fully understanding the motives that people have for participation in sport and exercise. Except for item 27, " someone close to me approves of my activities", most of the items that performed poorly in the current study had already been recommended for deletion following analysis in Study 2. They were included in the present study to facilitate comparison. The similarity of the conclusions regarding weak items, between the two studies, is reassuring for the reliability of the REMM. The factor analysis provided additional support for the deletion of items 4, 21, 26, 54, 56, 62, and 68. Although item 27 had not been recommended for deletion in Study 2 it had a low factor score in that study. The results of the current analysis combined with the low factor score in Study 2 suggest the item should be removed from the questionnaire. The internal consistency reliability coefficients for each factor in the present study fall within the same range as in Study 2, and confirm the conclusion of adequate reliability of the subs-scales within the questionnaire. Three items had been recommended for deletion following factor analysis in Study 2 but loaded highly onto a single factor in this Study were: item 6, "helps keep my mind healthy", item 14, "to improve strength", and item 43, "to be attractive to others". These items should be analysed further in the future to assess their performance.

Construct Validity

The construct validity of the questionnaire is established by comparing the motives of recreational sports participants with those of the recreational exercise participants examined in the previous study and other prior research on exercise motivation. It was

anticipated that the two groups would differ in predictable ways. This section will discuss the differences and similarities of the two groups and how these relate to differences predicted a priori on the basis of previous research.

Investigation of item rankings consisted of looking at the ten highest ranked items by sport participants and the ten highest ranked items by exercise participant and comparing these with the rankings given by the other group. There was one conspicuous difference between sport and exercise participants that was revealed in these comparisons. Sport participants rated items related to enjoyment about twenty places higher than exercise participants. Another variation, although not as large, was that sport participants rated appearance and physical condition items lower than exercise participants.

Statistical analysis of factor scores replicated the observation that exercise participants had higher mean scores on the physical condition and appearance factors. Exercise participants also had higher mean scores than sport participants on the others expectations factor. Sport participants had higher factor scores on the enjoyment and affiliation factors than exercise participants. In Study 2, male and female exercise participants were found to place higher importance on different motives for participation. As the ratio of male to female exercise participants in Study 2 was substantially different from the ratio of male to female sport participants in Study 3, factor scores for exercise and sports participants were also compared for male participants separately from female participants. Male exercise participants had higher scores on the physical condition and competition factors than male sport participants. Female exercise participants had higher scores on the physical condition, appearance, and others' expectations factors than female

sport participants. In both males and females, the affiliation and enjoyment factors were higher in sport participants than exercise participants.

The finding that sports participants place more emphasis on enjoyment and affiliation motives than exercise participants was anticipated prior to the study. This result agrees with the findings of Frederick (1999), Frederick and Ryan (1993), Morris, Clayton, Power, and Jin Song (1996), and Ryan, Frederick, Lepes, Rubio, and Sheldon (1997). All of these studies also found that competence motives were higher in sports participants than exercise participants, however no difference in the mastery factor was observed in the current study. A probable explanation for this is the type of sport participant involved in each study. In the current study, most of the participants were involved in adult, low to medium level competitions, some of which were specifically designed to act as social occasions. For instance, one night on which data was collected was a business houses night that aimed to get work colleagues together and assist to make connection to others' companies. The sample of sports participants gathered by Morris et al. contained a large number of participants who were competing at state, national, or high club level. Frederick and Ryan examined tennis players and Tae Kwon Do participants to compare with exercise participants. Ryan et al. used Tae Kwon Do participants as their sports sample. Frederick describes her sports group as comprised of individual and team sport participants. Except for the study by Frederick for which the exact level of competition of the participants is unclear, the previous studies involved high level sports participants or martial arts participants. For both of these groups, it would be expected that mastery motives would be very important. It is likely to be the nature and level of sports

participation that determines the importance of mastery motives not sports participation per se.

Morris, Clayton, Power, and Jin Song (1996) found that competition was more important to sports participants than exercise participants; however, the only difference in the competition factor observed in the current study was that male exercise participants had higher scores than male sports participants. The social nature of the sport sample in the present study could explain why sports participants did not score higher on the competition factor than exercise participants. The reason male exercise participants may have scored higher on this factor than male sports participants might be the inclusion in the competition factor of items about looking better than other people as well as items about performing better than other people. These appearance-related items would be expected to be more important to exercise than sport participants. This hypothesis was examined by comparing the scores of male exercise and sports participants on subsets of the competition factor (see Appendix I). One subset contained all the items that referred to appearance and the other contained the performance items. On the appearance related items, male exercise participants ($\underline{M}$ = 11.38) scored significantly higher than the male sports participants ($\underline{M}$ = 10.40), $\underline{t}$ (1, 349) = 2.40, $\underline{p} < .05$. There was no significant difference between male sport ($\underline{M}$ = 21.05) and exercise participants ($\underline{M}$ = 20.78) on the non-appearance relating items, $\underline{t}$ (1, 340) = -0.40, $\underline{p} > .05$. These results confirm the supposition that the higher score of male exercise participants than sports participants in the competition factor is due to the inclusion of items relating to appearance in the competition factor. The very low importance of competition to female sport and exercise participants is in line with past research that females in general, display low competitive

motivation (Duda, 1985; Gill, 1986; Morris, Clayton, Power, & Jin Song, 1996; Olsen & Templin, 1991; White & Zellner, 1996). This level is likely to be low in any recreational sport or exercise environment. An issue raised by the findings just reported concerns the most appropriate level at which to group items into sub-scales. Based on the factors that emerged from the factor analyses in Study 2 and 3, it is proposed that the competition sub-scale, including both performance and appearance aspects of competition, should be the primary level of reporting. Nonetheless, examination of scores on the performance and appearance subsets of items might add useful information, in many sport or exercise contexts.

Physical condition was more important to exercise participants than sport participants for both males and females. This finding is in agreement with past research (Frederick & Ryan, 1993; Morris, Clayton, Power, & Jin Song, 1996; Ryan, Frederick, Lepes, Rubio, & Sheldon, 1997). In the current research, female exercise participants displayed significantly higher appearance motivation than female sport participants. Frederick and Ryan found that body and appearance motives were higher in exercise participants than sport participants, although they did not divide their sample into males and females. In the current research, female exercise participants had higher appearance motives than female sport participants, when appearance was about improving one's appearance. Male exercise participants had higher appearance motives than sport participants when that appearance was about looking better than other people (included in the competition factor). The MPAM and MPAM-R do not separate these aspects of appearance. This distinction between a "competitive" appearance motive and a "mastery"

appearance motive may be important to separating the motives of males and females in exercise contexts.

The final factor in which a difference between sport and exercise participants was seen was the others' expectations factor. For females, this factor was more important to exercise participants than sport participants. This factor has not been looked at in previous research. This may be due to the overall low in importance of the factor to participants in general. In both Study 2 and Study 3 this factor had the lowest factor score, indicating that it was the least important motive for participants. Further research is needed to determine its usefulness.

It is clear from the preceding discussion that the motive differences found between sport and exercise participants completing the REMM largely correspond to differences that were predicted on the basis of prior research. This outcome provides solid construct validity for the REMM.

Relationship of Findings to Previous Research

The previous section discussed the correspondence of the current results to previous findings on the differences between sport and exercise participants. This section will look at the present results in relation to gender and age and how they compare with prior research.

Motive differences between male and female sport participants. Some differences between male and female sport participants have been mentioned in the discussion of differences between recreational sport and exercise participants. Observation of the top ten highest ranked items for each gender indicated very few differences between males and females on these items. This lack of difference between males and females on the most

important motives for participation agrees with observations in exercise participants in Study 2 and with the results of Morris, Clayton, Power, & Jin Song (1996). Males and females were able to be separated on the basis of factor score. Males had higher scores than females on the competition factor. Females had higher scores on the appearance, affiliation, and psychological condition factors. The results of the gender comparison in the current study are almost identical to the results of the gender comparison in Study 2. The only difference between the studies was the significant result in relation to the psychological condition factor in the present study. No difference in factor score on this factor was observed in the recreational exercise participants. This was the smallest of the significant differences in the present study and thus, the least important. Future studies should confirm whether this is a consistent finding, in which case, it would indicate that females were more likely than males to use sport (but not exercise) for things such as relaxation, getting away from other things, and stress release than males. A possible explanation for this is that females are able to relax while playing sport, whereas males are not, due to the competitive element of most sports and the greater focus on competition typically shown by males. Females might be able to ignore the score better than males.

Motives for sport participants of different ages. The analysis of age differences in recreational sport participants was made difficult by the small age range of participants who took part in the study. Three of the six age groups nominated in Study 2 had too few participants for reliable analysis in this study. The analysis that was carried out revealed that the factors of competition and enjoyment were significantly more important to 18 to 24 year-olds than to the rest of the sample. Competition was found to be less important and appearance more important to 25 to 34 year-olds than the rest of the participants.

Observation of mean values indicated that mastery, others' expectations, affiliation, and enjoyment all showed a tendency to decrease with age. Study 2 results indicated that the importance of appearance as a motive decreased with age, whereas the importance of physical condition increased with age, and psychological condition only became important after the age of 25. The results of the present study go a small way towards increasing understanding of the relationship between age and motivation in sport. The relatively small variation in age of participants and the lack of significance of one of the analyses means that the amount of useful information produced from the analysis was less than expected. The tendency for most factors to decrease in importance with age supports previous findings (Morris, Clayton, Power, & Jin Song, 1996).

Methodological Issues

Sample. The current sample of recreational sport participants was collected from a single sporting complex in Melbourne and contained a high proportion of basketball participants. The centre was used due to availability of participants and acceptance by management. Although the complex gets participants coming from all over Melbourne, for range of activities, a more diverse sample could be obtained if different centres were visited and different sports included.

The sports participants in the current study had a much narrower age range than in the recreational exercise participants in Study 2. Although this is partly a reflection of the age of people who play recreational sport a wider range of ages could provide more information about the different motives for recreational sport across the life-span. Younger participant might be obtained by collecting data from local junior sports

competitions. Older participants might be gathered by choosing different sports or daytime competitions, or masters sports events.

Data collection. Collecting completed questionnaires by using a collection box at the venue as was done in Study 2 did not prove to be an effective return method for sports participants. However, the use of reply aid, addressed envelopes for return of finished questionnaires resulted in a very good return rate. Although this method is more costly due to the expense of postage and envelopes it is useful when participants are only attending venues once a week.

Data analysis. The methods used for data analysis generally produced useful information. Examination of items and factors revealed similar patterns. Statistical test employed provided clarification in terms of reliability and construct validity that supported the REMM. Valuable information also emerged about the motives of recreational sport participants, distinguishing them from recreational exercisers. Of particular interest was the analysis of the performance and appearance aspects of the competition factor, which identified trends not noted in previous research.

Future Research

The results of the current study provide additional validity and reliability for the REMM. Future studies should be conducted on both recreational exercise and sport participants with the poorly performing items removed. These studies should be conducted on samples large enough to enable further confirmation of the first order factor structure of the REMM in addition to verification of the second order structure obtained in Study 2. These studies could provide further information about gender and age differences as well as confirmation of the factor structure. Addition of items on lifestyle,

exercise as a counteraction to diet (eat what I like), and being part of a team would provide the opportunity to determine whether these are widely held motives. It would also permit their loading on the existing factors to be identified. The effect of these changes on the factor structure could also be examined. It is predicted that there would be little change.

The comparison of motives of recreational sport and exercise participants using the REMM has demonstrated that there are clear differences between the motives people have for undertaking different activities. Future research should also investigate the applicability of the questionnaire to other activities and cultures and the different motives for activity that exist in these environments. Additional recreational sport activities could be looked at such as netball, tennis, cricket and martial arts. Exercise activities such as skiing or rollerblading could also be examined. While using the REMM in different contexts it is important that participants always be given the opportunity to nominate motives that they feel are not covered in the questionnaire. It is through these responses that the REMM can be expanded to include any motives for recreational sport and exercise that did not emerge from the current series of studies. Such studies could provide further evidence about the construct validity of the REMM. In their examination of 14 activities that grouped into five types of sport and exercise activity, using their 50-item version of the Participation Motivation Questionnaire (PMQ), Morris et al. (1996) found that racquet sports, team ball sports, exercise activities and martial arts could be discriminated from each other. For example, there was a higher motivation for challenge among racquet sport players, greater emphasis on affiliation, as a motive for team sport players, more of an emphasis on health motives for exercisers, and a higher rating for the

importance of skill learning among martial arts participants. These predictions could be tested using the REMM. They could be extended to different types of sport and exercise activity, such as those typically performed individually (e.g., lap swimming, ultra-distance running) and in groups (e.g., aerobics, football), those involving learning new skills (e.g., Tai Chi, badminton) compared with those that involve repetition of existing, simple skills (e.g., jogging, race swimming), or those that involve readily available objective measures of performance (e.g., weight training, high jump) versus those that are more difficult to evaluate (e.g., aquarobics, trampolining). There is also the potential to compare motives for activities that involve the same physical skills, but a different performance context. For example, the atmosphere of individual sprint cycling must be quite different to that of team road-race cycling. Likewise, the climate of mass fun runs is likely to differ considerably from that of competitive half-marathons. A measure that could discriminate between such activities would display impressive construct validity.

Comparison between cultures would also provide the potential for interesting comparisons, based on predicted differences in motives. Competition is less important and co-operation more highly valued in some cultures than others. Similarly, the emphasis on healthy lifestyle is not as prevalent in some cultures as it is in the western world. Cultural perspectives on what is considered to be attractive appearance vary, as does extent to which it is considered appropriate or important to commit time and effort to improving appearance. Comparisons between REMM sub-scale scores for samples from carefully selected cultures would provide a valuable test of the measure.

It is important for future research to examine the long-term stability of the REMM. Test-retest reliability must be demonstrated over periods long enough to support the use

of the REMM in tests of the efficacy of interventions. Based on Deci and Ryan's (1985) self-determination theory, Ryan et al. (1997) predicted that individuals who scored high on the intrinsic motivation sub-scales of the MPAM-R (enjoyment and competence/challenge) would adhere to a new exercise activity longer than those whose principal motivations were extrinsic (fitness, appearance, and social). Over a one month program, they found that adherence was positively associated with competence, enjoyment, and social motives. This is an important line of research, which can be extended and confirmed, based on the REMM, but only once it is shown conclusively that the REMM does measure motives that are stable over such time periods. The fact that social motives as well as intrinsic motives were associated with adherence may reflect participants satisfying their need for relatedness with others in addition to competence and autonomy. The needs of self-determination or autonomy, relatedness with others, and competence are an important motivating factor according to self-determination theory (Deci & Ryan, 1985). Once research has replicated the finding that intrinsic and social motives are associated with greater adherence to sport and exercise activities than extrinsic motives, it will be important to develop interventions to promote these motives. Stable measures of the range of motives for sport and exercise will be needed, that can be used in studies with pre-test, intervention, post-test designs. As the most comprehensive instrument that measures motives in recreational sport and exercise, the REMM will be of great value.

Implications for Practice

Practitioners should recognise and promote enjoyment and psychological factors such as stress release and relaxation that are important motivating factors for recreational sport participants in addition to health. According to self-determination theory,

participants who experience enjoyment in an activity are intrinsically motivated and thus more likely to maintain their participation. Enjoyment, therefore is an extremely important motive to encourage. In addition to these top motives, practitioners should recognise that there are a variety of motives that people may have for recreational sport participation. Social and appearance motives were the next most important motives of participants. As with intrinsic motives, self-determination theory rates social motives as satisfying a basic need for relatedness with others. Thus social motives should also enhance adherence. The range of motives found in current sports participants can be used to promote sport participation in different ways and to encourage people to participate for reasons other than health. Health and fitness outcomes are not always quick or easy to see. Participants who have a range of reasons for participation are more likely to experience success in at least one of these.

Comparison of motives between sports and exercise participants suggests that people participating in different types of physical activities place different emphasis on different motives. This information gives practitioners an idea of the benefits likely to be derived from each activity. Potential participants can be directed to activities that most match their motives and where they are likely to encounter others with similar aims. Activities can also be promoted in different ways to take advantage of these differences. Sports participants clearly valued fun and affiliation higher than exercise participants. Exercise participants on the other hand, were more motivated by physical condition and appearance factors than sports participants. Therefore, if someone says "I don't exercise because it is no fun getting up and going for a run by myself. I really just want to have a good time and be with friends", then participating in sport might be a successful form of

exercise. By having knowledge of the most important motives of participants committed to different types of physical activity, practitioners can direct people to activities that most suit them. In this way, drop out rates from sport and exercise can be reduced.

Differences in motives of males and females and different age groups can also provide useful information to practitioners trying to direct or design activities for people. It is important to realise that the top motives for different genders are the same. However, female sport participants value affiliation and psychological condition more highly and competition less than male sport participants. This knowledge can be useful in structuring a sporting competition. The competitive aspect might be emphasised more for males by giving more feedback or details or providing more opportunities for advancement into higher grades. For women's competitions, management might organise social events at various stages of the competition for participants to meet outside the game time.

Increasing age appears to bring about a general decrease in most motives with the exception of physical condition. Health and fitness are continually being promoted as reasons to exercise and as ways of "slowing done the ageing process". It might be the as people get older, they forget about the other motives for exercise. A challenge for sports organisers would be to promote other aspects of sport, such enjoyment and affiliation directly to older participants. Further knowledge about motives of different age groups will help practitioners more directly target competitions at different groups.

Concluding Remarks

Analysis of the sport participant data supported the reliability of the REMM and the factor structure found in Study 2. The observed differences between recreational exercise participants in Study 2 and sports participants in the current study provided support for the construct validity of the REMM.

A secondary aim of Study 3 was to investigate the applicability of the REMM to recreational sport participants. Sports participants had no problems completing the questionnaire and there were very few suggestions for motives that may have been overlooked. It is, thus, concluded that the REMM was relevant to these participants. Participant comments provided useful suggestions for two additional themes that could be included in the questionnaire in the future. These were for items relating to exercise or sport being part of a lifestyle and participating in sport or exercise to do something for oneself. Both of these motives would apply to recreational exercise and sport participants. This study also confirmed that the removal of several items from the 73 item version of the REMM, developed for the examination of recreational exercise in Study 2, would enhance the internal consistency of the REMM, raising it to very high levels on all the sub-scales.

CHAPTER 6: SUMMARY AND CONCLUSION

The aim at the beginning of this thesis was to examine motivation in recreational exercise participants and to develop a questionnaire to measure this motivation. It was hypothesised that achievement goal theory could provide a good theoretical basis for such a questionnaire. Achievement goal theory is a widely used theory in sport and educational motivation research. Achievement goal theory concentrates on what makes a person feel successful in an activity. Several studies have already used achievement goal orientation questionnaires to study motivation in recreational exercise (Hayashi, 1996; Li, Harmer, Chi, and Vangjaturapat, 1996) and thus it is important to assess whether it is an appropriate tool to use in such research. Prior to the first study the main problem with most past achievement goal research was thought to be the limitation of only measuring two gaols: task and ego orientation. However, goals in addition to task and ego had already been suggested by some achievement goal researchers (Ames, 1986; Maehr 1984, 1991; Maehr & Braskamp, 1986; Whitehead, 1992) and it was hoped that the use of an expanded set of goals could be used to explain motivation in recreational exercise.

The first study of the series used participant interviews to investigate the range of motives stated by exercise participants. An open ended interview technique allowed motives to be volunteered by exercise participants, rather than participants responding to motives presented to them by the researcher, based on pre-existing theory. It was anticipated that this method would result in a wider range of motives than would be used if motives were pre-selected by the researcher. Analysis of participant responses resulted in 13 constructs, representing different motives for exercise participation. These motives included task and ego motives most often used in achievement goal research, as well as

social goals which have been suggested as a third type of achievement goal in the past (Urdan and Maehr, 1995; Whitehead, 1992). However, there were other achievement goals cited that did not easily fit into the achievement goal framework and it was clear that achievement goal orientation theory could not adequately explain the diversity of motives in recreational exercise. A number of the motives emphasised by participants were not achievement-oriented goals.

The results of Study 1 also indicated that the distinction between achievement goals and motives made by researchers was not made by the exercise participants interviewed. To researchers, the questions of what a person wants to achieve from exercise and what motivates them to exercise are vastly different. The finding that exercise participants appear to perceive them as the same thing is an important research question for the future

A review of existing theories suggested that self-determination theory could provide for inclusion of a broader range of motives for activity, able to explain motives such as enjoyment and health that can not be classified as achievement motives. Self-determination theory has been used as the basis for recreational exercise questionnaires in the past, however, none of these questionnaires is comprehensive enough to include all the motives nominated by participants in the first study. Study 2 aimed to develop a questionnaire to measure motivation in exercise and at the same time investigate the structure of the measure and the efficacy of self-determination theory in explaining this structure.

To develop a questionnaire to measure motivation in recreational exercise participants, items were written to cover the motives nominated by participants in Study 1. These items were reviewed by a number of sports psychologists from around Australia.

The new items were combined with items drawn from previous motivation questionnaires to construct a 73 item questionnaire called the Recreational Exercise Motivation Measure (REMM). The questionnaire was trialed on 753 recreational exercise participants attending six gymnasiums around Melbourne. Factor analysis produced a factor structure very similar to the construct predicted on the basis of Study 1. The results verified the prominence of motives others than task and ego goals in recreational exercise. The factors to emerge from Study 2 were competition, appearance, others' expectations, affiliation, physical condition, psychological condition, mastery, and enjoyment. Second order factor analysis grouped these factors into social motives (affiliation, others' expectations, and competition), body motives (appearance, physical condition, and psychological condition), and intrinsic motives (enjoyment and mastery). The REMM demonstrated good reliability. Most of the items performed well, although deletion of several was recommended, primarily due to the items being poorly defined, loading onto more than one factor. The factor structure and second order factor analysis provided support for the self-determination theory framework of motivational categories.

Study 3 provided further evidence for the factor structure, validity, and reliability of the REMM. It showed the REMM was applicable to recreational sport and that like recreational exercise participants, recreational sport participants display a wide range of motives for participation. Study 3 demonstrated that the questionnaire could distinguish between the two groups of participants. In both recreational sport and exercise non-achievement based motives for exercise were rated more important than achievement goals. The REMM thus, provides a more comprehensive analysis of participant motives than achievement goal questionnaires. It measures a wider range of participant motives

than previous questionnaires based on self-determination theory such as the MPAM-R. This thesis has developed a comprehensive measure of motivation in recreational exercise. By using a process that included interviews with participants in addition to a thorough review of previous measures and theories, the resulting questionnaire includes a range of motives that is wider than previous questionnaires. Rather than developing a questionnaire to fit a theoretical construct, a questionnaire has been developed from participant feedback and the results assessed to determine whether they can be explained by existing theories. It was concluded that self-determination theory could provide a sound theoretical basis for understanding motivation in recreational exercise.

Self-determination theory was able to explain the range of motives found in the measurement of recreational sport and exercise with the REMM. If the aim of research is a comprehensive assessment of motives in recreational physical activity a self-determination theory and use of a questionnaire such as the REMM is more appropriate than achievement goal theory and related measures. In these situations, achievement goal theory is only able to explain a part of the picture. If the purpose of research is to assess only task and ego goals with the exercise domain, achievement goal theory provides a useful and reliable account of behaviour. Much research has been conducted using achievement goals in education and competitive sport. This research has provided much useful information about human behaviour and performance in these domains. In education and competitive sport achievement goal theory has proved to be a very useful concept. Achievement goal theory can also provide some explanation of behaviour in the exercise domain. However, if a comprehensive explanation of behaviour in exercise is required, self-determination theory should be preferred.

The space at the end of the questionnaire in which participants are able to nominate any motives for participation not covered by the items is vital to the ongoing development of the questionnaire. Responses to this question suggest that items regarding exercise as part of a lifestyle should be considered for future versions of the questionnaire. This space for nominating other motives for exercise is important for use of the questionnaire in different sport and exercise contexts, in different cultures, and different times. The inclusion of this item also helps provide participants with a feeling that their responses are valued. Past research has demonstrated that motivation for participation varies across different cultures (Duda, 1985, 1986; Harmer, Chi, Vangjaturapat, 1996) and for different types of activity (Morris, Clayton, Power, & Jin Song, 1996). It is also quite likely that motivation might vary for different generations. Although an attempt has been made to develop a questionnaire that provides a comprehensive coverage of the motives of recreational exercise participants, the REMM was developed in Melbourne, Australia and may not include some motives found in other communities and cultures. Wider use of the REMM across culture, age groups, genders, and sport categories is needed

Study 3 demonstrated that the questionnaire could be useful in recreational team sport, however participants in other sports or playing at higher levels may possess additional motives for participation. The current research found that recreational sport and exercise participants ranked different motives as more important to their participation. Sports participants valued enjoyment and affiliation more highly, while exercise participants assigned physical condition items higher ratings. If the questionnaire were utilised in competitive sporting contexts, factor analysis might result in the splitting of the competition factor into the appearance aspect and the competition outcome aspect of

competition. The REMM provides a basis for studying recreational physical activity further in addition to investigating other forms of physical activity.

Studies 2 and 3 investigated motives for different age and gender participants. The investigation of age differences in motivation is difficult and needs more work in the form of both longitudinal and non-longitudinal studies. Nonetheless, there were consistencies in the findings with the REMM with previous research. The general tendency for most motives other than those related to health to decrease as age increases is consistent with past research. Gender differences in motivation were clearly identified in both recreational exercise and recreational sport. Although the primary motives of males and females were very similar, female participants rated affiliation and appearance motives higher and competition motives lower than male participants. Future research could confirm these findings as well as examine whether they exist in all sections of the community, across the life-span and in other cultures.

The REMM provides a comprehensive measure for assessing motivation in recreational sport and exercise. In addition to its potential use for future research it help participants understand their own motives for participation. The factor structure within the REMM provides valuable information for health authorities and fitness professionals about the range of motives people have for participation. This information can be used to promote exercise participation as fulfilling a variety of purposes, not just the health based motives traditionally promoted as being the reason for exercise. The knowledge of the types of motives possessed by different age and sex participants can be used to directly target promotion of physical activity to different sections of the community. Different

activities can fulfil different motives and this information can be used to promote individual activities by highlighting the goals they are most likely to satisfy.

Concluding Remarks

This thesis developed an extensive measure of motivation in recreational exercise and also demonstrated the efficacy of self-determination theory in explaining exercise behaviour. The most important aspect of questionnaire development in this domain that has been overlooked in the past, was the inclusion of participants throughout the process. This ensures that the motives measured reflected the motives of participants and not simply the motives that they were hypothesised to have. The REMM assesses a wider range of factors than previous measures and thus adds to the understanding of motivation for recreational physical activity. Applicability of the REMM to both recreational exercise and recreational sport participants was demonstrated. Future research could assess its usefulness in other sport and exercise environments. The REMM is a comprehensive measure that can be used to further examine motivational differences between different genders and age groups. It is also a valuable tool for research on motivation for exercise in different environments and cultures.

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APPENDICIES

Appendix A: Information and Informed Consent Forms and Interview Guide.

Dear participant

A major area within sport psychology is the area of motivation. Researchers are keen to learn why people participate in sport and other forms of physical activity. Understanding the goals of people who exercise can help sport and health bodies to encourage these goals in non-exercise participants. I am primarily interested in one area of motivation - goals of non-competitive exercise participants. By talking to a number of participants I hope to gain a better insight into the different goals people have when exercising. This knowledge will be used to assist in the development of a questionnaire that will be able to be used to expand knowledge of the characteristics of exercise and sports participants.

This study is being conducted as part of a higher degree in sport psychology. Participation in the study is voluntary and you may withdraw at any time. There are no right or wrong answers or things to say, so I ask to be as honest as possible. All responses will be treated as confidential and the transcripts will not be identified with your name. Thank you for your participation in the study.

VICTORIA UNIVERSITY OF TECHNOLOGY

CONSENT FORM

CERTIFICATION BY SUBJECT

I, ...
of .....

certify that I have the legal ability to give valid consent and that I am voluntarily giving my consent to participate in the experiment entitled: *" Goal orientations of recreational exercise participants. "* being conducted at Victoria University of Technology by Ms Helen Clayton, Dr Vance Tammen, and Dr Tony Morris.

I certify that the objectives of the experiment, together with any risks to me associated with the procedures listed hereunder to be carried out in the experiment, have been fully explained to me by:
.....

and that I freely consent to participation involving the use on me of these procedures.

Procedures
Participation in an interview which will be recorded on audio tape.

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this experiment at any time and that this withdrawal will not jeopardise me in any way.

I have been informed that the confidentiality of the information I provide will be safeguarded.

Signed:

.....

Witness other than the experimenter:

Signature:.....

Date:.....

MOTIVATION INTERVIEW

Before we start I need to get some descriptive information from you

Could you tell me your
Age:
Occupation:

The focus of this interview will be on your reasons and goals for exercise, particularly those activities that you undertake in a non competitive environment. First, I want to get some idea of the type and frequency of activities you participate in.

1. What non competitive exercise activities do you regularly partake in?

2. How many times per week do you ..... ?
   How long is each session?

3. Do you participate in any competitive exercise or sport?

4. How many times per week do you play or practice ..... ?
   How long is each session?

5. Some people lead generally active lives. What type of weekend and leisure activities do you do?

6. Have your exercise habits been fairly regular during the past year?

   If not: How have they changed?
   Why have they changed?

7. Think back to five years ago. Were your exercise habits different or similar to those you have now?

   If changed: In what way have your habits changed?
   Why have they changed?

8. What words would you associate with the effort put in by an athlete competing at the Olympic Games?

Do these words describe the effort you put in when exercising.

If not - what words would you use to describe your effort?

I would now like to talk about your reasons and goals for exercise.

9. (i) What do you hope to achieve from the non-competitive exercise activities you are involved in?
Probe

(i) Do you hope to achieve different things from different non competitive activities?
Probe

(iii) How do you think the activities can help you achieve these things?
Probe

(iv) How successful have you been so far in achieving these goals?

10. (i) What do you hope to achieve from the competitive exercise/sport activities you are involved in?
Probe

(ii) Do you hope to achieve different things from different sport activities ie different sports, different competitions, practice versus games?
Probe

(iii) How do you think the activities can help you achieve these things?
Probe

(iv) How successful have you been so far in achieving these goals?

11. (If applies)Earlier you said that your non competitive exercise activities were different in the past from what you do now, have the goals you hope to achieve from this type of exercise changed

12. For those non competitive activities which have not changed - have your reasons for doing these activities changed

13. What other goals do you think people have for exercise that are different from your own?
Why do you think they are different?

Are there any other reasons for exercise you can think of but have not mentioned or are there any points you would like to expand on?

That is all the questions I have for you. Thank you for participating in the study. If you have any questions to ask about the project feel free to ask

Appendix B: Raw Data Themes and Accompanying Goal Themes in Study 1.

Table A.1

Participant Goal Statements and Associated Goal Themes

Goal statement/raw data theme	**Goal theme**
Participant 1	
"fitness.."	Fitness
"health...when I was young I was very overweight"	Health
"It was more the fact that I wanted to keep my figure now"	Appearance
"how much I enjoyed it"	Enjoyment
"health and fitness number one"	Health & fitness
"peace of mind number two....it's like my hour and a half that I have to myself"	time out, stress break
"I would like ultimately compete in a triathalon umm and complete it"	Mastery or competition?
"I suppose if I didn't value health and fitness I wouldn't be at the gym any more"	health and fitness
"I think it would be more for me as a personal goal to be able to say that I've done it. I've trained for a triathalon and I've completed it."	mastery
"but I don't really care if I don't beat any people...Its more personal."	mastery
"the vanity angle...to get their figures into shape"	appearance
"Social...meet people at the gym...spend more time talking to each other than actually exercising"	affiliation/social
"people say: oh you know. Do you go to the gym...How many times a week do you go?"	social comparison
" a lot of people go to the gym because they're the body beautiful...they sort of parade around you know"	social comparison (appearance)
"value their fitness and they work really hard"	fitness
"They're there because they want to keep their figures"	appearance
Participant 2	
"more a social I guess but not really competitive there" (on netball)	social
"I've just always loved it"	enjoyment
"I like the social atmosphere when I'm at the gym"	social
"meeting people there...sometimes go with friends"	social
" um I guess just keep the body in shape"	appearance
"Toning up...and yeah weight loss...makes	appearance

you feel better"	
"just put my walkman on and go...So I guess its more for myself...I want to sort of do my own things"	get away
"I enjoyed it I really enjoyed it"	enjoyment
"um stress relief...to be on their own and think about things.."	relaxation, get away
"health reasons"	health
Participant 3	
"My sort of exercise is more of keeping ones body fit"	fitness
"You know it's a challenge more than anything else, yeah"	mastery
"when you get to my age...you just can't compete with a twenty one year old or twenty two year old..."	social comparison
"but I've always maintained this... fitness"	fitness
"I'm a very competitive person for example"	competition (general trait)
"exercise is more to relieve the stress levels"	relaxation, stress relief
"golf is...a bit of relaxation mare than anything else"	relaxation
"Mine really is...a stress outlet more than anything else and a relaxation"	relaxation, stress relief
"healthy body, healthy mind"	psychological well being
"a healthy body, ...improves the cardiovascular system"	health
"doing your personal best"	mastery
"your always looking better and better"	appearance
"trying to better that handicap"	mastery
"I've achieved the kinds of goals and personal bests I've set myself"	mastery
"I still like to compete...even now down at the gym if we go for five k I always try to be up there in the top two or three even with the young guys"	competition
Participant 9	
"competitive nature probably put me off"	non-competitive
...I'm interested in it because of the skills and..., hand-eye co-ordination,.."	mastery
"it's quite social"	social
"its good for fitness"	fitness
"you get on a real adrenaline high the more you do"	enjoyment?
"First I want to achieve a toned firm, non fat body...my body feels toned and good"	appearance
"I feel so much more relaxed when I exercise"	relaxation
"I think a sound mind and a sound body"	psychological well being
(instructing) "it gives you a reason for being there, it gives you some money"	extrinsic: money
...and it's fun	enjoyment
"I was disappointed with myself with my squash that I never managed to...get into A	competitive

grade...	
but in terms of aerobics I'm pretty pleased...did the instructors coarse...and then got employment"	extrinsic reward
"helps them loose weight"	appearance
"relaxing mentally"	relaxation
Participant 10	
"I think it's just fitness"	fitness
"sport people like that competition, like that achievement of winning"	competition
"I spose weight loss"	appearance
Participant 11	
"I don't do that much really so um I tried....and didn't really like that a lot"	enjoyment factor important
"Kayaking um...that's more fun and recreation..."	enjoyment,
"get away from the work a day world"	relaxation
"Enjoy getting out into the bush"	enjoyment
"...the companionship and things that go with it are good"	social
"Skiing...That's much more exhilaration and ah excitement"	enjoyment
"with kayaking I've increased my skills"	mastery
"with the ah things like kayaking and swimming you see people who are far more interested in developing a high level of skill and proficiency than my relatively more relaxed approach.	Mastery
Participant 12	
"Just greater fitness level and overall healthiness"	health, fitness
"It used to be weight loss but I don't want that. I want to just be more toned, muscle defined"	appearance
"that is my other goal. I just want to accomplish. Getting faster and longer distances"	mastery
"just another variation on the overall fitness goal"	fitness
"He got me more motivated to actually continue"	social
"to be able to sort of jog a certain distance"	mastery
"I sort of went to an aerobics class with a friend of mine...been going to the gym together for years"	social
"I just see that you know she gets a lot more puffed quicker than I do now so I've sort of got maybe or maybe I'm getting fitter"	social comparison
"weight loss..."	appearance
"just enjoyment..."	enjoyment
"build peoples self esteem by comparing it to other people..."	social comparison
"accomplishing something that they set to	mastery

do. It can make them feel good by actually doing it"	
Participant 13	
"I sort of found I really enjoyed it"	enjoyment
"I felt I needed an outlet"	stress relief
"a friend encouraged me"	social
"and I really enjoyed it"	enjoyment
"meeting different people and just being in a different environment"	social
"I'm achieving something"	mastery
"and I'm doing something for myself"	self esteem
"I feel better...if I have a week off I feel really depressed"	psychological well-being
"just seems to give me a buzz"	enjoyment
"I've always been concerned how I look...body shape and size"	appearance
the fact that I'm doing exercise will help me maintain that um makes me feel good about myself"	self esteem
"when I first started it was more to get out and probably meet people...but its sort of changed"	social
"a lot of people go just for the social aspect of it"	social
"its really for myself I 'spose. Allen likes me to look a certain way but in the long run I'm doing it for myself"	mixed message, social pressure?
Participant 14	
"squash...it was ah quite competitive"	competition
"I quite enjoyed it"	enjoyment
"I guess the reason I started...I used to have um a back problem...and I found the gym strengthened the muscles"	medical
"in addition I guess now that I've been doing it for some time I find it is enjoyable"	enjoyment
"It gives me a level of satisfaction and I'm maintaining my fitness level and ...probably increased my fitness level"	fitness
"its nice to think that...yeah when you've got to my age that I'm fitter than the average and I am so that's true yeah"	social comparison
"toning"	appearance
"I'm not trying to be a muscle man, I'm not trying to be an Olympic star."	social comparison?
"Just general fitness"	fitness
"obviously people who are playing... competitive sport exercise to...make them compete and win"	competition
"I guess some people exercise purely for ...health reasons"	health
Participant 15	
"a lot of my friends had newish bikes and they were doing a lot of riding"	social

"I also heard about The Great Victorian bike ride that I want to do this year. So I'm sort of in artificial training for that"	mastery
"I was getting a new bike too which sort of makes it more exciting to ride"	enjoyment
"its like an enjoyment"	enjoyment
"or distraction"	stress relief, time out
"I do try and push myself...on weekends its more sociable so I just pace myself"	social
"to keep a balanced life...I think balance is really important for me"	balance
"enjoyment"	enjoyment
"often dad goes with me and we have a bit of a chat, so its sort of social"	social
"My brother and his wife and a few friends of ours yeah we either ride down the beach and have a coffee or..."	social
"we like to win"	competition
"and we like to improve"	mastery
"if we don't organise to do things together we might not see each other for ages"	social
(work netball)"just during lunch time...it wasn't competitive at all. It was just a laugh most of the time"	social
"I think some people are more concerned with um improving their level of fitness and their endurance more than me"	fitness
Participant 16	
"um I didn't like the competition, basically yeah"(on giving up football)	non-competitive
"The focus of my life is different. I do an exercise because I want to do an exercise and that is just one small part of my life whereas for an athlete at that level, that is their life"	enjoyment
"I hope to achieve enjoyment basically"	enjoyment
"I enjoy the feeling of.."	enjoyment
"..using my body for what it was designed to be used for and so whether its going for a run and working the cardiovascular system or doing karate and working your arms and legs or whatever else and just working your whole body generally"	mastery
"and your mind at the same time."	psychological well-being
"Its a good form of stress release too"	relaxation
"some people might want to prove to themselves that they can actually do something..."	mastery
"their self esteem"	self esteem
"they might want to keep fit"	fitness
Trial participant	
"the reason I stared was cause my father was saying your unfit, you have to go and I started going"	others expectations

Appendix C: Integrated Concepts and Accompanying Raw Data Themes

Table A.2

Integrated Concepts and Related Raw Data from Study 1

Integrated concept	**Raw data theme**
Fitness and health	"fitness"
	"health...when I was young I was very overweight"
	"health and fitness number one"
	"I suppose if I didn't value health and fitness I wouldn't be at the gym any more"
	"value their fitness and they work really hard"
	"health reasons"
	"My sort of exercise is more of keeping ones body fit"
	"but I've always maintained this... fitness"
	"a healthy body...improves the cardiovascular system"
	"its good for fitness"
	"I think it's just fitness"
	"Just greater fitness level and overall healthiness"
	"just another variation on the overall fitness goal"
	"It gives me a level of satisfaction and I'm maintaining my fitness level and ...probably increased my fitness level"
	"Just general fitness"
	"I guess some people exercise purely for ...health reasons"
	"I think some people are more concerned with um improving their level of fitness and their endurance more than me"
	"they might want to keep fit"
Appearance	"It was more the fact that I wanted to keep my figure now"
	"the vanity angle...to get their figures into shape"
	"They're there because they want to keep their figures"
	" um I guess just keep the body in shape"
	"toning up...and yeah weight loss...makes you feel better"
	"your always looking better and better"
	"First I want to achieve a toned firm, non fat body...my body feels toned and good"
	"helps them loose weight"
	"I spose weight loss"
	"It used to be weight loss but I don't want that. I want to just be more toned, muscle defined"
	"weight loss"
	"I've always been concerned how I look...body shape and size"
	"I spose weight loss"
	"toning"
Enjoyment	"how much I enjoyed it"
	"I've just always loved it"
	"I enjoyed it, I really enjoyed it"
	"you get on a real adrenaline high the more you do"
	"and it's fun"
	"I don't do that much really so um I tried....and didn't really like

	that a lot"
	"Kayaking um...that's more fun and recreation"
	"Enjoy getting out into the bush"
	"Skiing...That's much more exhilaration and ah excitement"
	"I sort of found I really enjoyed it"
	"and I really enjoyed it"
	"I quite enjoyed it"
	"just seems to give me a buzz"
	"in addition I guess now that I've been doing it for some time I find it is enjoyable"
	"just enjoyment"
	"I was getting a new bike too which sort of makes it more exciting to ride"
	"its like an enjoyment"
	"enjoyment"
	"The focus of my life is different. I do an exercise because I want to do an exercise and that is just one small part of my life whereas for an athlete at that level, that is their life"
	"I hope to achieve enjoyment basically"
	"I enjoy the feeling of.."
time out, stress break, relaxation	"peace of mind number two....it's like my hour and a half that I have to myself"
	"just put my walkman on and go...So I guess its more for myself...I want to sort of do my own things"
	"um stress relief...to be on their own and think about things.."
	"exercise is more to relieve the stress levels"
	"golf is...a bit of relaxation more than anything else"
	"Mine really is...a stress outlet more than anything else and a relaxation"
	"I feel so much more relaxed when I exercise"
	"relaxing mentally"
	"I felt I needed an outlet...a friend encouraged me...and I really enjoyed it"
	"get away from the work a day world"
	"I felt I needed an outlet""
	"its ..a distraction"
	"Its a good form of stress release too"
mastery	"I would like ultimately compete in a triathalon umm and complete it"
	"I think it would be more for me as a personal goal to be able to say that I've done it. I've trained for a triathalon and I've completed it."
	"but I don't really care if I don't beat any people...Its more personal."
	"You know it's a challenge more than anything else, yeah"
	"doing your personal best"
	"trying to better that handicap"
	"I've achieved the kinds of goals and personal bests I've set myself"
	"I'm interested in it because of the skills"
	"with kayaking I've increased my skills"
	"with the ah things like kayaking and swimming you see people who are far more interested in developing a high level of skill and proficiency than my relatively more relaxed approach.
	"that is my other goal. I just want to accomplish. Getting faster and

	longer distances"
	"to be able to sort of jog a certain distance"
	"accomplishing something that they set to do."
	"I'm achieving something"
	"I also heard about The Great Victorian bike ride that I want to do this year. So I'm sort of in artificial training for that"
	"we like to improve"
	"using my body for what it was designed to be used for and so whether its going for a run and working the cardiovascular system or doing karate and working your arms and legs or whatever else and just working your body generally"
	"some people might want to prove to themselves that they can actually do something"
appearance/ social comparison	"people say: oh you know. Do you go to the gym...How many times a week do you go?"
	" a lot of people go to the gym because they're the body beautiful...they sort of parade around you know"
	" when you get to my age... you just can't compete with a twenty one year old or twenty two year old"
	"I just see that you know she gets a lot more puffed quicker than I do now so I;ve sort of got maybe I'm getting fitter"
	"build people'e self-esteem by comparing it to other people"
	"its nice to think that...yeah when you've got to my age that I'm fitter than the average and I am so that's true yeah"
	"I'm not trying to be a muscle man, I'm not trying to be an Olympic star. Just general fitness"
affiliation/social	"Social...meet people at the gym...spend more time talking to each other than actually exercising"
	"more a social I guess but not really competitive there" (on netball)
	"I like the social atmosphere when I'm at the gym"
	"meeting people there...sometimes go with friends"
	"it's quite social"
	"the companionship and things that go with it are good"
	"He got me more motivated to actually continue"
	"I sort of went to an aerobics class with a friend of mine...been going to the gym together for years"
	"a friend encouraged me"
	"meeting different people and just being in a different environment"
	"when I first started it was more to get out and probably meet people...but its sort of changed"
	"a lot of people go just for the social aspect of it"
	"a lot of my friends had newish bikes and they were doing a lot of riding"
	"I do try and push myself...on weekends its more sociable so I just pace myself"
	"often dad goes with me and we have a bit of a chat, so its sort of social"
	"My brother and his wife and a few friends of ours yeah we either ride down the beach and have a coffee or..."
	"if we don't organize to do things together we might not see each other for ages"
	"just during lunch time...it wasn't competitive at all. It was just a laugh most of the time"

competition	"I'm a very competitive person for example"
	"I still like to compete...even now down at the gym if we go for five k I always try to be up there in the top two or three even with the young guys"
(negative)	"competitive nature probably put me off..."
	"I was disappointed with myself with my squash that I never managed to...get into A grade"
(other activities)	"sport people like that competition, like that achievement of winning"
(other activities)	"squash...it was ah quite competitive I quite enjoyed it"
(other activities)	"obviously people who are playing... competitive sport exercise to...make them compete and win"
	"we like to win"
(negative)	"um I didn't like the competition, basically yeah"(on giving up football)
others expectations	"its really for myself I 'spose. Allen likes me to look a certain way but in the long run I'm doing it for myself"
	"the reason I stared was cause my father was saying your unfit, you have to go and I started going"
extrinsic reward	(instructing) "it gives you a reason for being there, it gives you some money"
	"but in terms of aerobics I'm pretty pleased...did the instructors coarse...and then got employment"
self esteem	"I'm achieving something and I'm doing something for myself...I feel better"
	"the fact that I'm doing exercise will help me maintain that um makes me feel good about myself"
	"some people might want to prove to themselves that they can actually do something...their self esteem"
medical	"I guess the reason I started...I used to have um a back problem...and I found the gym strengthened the muscles"
psychological well-being	"healthy body, healthy mind"
	"I think a sound mind and a sound body"
	"I feel better. If I have a week off I feel really depressed"
	"and your mind at the same time"
	"to keep a balanced life...I think balance is really important for me um and enjoyment"

• participants statements citing weight loss as a goal for exercise have been placed in the appearance theme. It is acknowledged that this may not always be appropriate. For some it may be a health issue, for others it may be a social comparison issue or to meet the expectations of others. Future studies should indicate its most appropriate category.

Appendix D: Constructs, Items and Source of Item

Below each item is listed with the item number it has on the questionnaire. The items are listed within the constructs it was hypothesised they would belong. In brackets is indicated whether the item was a new (New) item, an original MPAM item (MPAM), an item from the revised MPAM (R-MPAM), an item from the revised MPAM which had been slightly modified (R-MPAMm) or an item taken from the Particiaption motivation questionnaire (PMQ)

Competition/ego (11)

Direct competition (5)

35. because I like to win (PMQ)
47. to beat my friends (New)
44. to compete with others around me (New)
73. to perform better than others (New)
49. to be the best in the group (New)

Social comparison (6)

50. to work harder than others when I exercise (New)
61. to be fitter than others (New)
36. because it makes my physical appearance better than others (New)
64. to make my body look better than other people's (New)
8. to do more for my fitness than other people (New)
63. to make my muscles look more toned than other people's (New)

Appearance (7)

15. to define muscle to look better (R-MPAM)
13. to improve my appearance (R-MPAM)
58. to lose weight to look better (R-MPAM)
43. to be attractive to others (R-MPAM)
28. to improve my body shape (R-MPAM)
51. because it helps me maintain a trim, toned body (New)
56. because it helps me stay in shape (New)

Extrinsic rewards (5)

60.because I get paid to do it (New)
4. because I get rewarded for doing it (New)
46. to earn a living (New)
38. because I am required to stay fit for my job (New)
29. because it helps me gain status or recognition (PMQ)

Social (11)

Affiliation (7)

40. to do an activity with others (R-MPAMm)
57. to be with friends (R-MPAMm)
7. to meet new people (R-MPAM)
67. because I enjoy spending time with others doing exercise (R-MPAMm)
5. because it is something I have in common with my friends (New)
37. to talk with friends while I exercise (New)
25. to make new friends (New)

Others Expectations (4)

9. because friends want me to (R-MPAM)
27. because someone close to me approves of my exercise activities (New)
54. to achieve the looks/figure others expect of me (New)
66. because people tell me I need to exercise (New)

Physical Condition (11)

Fitness (5)

34. to improve cardiovascular fitness (R-MPAM)
69. to maintain strength (New)
42. to have more energy (R-MPAM)
31. to be physically fit (R-MPAMm)
14. to improve my strength(New)

Health/Medical (6)

39. because it helps me manage a medical condition (New)
70. to maintain physical health (New)
19. because it keeps me healthy (New)
72. because it is prescribed by my doctor , physiotherapist (New)
12. because doing exercise helps me maintain a healthy body (New)
62. because exercise lessens the physical effects of aging (New)

Psychological Condition (10)

Psychological well being/Balance (5)

6. because exercise helps keep my mind healthy (New)
24. because exercise helps improve my mental health (New)
22. because doing exercise helps me achieve other things in life (New)
21. because after exercise I feel good about myself (New)
33. because doing exercise stops me from feeling depressed (New)

Stress release, relaxation (5)

11. because I want to cope better with stress (MPAM)
23. because it acts as a stress release (New)
30. because exercise helps me take my mind off other things (New)
32. because it helps me relax (New)
65. to get away from pressures at work/home (New)

Mastery (10)

Skills (5)

71. to get better at activity (R-MPAM)
1. to keep up current skill level (R-MPAM)
18. to obtain new skills or try new activities (R-MPAMm)
53. to improve my skill or technique (New)
41. to improve existing skills (R-MPAM)

Challenge (5)

3. to do my personal best (New)
17. to perform well compared to my own past performance (New)
26. to achieve an exercise goal I have set myself (New)
16. because I like the physical challenges (R-MPAM)
2. because I like activities that are challenging (R-MPAM)

Enjoyment (8)

59. because it makes me happy (R-MPAM)
45. because it is fun (R-MPAM)
48. because I enjoy exercising (R-MPAM)
52. because it is interesting (R-MPAM)
55. because I have a good time (New)
68. because I like the excitement of participation (R-MPAM)
20. because exercise is stimulating (R-MPAM)
10. because the activities I do are exciting (New)

Recreational Exercise Motivation Questionnaire

Helen Rogers
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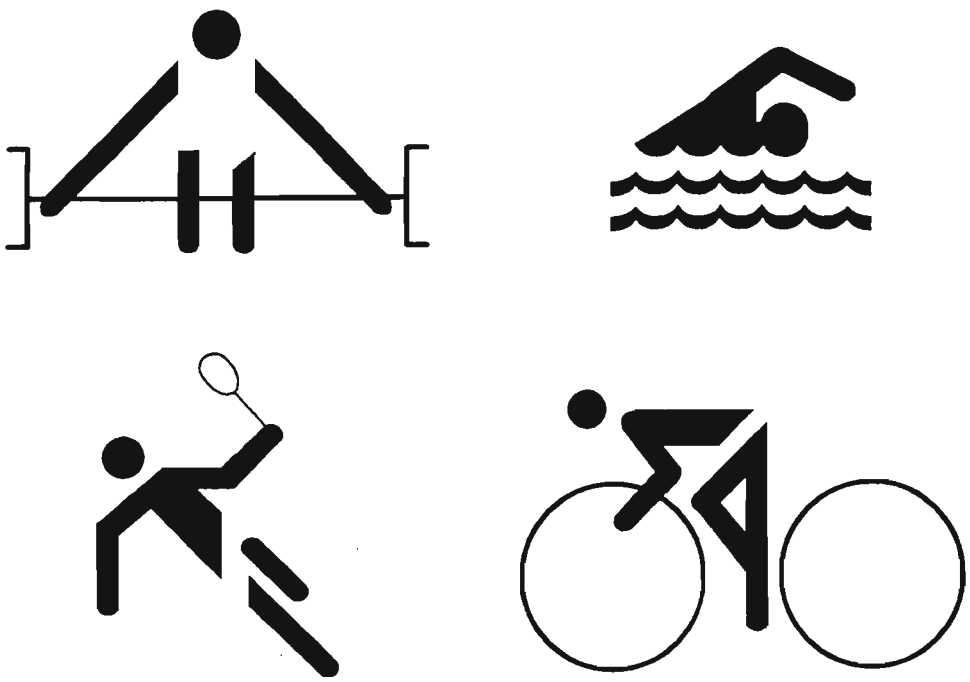

Age (years) :____ **Occupation: _____**

Sex: M / F

In the space provided below could you please indicate the duration, frequency, and intensity of each exercise and sport activity you regularly participate in. For sport could you also indicate the level at which you participate. In the example provided the participant plays tennis for two hours twice a week at club level at a medium intensity level. The person also runs for 30 minutes at a fast pace once a week, does a beginners/ light circuit class once a week, and 3, 20 minute weights sessions.

Activity	**Frequency** *(number of times per week)*	**Duration** *(average length of each session of that activity)*	**Intensity** *(Heavy/ medium/ light)*	**Level of play** (*social/ club/ state/ national)*
Example:				
tennis	2	2 hrs	medium	club
running	3	30 minutes	fast	
circuit class	1	1 hour	light	
weight training	3	20 minutes	medium	
Insert your activities below:				

In responding to the following statements, think of the motives you have for **exercise** activities you do. Try not to spend time pondering over your responses. There are no right or wrong answers. Indicate how much your motives correspond with each of the statements by circling one of the numbers one to five on the scale beside each statement. In each case **1** indicates **strongly disagree** and **5** indicates **strongly agree**.

I exercise.....	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. to keep up current skill level.	1	2	3	4	5
2. because I like activities that are challenging.	1	2	3	4	5
3. to do my personal best.	1	2	3	4	5
4. because I get rewarded for doing it	1	2	3	4	5
5. because it is something I have in common with my friends	1	2	3	4	5
6. because exercise helps keep my mind healthy	1	2	3	4	5
7. to meet new people	1	2	3	4	5
8. to do more for my fitness than other people	1	2	3	4	5
9. because friends want me to	1	2	3	4	5
10. because the activities I do are exciting	1	2	3	4	5
11. because I want to cope better with stress	1	2	3	4	5
12. because doing exercise helps me maintain a healthy body	1	2	3	4	5
13. to improve my appearance	1	2	3	4	5
14. to improve my strength	1	2	3	4	5
15. to define muscle to look better	1	2	3	4	5
16. because I like the physical challenges	1	2	3	4	5
17. to perform well compared to my own past performance	1	2	3	4	5
18. to obtain new skills or try new activities	1	2	3	4	5
19. because it keeps me healthy	1	2	3	4	5
20. because exercise is stimulating	1	2	3	4	5
21. because after exercise I feel good about myself	1	2	3	4	5
22. because doing exercise helps me achieve other things in life	1	2	3	4	5
23. because it acts as a stress release	1	2	3	4	5
24. because exercise helps improve my mental health	1	2	3	4	5
25. to make new friends	1	2	3	4	5
26. to achieve an exercise goal I have set myself	1	2	3	4	5
27. because someone close to me approves of my exercise activities	1	2	3	4	5
28. to improve my body shape	1	2	3	4	5
29. because it helps me gain status or recognition	1	2	3	4	5
30. because exercise helps me take my mind off other things	1	2	3	4	5
31. to be physically fit	1	2	3	4	5
32. because it helps me relax	1	2	3	4	5
33. because doing exercise stops me from feeling depressed	1	2	3	4	5
34. to improve cardiovascular fitness	1	2	3	4	5

/PTO

I exercise.....	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
35. because I like to win	1	2	3	4	5
36. because it makes my physical appearance better than others	1	2	3	4	5
37. to talk with friends while I exercise	1	2	3	4	5
38. because I am required to stay fit for my job	1	2	3	4	5
39. because it helps me manage a medical condition	1	2	3	4	5
40. to do an activity with others	1	2	3	4	5
41. to improve existing skills	1	2	3	4	5
42. to have more energy	1	2	3	4	5
43. to be attractive to others	1	2	3	4	5
44. to compete with others around me	1	2	3	4	5
45. because it is fun	1	2	3	4	5
46. to earn a living	1	2	3	4	5
47. to beat my friends	1	2	3	4	5
48. because I enjoy exercising	1	2	3	4	5
49. to be the best in the group	1	2	3	4	5
50. to work harder than others when I exercise	1	2	3	4	5
51. because it helps me maintain a trim, toned body	1	2	3	4	5
52. because it is interesting	1	2	3	4	5
53. to improve my skill or technique	1	2	3	4	5
54. to achieve the looks/figure others expect of me	1	2	3	4	5
55. because I have a good time	1	2	3	4	5
56. because it helps me stay in shape	1	2	3	4	5
57. to be with friends	1	2	3	4	5
58. to lose weight to look better	1	2	3	4	5
59. because it makes me happy	1	2	3	4	5
60. because I get paid to do it	1	2	3	4	5
61. to be fitter than others	1	2	3	4	5
62. because exercise lessens the physical effects of ageing	1	2	3	4	5
63. to make my muscles look more toned than other people's	1	2	3	4	5
64. to make my body look better than other people's	1	2	3	4	5
65. to get away from pressures at work/home	1	2	3	4	5
66. because people tell me I need to exercise	1	2	3	4	5
67. because I enjoy spending time with others doing exercise	1	2	3	4	5
68. because I like the excitement of participation	1	2	3	4	5
69. to maintain strength	1	2	3	4	5
70. to maintain physical health	1	2	3	4	5
71. to get better at activity	1	2	3	4	5
72. because it is prescribed by my doctor, physiotherapist	1	2	3	4	5
73. to perform better than others	1	2	3	4	5

Do you have any motives for exercise that are not included in the above statements? Please write them here.

_____

_____

_____

Appendix F: List of Occupations Given by Participants in Study 2 and Study 3

Table A.3

Occupations of Participants in Study 2 and Study 3

	Study 2: Exercise		Study 3: Sport	
Occupation	N	%	N	%
1 housewife	90	11.81	4	1.71
2 solicitor, lawyer, barrister	10	1.31	8	3.42
3 accnt, fin analyst, sales analyst, demand analyst, financial consultant, statistician, estimator	33	4.33	15	6.41
4 computers	20	2.62	13	5.55
5 executive./personal assistant	7	0.92	3	1.28
6 fitness consultant, personal trainer, coach	23	3.02	2	0.85
7 teacher, trainer, education consult	46	6.04	14	5.98
8 electrician, builder, plumber, telecommunications technician, motor mechanic, shop fitter, construction foreman, glass worker, printer	13	1.71	5	2.14
9 student, apprentice	87	11.42	34	14.53
10 physiotherapist, occ therapist, podiatrist	12	1.57	2	0.85
11 sales, shop assis., marketing, insurance sales, bank officer, travel agent	21	2.76	9	3.85
12 retired	42	5.51		
13 doctor, dentist, psychologist, optometrist	9	1.18	1	0.43
14 office duties, recept, clerk, book keep	44	5.77	19	8.12
15 sales/ quality/ admin mngr, product mngr, performance advancement coordinator, marketing coordinator, advertising executive	68	8.92	32	13.67
16 personnel cons, human resource officer	6	0.79	2	0.85
17 unemployed	3	0.39		
18 manager, director	35	4.59	12	5.13
19 musician, designer	4	0.52	1	0.43
20 engineer	14	1.84	10	4.27
21 furniture restorer, curtain maker, carpenter	3	0.39		
22 t.v. presenter, tv producer	3	0.39		
23 hairdresser, beauty therapist	3	0.39		
24 police	8	1.05	2	0.85
25 nurse, dental technician	25	3.28	4	1.71
26 childcare, attendant carer	14	1.84	2	0.85
27 caterer, restraunteur, hospitality	4	0.52	2	0.85
28 building developer, construction manager	4	0.52	1	0.43
29 security consultant	1	0.13		
30 driver	3	0.39	1	0.43
31 survey draftsman, graphic designer, draftsperson	4	0.52	2	0.85
32 logistics coordinator	1	0.13		
33 business consultant, management consultant, consultant, marketing consultant	14	1.84	8	3.42
34 professional athlete	2	0.26		
35 research officer, technician (science)	8	1.05	6	2.56
36 masseuse	2	0.26		
37 publisher, music producer	4	0.52		

38 PE teacher	5	0.66	2	0.85
39 speech pathologist	1	0.13		
40 security guard	2	0.26		
41 army reserve	1	0.66		
42 technologist	2	0.26		
43 landscape gardener, gardener, horticultural consultant	6	0.79	1	0.43
44 process designer	1	0.13		
45 scientist, industrial chemist	12	1.57	4	1.71
46 flight attendant	1	0.13		
47 pharmacist	2	0.26		
48 lecturer, academic	12	1.57		
49 journalist, sub-editor, news assistant, freelance writer	4	0.52	1	0.43
50 dog groomer	1	0.13		
51 sign writer, visual merchandising	1	0.13		
52 auctioneer, real estate agent	5	0.66	1	0.43
53 dancer	1	0.13		
54 self employed	4	0.52		
55 municipal ranger	1	0.13		
56 butcher	1	0.13		
57 model	1	0.13		
58 interviewer	1	0.13		
59 mortgage banker	1	0.13		
60 vet	1	0.13		
61 flight attendant	1	0.13		
62 library assistant, librarian	1	0.13	1	0.43
63 artist, musician	1	0.13	1	0.43
64 social worker, youth worker, career counsellor	2	0.26	2	0.85
65 interior decorator			1	0.43
66 architect			4	1.71
67 broker			1	0.43
68 storeperson			1	0.43

Appendix G: Pearson Product-Moment Correlation Coefficients for Test-Retest Reliability of Each Item

Table A.4

Pearson Product Moment Correlation Coefficients for Each Item

Item	r	Item	r	Item	r
1	.52	25	.68	50	.69
2	.58	26	.43	51	.61
3	.70	27	.62	52	.53
4	.64	28	.55	53	.57
5	.71	29	.64	54	.62
6	.50	30	.34	55	.66
7	.72	31	.49	56	.33
8	.59	32	.44	57	.70
9	.44	33	.53	58	.74
10	.59	34	.45	59	.41
11	.68	35	.76	60	.69
12	.64	36	.73	61	.58
13	.58	37	.74	62	.69
14	.64	38	.71	63	.61
15	.66	39	.75	64	.69
16	.62	40	.60	65	.53
17	.65	41	.70	66	.49
18	.46	42	.40	67	.72
19	.45	43	.55	68	.75
20	.58	44	.63	69	.52
21	.56	45	.55	70	.35
22	.64	46	.69	71	.43
23	.40	47	.64	72	.82
24	.60	48	.49	73	.76
25	.68	49	.71		

Appendix H: Basic Statistics for Each Item for Study 3

Table A.5 lists the basic statistics for each item obtained in Study 3. The order is the same as Table 4.2 that lists item statistics for exercise participants to enable easy comparison. Table 4.2 is in rank order (highest to lowest) for exercise participants. The ranks for sports participants (1 being the highest mean) are given in Table A.5.

Table A.5

Basic Item Statistics for Each Item in Study 3

Item No.	Rank	M	SD	Skew-ness	Kurtosis	Item
12	1	4.42	0.60	-0.94	3.01	helps maintain healthy body
19	2.5	4.39	0.60	-0.53	0.02	keeps me healthy
31	5	4.25	0.61	-0.52	1.05	to be physically fit
21	8.5	4.18	0.78	-0.70	0.00	after I feel good about self
34	12	4.10	0.72	-0.90	2.28	improve c.v. fitness
70	10	4.16	0.61	-0.54	1.45	maintain physical health
6	6	4.21	0.78	-1.03	1.69	helps keep mind healthy
56	13	4.03	0.72	-1.16	2.99	helps me stay in shape
42	32.5	3.57	0.85	-0.80	0.78	to have more energy
14	34.5	3.55	0.98	-0.62	0.02	improve strength
13	37	3.48	1.03	-0.72	-0.04	improve appearance
20	7	4.20	0.70	-0.59	0.30	is stimulating
24	17	3.93	0.79	-0.64	0.85	improve mental health
23	14	4.00	0.79	-0.77	1.10	stress release
48	11	4.13	0.79	-0.75	0.34	I enjoy exercising
51	40	3.43	1.05	-0.51	-0.28	maintain trim, toned body
69	26.5	3.67	0.88	-0.90	0.91	maintain strength
32	15	3.96	0.77	-1.06	2.24	helps me relax
28	42.5	3.37	1.06	-0.59	-0.34	improve body shape
59	8.5	4.18	0.67	-0.89	2.36	makes me happy
45	2.5	4.39	0.69	-1.21	2.08	it is fun
3	20	3.82	0.82	-0.54	0.21	to do my personal best
22	31	3.58	0.90	-0.44	-0.15	helps achieve other things
15	45	3.21	1.10	-0.23	-0.51	define muscle, look better
11	41	3.41	1.03	-0.42	-0.40	cope better with stress
58	46	3.17	1.14	-0.40	-0.66	lose weight, look better
55	4	4.31	0.68	-1.04	1.90	I have a good time
16	21	3.77	0.95	-0.98	0.95	like the physical challenges
71	26.5	3.67	0.82	-0.57	0.35	get better at the activity

2	18	3.89	0.82	-0.69	0.46	like challenging activities
62	53	2.92	1.11	-0.11	-0.84	less physical effects ageing
30	25	3.68	0.94	-0.98	0.94	takes mind off other things
1	30	3.60	0.84	-0.84	0.66	keep current skill level
17	28.5	3.63	1.51	7.31	0.31	perform well compared self
26	47.5	3.07	0.91	-0.10	-0.39	achieve exercise goal I set
18	42.5	3.37	0.92	-0.24	-0.32	new skills/try new activities
52	22.5	3.72	0.82	-1.00	1.29	it is interesting
41	32.5	3.57	0.85	-0.80	0.78	improve skills
53	34.5	3.55	0.84	-0.73	0.58	improve skill/technique
33	50	2.96	1.17	-0.25	-0.90	stops me feeling depressed
65	38.5	3.45	1.02	-0.78	0.04	escape other pressures
43	51	2.94	1.00	0.03	-0.33	be attractive to others
4	56	2.70	1.17	1.20	-0.91	I get rewarded
10	36	3.50	0.92	-0.54	0.04	activities are exciting
68	16	3.95	0.80	-1.30	2.94	like excitement of partic.
8	54	2.78	1.09	0.20	-0.51	more for fitness than others
67	22.5	3.72	0.92	-1.00	1.14	enjoy time with others while
36	55	2.75	0.94	0.23	-0.20	appearance better than others
40	28.5	3.63	0.96	-0.92	0.54	to do activity with others
5	19	3.88	0.92	-1.01	1.01	in common with friends
57	24	3.69	0.93	-0.95	1.01	to be with friends
63	58	2.34	1.04	0.55	-0.32	more toned than others
7	49	3.02	0.97	-0.15	-0.48	meet new people
64	61	2.26	0.98	0.66	0.77	body better than others
25	52	2.93	0.92	-0.10	-0.50	make new friends
35	38.5	3.45	1.02	-0.46	-0.29	I like to win
44	44	3.24	1.01	-0.50	-0.37	compete with others
37	47.5	3.07	1.05	-0.21	-0.84	talk with friends
27	57	2.40	1.03	0.32	-0.34	someone close approves
54	62.5	2.25	1.04	0.49	-0.58	achieve looks others expect
39	68	1.98	0.93	0.77	0.11	help manage medical cond.
38	67	2.09	0.95	0.82	0.47	required to be fit for job
61	60	2.28	0.99	0.44	-0.37	to be fitter than others
50	62.5	2.25	1.03	0.66	0.10	work harder than others
29	59	2.32	0.99	0.51	-0.21	helps me gain status
73	64	2.23	1.07	0.53	-0.46	perform better than others
49	65	2.16	1.03	0.67	-0.01	to be best in group
72	71	1.61	0.81	1.30	1.42	prescribed by doctor/physio.
66	69	1.96	0.87	0.76	0.35	people tell me I need to
46	72	1.56	0.77	1.16	0.45	earn a living
47	70	1.82	0.94	0.96	0.27	to beat my friends
9	66	2.13	1.02	0.66	-0.33	friends want me to
60	73	1.42	0.67	1.47	1.46	I get paid to

Appendix I: Comparison of Male Exercise and Sport Participants on Subsets of the Competition Factor

Male exercise participants were found to have higher scores on the competition factor than male sport participants. This result was contrary to previous research and therefore it was of interest to find out whether this was due to the inclusion of items relating to appearance in the competition factor. The items within the competition factor were divided into appearance (items 36, 54, 63, & 64) and non-appearance (8, 29, 35, 44, 47, 49, 50, & 73) items for comparison. The items in each group were added together and compared using t-test tests. Table A.6 shows the means and standard deviations for exercise and sport participants in each sub-group.

Table A.6

Mean and Standard Deviation Values for Sub-Groups of the Competition Factor for Male Sport and Exercise Participants

	Exercise Participants			Sport Participants		
	M	SD	N	M	SD	N
Appearance Items	11.38	3.70	232	10.40	3.38	119
Competition Items	20.78	6.53	227	21.05	4.03	115

The male exercise participants (M = 11.38) scored significantly higher than the male sport participants (M = 10.40) on the total of the appearance related items within the competition factor, t (1, 349) = 2.40, $p < .05$. There was no significant difference between the male exercise participants (M = 20.78) and sport participants (M = 10.40) on the total

of the non-appearance related items within the competition factor, t (1, 340) = -0.40, p > .05.