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An Exploratory Study of Motives for Participation in Extreme Sports and Physical Activity

Lijun Zhou[1], Karolina Chlebosz[2], John Tower[3], & Tony Morris[1,3]

[1] Department of Sports Science, College of Education, Zhejiang University, Hangzhou, China. Room 227, Tianjiabing Building, No.148, Tianmushan Road, Hangzhou, China,310028

[2] Department of Sport Psychology, University School of Physical Education in Poznan, Poland. Ul. Królowej Jadwigi 27/39, 61-871 Poznań, Poland

[3] Institute of Health and Sport, Victoria University. P. O. Box 14428 Melbourne City, Victoria Australia 8001

Author details:
Lijun Zhou – janezhou328@zju.edu.cn
Karolina Chlebosz – Karolina.Chlebosz@gmail.com Linkedin Karolina Chlebosz
John Tower – john.tower@vu.edu.au Orcid 0000-0003-3907-3306; Twitter @JRT_Leisure; Linkedin John Tower.
Tony Morris – tony.morris@vu.edu.au Orcid 0000-0002-2883-7270 (Corresponding author).

Abstract

While participation in traditional sports and leisure-time physical activity (PA) is declining globally, participation in extreme sports is increasing. Few studies have examined the motives of participants in extreme sports. We explored motives for participation of extreme sports in China, adopting a qualitative design. Participants were 14 adults, who participated in extreme sports as serious leisure pursuits. We interviewed participants about the reasons why they participated in their chosen activity. Each interview lasted between 40 and 60 minutes. We transcribed digital recordings verbatim and conducted an inductive-deductive content analysis. We identified nine general dimensions (motives), seven of which were consistent with participation motives in traditional sports (mastery, enjoyment, psychological condition, physical condition, affiliation, others' expectations, competition/ego) and two were new to extreme sports (vertigo, catharsis). We note limitations of this study, draw conclusions for future research, and propose implications for increasing participation in sport and PA arising from this study.

Keywords: Extreme sport, motivation, participation.

There is worldwide concern about low levels of leisure-time physical activity (PA) among a large proportion of the population (World Health Organization, WHO, 2010). PA can reduce the risk for cardiovascular diseases, overweight, and falls (Blair, Kohl, Paffenbarger, Clark, Cooper, & Gibbons, 1989; Kriska, Saremi, & Hanson, 2003), depression (Strawbridge, Wallhagen, & Cohen, 2002) perceived stress (Aldana, Sutton, Jacobson, & Quirk, 1996), and bone fractures (Stattin, Michaëlsson, Larsson, Wolk, &Byberg, 2017). On the other hand, physical inactivity is associated with higher all-cause mortality (Ekelund, Ward, Norat, Luan, May, Weiderpass, Sharp, …, & Riboli,2015), coronary artery disease, stroke, and hypertension (Katzmarzyk & Craig, 2006). Habitual leisure-time PA can improve other factors, including mental health, social contacts, self-confidence, and healthy aging (Leslie, Sparling, & Owen, 2001), benefitting overall quality of life (Elavsky, McAuley, Motl, Konopack, Marquez, Hu, Jerome, … Diener, 2005; Gill, Marcum-Dietrich, & Fraser, 2013). In contrast to the trend reported for traditional forms of leisure-time about low levels of leisure-time physical activity (PA) including sport and exercise, among a large proportion of the population (World Health Organization, WHO, 2010), there has been a sharp increase in participation in extreme sports as serious leisure pursuits (Hajkowicz, Cook, Wilhelmseder, & Boughen, 2013).

The serious leisure framework was chosen because it is an established and accepted approach of contextualizing leisure pursuits (Veal, Darcy & Lynch, 2013). The extreme sport leisure-time PA fit within the serious leisure framework as “nature-challenge hobbies”. These pursuits may include competition, but usually “beating nature is thrill enough” (Stebbins, 2015, p. 9). Leisure-related extreme sport participation exhibits the six features of serious leisure, i.e., i) the need to persevere (confronting danger), ii) building a leisure career, iii) requiring significant personal effort, iv) durable benefits, v) unique ethos, and vi) identify with the pursuit (Stebbins, 2015). Factors leading to increased extreme sport participation are

unclear. To throw light on this phenomenon, we aimed to explore motives for participation in leisure-related extreme sports.

Despite the widespread knowledge about the positive health effects from regular exercise, one in four adults are not active enough (WHO, 2017). Worldwide, the prevalence of physical inactivity among individuals over 15 years is estimated at 17%, ranging between 11% and 24%, depending on the region. Inactivity rises with age, is higher in women than in men, and increases in high-income countries (WHO, 2010).

Motivation is a crucial factor in maintaining leisure-time physical activity (Molanorouzi, Khoo, & Morris, 2015). Several theories are prominent in research on motivation related to leisure-time physical activity, including self-efficacy theory (SET; Bandura, 1977, 2000), the transtheoretical model of behavior change (TTM; Prochaska & DiClemente, 1983), the theory of planned behavior (TPB; Ajzen, 1985), and self-determination theory (SDT; Deci& Ryan, 1985). Limited research has specifically examined whether motivation differs for various types of physical activity. It is plausible that there is a relationship between motives for participation in leisure-time PA and the types of PA that individuals choose.

Studies that have reported the correspondence of participation motives with specific types of PA suggest systematic differences (Ryan, Frederick, Lepes, Rubio, & Sheldon, 1997). Those who participated in individual sports had higher interest/enjoyment and competence motivation, whereas those who participated in fitness or exercise activities had higher body-related motivation (Frederick & Ryan, 1993). Morris, Clayton, Power, and Han (1995) examined leisure-time PA in five types of activity: team sports, individual sports, racquet sports, exercise activities, and martial arts, among 2,601 participants of both genders and ages from 10 to 80 years, using the Participation Motivation Questionnaire (PMQ; Gill, Gross, &Huddleston, 1983). Morris et al. systematically examined how each type of activity

differed from the rest of the sample using separate discriminant function analyses for each activity type. They found that team sport participants scored higher on affiliation, racquet sport participants scored higher on competition, exercisers scored higher on physical condition, and martial arts participants scored higher on mastery then the rest of the sample. Recently, Molanorouzi, Khoo, and Morris (2015) confirmed these trends in a large sample involved in diverse types of PA. This leads us to propose that motives for leisure-time participation in extreme sports are likely to show patterns of motives differing from traditional sports in general, as well as these types of PA.

Extreme sport refers to a category of PA that has been distinguished from the broad range of what might be called "traditional" PA. Leisure-time involvement in extreme sports has seen significant growth over recent years (Hajkowicz et al., 2013). Factors leading to increased extreme sport participation over the years are unclear. Motives for participation in various forms of traditional PA may be different to motives of leisure-time extreme sports participants. There is limited research examining leisure-time extreme sports participants' motivation.

Extreme sport includes sports featuring high speed, height, real or perceived danger, a high level of physical exertion, and highly specialized gear or spectacular stunts, involving elements of increased risk (Heggie & Heggie, 2012). Leisure-time extreme sport activities tend to be individual and many can be pursued both competitively and non-competitively (Heggie & Heggie, 2012). Participants usually face challenges related to longer response and transport times, access to few resources and more extreme geographical and environmental challenges (Heggie & Heggie, 2009), which raise issues for the leisure industry. Examples of popular extreme sports include bicycle motocross and mountain biking; hang-gliding and paragliding; free diving; wave, wind, and kite surfing; whitewater canoeing, kayaking, and rafting; bungee jumping, BASE jumping, and skydiving; extreme hiking and skateboarding;

mountaineering; ultra-endurance races; and All-Terrain Vehicle and motocross sports (Mei-Dan & Carmont, 2013).

Extreme sports are associated with high risks (Davis-Berman & Berman, 2002; Demirhan, 2005). The challenges that people in extreme environments face include pain, physical hardship, loneliness, and friction between individuals (Barrett & Martin, 2014). Risk perception in extreme sports has attracted a small number of studies (Pedersen, 1997; Vagias, Morais, & Dziubek, 2005), but the motivational factors that influence individuals' desire to participate in extreme sports have not yet been systematically investigated. The trend of increasing participation in leisure-time extreme sports merits examination (Brymer& Schweitzer, 2012; Puchan, 2004; Reiman et al., 2007). We do not fully understand what motivates individuals to participate in such high-risk behavior (Lyng, 1990).

Reasons for participating in leisure-time extreme sports have been suggested in a number of studies that did not adopt a systematic examination of motives based on an established theoretical framework, such as Self-determination Theory (SDT; Deci& Ryan, 1985). Motives that have been suggested include fun/enjoyment and risk taking (Ko, Park, & Claussen, 2008), social, sensation-seeking, and self-image (Ewert, Gilbertson, Luo, &Voight, 2013), elements of freedom (Brymer & Schweitzer, 2013), and positive transformation (Allman, Mittlestaedt, Martin, & Goldenberg, 2009). These elements are described as necessary for having different, new, complicated sensations and experiences and a desire for social and physical risk-taking (Zuckerman, 1979). A tendency for searching and discovering new and intense experiences is part of being human (Arnett & Balle-Jensen, 1993). Human beings bravely search for extreme activities with risks of fear and death to make them stronger and greater (Brymer & Oades, 2009). Risk-focused models have treated adventure nature sports (ANS) as niche activities, involving a small number of participants with specific personality characteristics. Houge and Brymer (2018) suggested that personality

characteristics are too narrow and proposed that positive psychology can be applied to conceptualize ANS as health and well-being activities. In a study of extreme endurance athletes, Schüler, Wegner, and Knechtle (2014) reported that implicit achievement and affiliation motives interact respectively with satisfaction of the need for competence and the need for social relatedness proposed in SDT (Deci& Ryan, 1985), to predict flow experience and well-being.

A perspective on PA developed by Kenyon (1968) foreshadowed people's need to experience emotions associated with risk and danger. Kenyon proposed a conceptual model characterizing attitudes to PA as a multidimensional phenomenon (Kenyon, 1968). In the model, Kenyon identified six dimensions, namely attitudes to PA as a social experience, health and fitness, the pursuit of vertigo, an aesthetic experience, catharsis, and an ascetic experience. In a study based on Kenyon's model, Smoll and Schutz (1980) reported that Grade 4 to 6 aged boys scored significantly higher on vertigo and catharsis than girls, suggesting that the experience of excitement from participating in risky and dangerous forms of PA (vertigo) and the release of emotional feelings, such as stress (catharsis), are important, especially to males, even at quite young age. Although Kenyon examined attitudes, rather than motives, and his work has gone into abeyance for several decades, we propose that the search for experiences involving vertigo and catharsis could be motives more strongly associated with participation in extreme sports than traditional sports, as serious leisure pursuits.

China, where the current study was conducted, has experienced rapid development of the social economy, living standards continue to improve, and the pace of life is speeding up. More people are eager to escape from boring work and the increasing pressure of life (Zhao & Wang, 2009). Yet, China has also witnessed a decline in leisure-time physical activity participation (China Sport General Administration, 2014). As self-challenging activities, leisure-

time extreme sports can meet individuals' needs to escape from daily life, tap their potential, and seek stimulation or excitement (Fang, 2013). Extreme sports attract people who are interested in novelty, especially young people who tend to be more receptive to new experiences (Su, 2015). Therefore, extreme sports have become sought-after in China. Current studies in China mainly focus on the characteristics and values of leisure-time extreme sports and related competitions from cultural aspects and predict future trends (Dong & Ma, 2016; Su, 2014; Wei, 2017). The significance and value of extreme sports are affirmed by elaborating their characteristics, which include high-risk, ornamental, fashionable, high-challenging, and recreational elements (Zhang, 2013).

Researchers in China have reported case studies of particular leisure-time extreme sports, such as parkour and paragliding (Fang, 2013; Long, 2010). Also, there are several case studies related to current participation in specific contexts, such as the development of extreme sports during higher education (Pan & Yang, 2006; Xu, 2014). Results for paragliding participants showed that their main motives for participating were to release life pressure, to have a new experience, and to challenge themselves (Zhang, 2013).

Studies have pointed to development challenges of extreme sport because government and industry have been challenged to have policy settings and resources to encourage the growth of leisure-time extreme sport. The present study employed a qualitative research design to explore the reasons why experienced extreme sports participants choose to take part in serious leisure-time physical activities classified as extreme. We chose this exploratory interview approach because we consider that existing qualitative research on this question is suggestive, rather than conclusive, involving diverse findings in different studies. Current, validated, self-report measures of motives for participation in traditional forms of sport and PA, such as MPAM-R and PALMS, might not comprehensively address all the motives individuals have for participating in extreme sports. No questionnaire on motives for participation in

leisure-time PA, of which we are aware, includes motives associated with vertigo or catharsis. However, based on research conducted on attitudes to physical activity (e.g., Kenyon, 1968a; Smoll & Schutz, 1980), vertigo and catharsis seem consistent with the risk-taking and stress release aspects of motivation reported in several, recent qualitative studies of extreme sports. Our theoretical base is motives for participation in PA that is related to SDT (Deci& Ryan, 1985). To avoid imposing that framework on this study we chose the exploratory approach. Thus, the purpose of this study was to explore motives for extreme sport motivation. The research questions were constructed to understand extreme sport participation and, in particular, the main reasons for participants' involvement in their chosen activity.

Method

Participants

We interviewed 14 Chinese extreme sport participants. Four respondents reported that they were mountain climbers, five told us they were rock climbers, two said their main activity was ice climbing, two identified their expertise as downhill mountain biking, and one participated in paragliding. Four participants were female and 10 were male. They were aged between 10 and 43 years (M = 27.8; SD = 1.36). The study participants had at least two years of participation in their chosen extreme sport and participated for a minimum of two hours per week on average at the time of the study. The participants included five athletes, who were active in international and domestic competition, comprising a female and two males from mountaineering and two men from rock climbing, and nine amateurs, including six males and three females, who usually participate in extreme sports domestically. Although the sample included five professionals, they all fit in Stebbins (2015) description of certain serious leisure pursuits as "nature-challenge hobbies" (p. 9).

Measures

We used semi-structured interviews to obtain information about participants'

experience of extreme sport and the perceived factors associated with their development. Initially, we gathered demographic information about participants' age, gender, sport domain, and years of extreme sport experience. We asked athletes about their highest level of performance and their current level of participation. In the second phase, we invited participants to expand on how they started participating in the activity, how they developed and, how they reached their current level. This phase of the interview provided further background information and encouraged participants to become comfortable talking and build rapport with the interviewer. The final phase focused on the study's main focus by asking about the main reasons for participation in their chosen activity. In most interviews, the conversation was free flowing and cooperative. When needed, we used follow-up questions to ascertain respondents' motives for participating in their extreme sport, to focus on the question, and gain accurate information. We followed unclear responses with clarification probes and asked participants if there was anything else they wished to say at the conclusion. We stopped interviewing when we had interviewed 14 participants, because we had reached theoretical saturation (Glaser & Strauss 1967), that is, the participants' answers did not provide any new information.

Procedure

Zhejiang University Human Research Ethics Committee approved the study. The first author (LZ) conducted recruitment based on personal acquaintance and snowball sampling from those initial contacts. We conducted interviews at places that were quiet and free from distractions or interruptions. At the start, LZ introduced herself and gave participants an information statement about the research and encouraged them to ask questions. We then conducted the interviews as described in the Measures section. Interviews were recorded, with participants consent. Interviews ranged from 40 to 60 minutes in duration amounting to around 14 hours of recorded content. After each interview, LZ transcribed the content

verbatim into a word document and sent the transcribed text to the corresponding participant for confirmation. If there were some points missing or mistaken, the participants revised them. Then JZ translated the transcripts from Chinese to English. JZ sent the English transcripts to TM, TM asked a Chinese student who was studying in Australia to translate the material back to Chinese to double check that the original meaning was retained.

Analysis

We used inductive content analysis to identify raw-data themes, higher-order themes, and general dimensions that emerged from the interview transcripts. The process of independent analysis by three authors increased trustworthiness. The raw-data statements were drawn from each interview transcript in search of terms, feelings, and thoughts describing their extreme sport motives and experiences. Once participants' experiences were repetitive we advanced to the next stage of data analysis. This process aimed to identify similarities and differences between experiences of participants. LZ and TM conducted independent groupings of raw data statements into raw-data themes that summarized the content. Then we grouped these into first-order themes and general dimensions. LZ and TM verified that the specific raw data statements were classified under the correct raw-data theme and the title of each raw-data theme was appropriate. Then, LZ and TM independently categorized the raw-data themes into first-order themes and grouped the first-order themes into general dimensions. Grouping raw-data themes into first-order themes and first-order themes into dimensions involved inductive processes. However, identification and naming of the dimensions included a deductive process because the dimensions corresponded to motives derived from previous quantitative research. We also assessed the accuracy of the analysis, in relation to its validity (the extent to which each statement accurately reflects extreme sport motives); mutual exclusivity (each theme fits only one dimension); distinction (separating each category from other categories without overlap); and exhaustivity (assuring that all

relevant data fitted into a category). LZ and TM discussed differences until they achieved consensus on the themes and dimensions. Then JT independently reviewed the thematic content analysis and a second discussion process led to final consensus. This review produced a synthesized table of the raw-data themes, first-order themes, and general dimensions.

Results

The outcome of the inductive-deductive content analysis is summarized in Table 1. In the analysis, we identified 2,051 raw data statements that we classified into 108 raw-data themes, representing 23 first-order themes, from which we resolved nine general dimensions. In the Results section, we identify each general dimension and describe the first-order themes within it, quoting examples of statements reflecting the most frequent raw-data themes within each first-order theme. To maintain confidentiality, we cite code numbers with the quotes, demonstrating that they reflect comments made by the range of participants.

Mastery

Mastery refers to a motive associated with setting and attaining goals that are self-referenced. Mastery goals (Zeigler-Hill & Shackelford, 2019) involve achieving higher levels of skill or attainment than one has achieved before without comparison to the achievements of other people. Mastery included two first-order themes, namely Achievement and Challenge. The Achievement theme reflects the attainment of a high-level achievement, usually beyond one's best effort. It might also reflect doing something one has never done before or attaining a high level in a new way. One climber stated, "We conquered all the five peaks" (P08). The Challenge theme is associated with setting goals that go beyond what has previously been attained. The participants referred "what impressed me most is the successful challenge to what you think cannot be challenged" (P09) and "actually, every time we

experienced was very impressive because what we did was very challengeable and extreme, so every time was special." (P13)

Enjoyment

Enjoyment is a general dimension that refers to the experience of pleasure and satisfaction attained simply from performing a task. Enjoyment comprised four first-order themes, which were Fun, Passion, Interest, and Enjoyment. Fun means something that provides mirth or amusement. One climber described it thus, "I would like to talk about the charm of climbing, it's full of leisure elements and fun" (P11). The second first-order theme is Passion, which means an intense desire or enthusiasm for the activity, "I have such passion from then on. … Because of such passion, I developed it from hobby to profession" (P01). The third first-order theme, Interest, is the feeling of wanting to know or learn about something. A participant stated, "The biggest reason must be personal interest, … maybe something related to my inner desire" (P06). The final first-order theme in this general dimension is Enjoyment, the state or process of taking pleasure in something. Participants said, "I enjoyed the sense of achievement it brought." (P05), and "I just like sports" (P01)

Psychological Condition

The general dimension Psychological Condition refers to aspects of mental health and wellbeing. Psychological Condition comprised three first-order themes, which were Enhanced Mental State, Relaxation, and Mental Toughness. Enhanced Mental State (Plante & Rodin, 1990) is connected with the ability to respond to the ongoing demands of an experience with the range of emotions and thoughts in a manner that is socially acceptable and sufficiently flexible to permit spontaneous reactions (reaction that occurs in a given set of conditions without intervention), as well as the ability to delay spontaneous reactions as needed. One down-hill cyclist described how participating in the activity helped to enhance mental state:

> It can develop one's character, when you are used to challenge yourself, you may become [develop] perseverance. I can push such a heavy bicycle to the top of the mountain just for Downhill. That will train my mind. I will make up my mind to challenge my target. (P12)

Relaxation refers to activities that provide stress relief, and a feeling of calmness. One paraglider described it like this, "It is a kind of relaxing and freedom when flying above the sky." (P10). Mental Toughness is an individual resilience and self-belief, allowing individuals to become more effective athletes, able to cope with demanding training and difficult competitive situations, emerging without losing confidence. It was described by one climber as follows, "Since you have already known the result, you'll never feel regretful. What doesn't kill you only makes you stronger, you know." (P14).

Physical Condition

As a general dimension, Physical Condition is the state of body functions. It comprised of two first-order themes, which were Health and Physical Strength. Health here means a state of physical wellbeing and not merely the absence of disease or infirmity. As one participant said, "It's good for health, I think climbing is definitely good for physical ability" (P06). Physical Strength relates to bodily capacity, particularly the ability to do sports and physical exercises well. It was described by a climber in this way, "on the physical level, you know sports makes you stronger, keeps you away from getting ill, and it also improves your physical endurance." (P05).

Others' Expectations

Others' Expectations is a general dimension that relates to motivation to participate in physical activities that is driven by the expectations of significant others, especially those through whom individuals earn a living, experts who provide advice to a family. Three first-order themes in this general dimension were Future Occupation Preparation, Financial

Rewards, and Family Support. One participant told us, “I think I will never leave climbing and it will be my occupation in the future.” (P02). Financial Rewards means the extreme sport participants can win prizes or gain material wealth for doing their activity, aside from any paid job, for example, by winning competitions with prize money. As a motive for participating, one successful climber stated, “the material wealth, the ability I establish myself in society and support myself … Maybe I will choose to be a coach for months or go to climb around the country after getting a bonus from competition.” (P05). Family Support reflects the way in which financial and informal, attitudinal support from close family gives extreme sport participants positive expectations about their participation in the activity. This was a widely reported reason for participants’ involvement in their activity with 71 raw data statements identified in the transcripts.

Affiliation

The general dimension Affiliation refers to a motive based on the need for social relatedness. Affiliation is associated with doing activities for the social interactions they involve, usually in groups or teams, providing a feeling of social relatedness. We identified one first-order theme in the Affiliation dimension, which we interpreted as Affiliation. Affiliation refers to the experience of being closely connected or associated with other people, such as friends, who are also involved in the extreme sport, or organized groups, such as sports teams. One climber said, “Yes, most of the time I’m alone, during climbing, it’s better to be with your team members.” (P01). Another respondent explained,“from this lifestyle, you can learn much about human relationship, and your view of life and value are also different. When you return to your ordinary work or do other things, the way you deal with things might differ.” (P13).

Competition

The essence of the Competition general dimension is the act of competing, which involves rivalry, that is, there is a contest in which a winner is selected from among two or more entrants. Two first-order themes in this general dimension were Recognition in Competition and Competition. Recognition in Competition is connected with winning the prizes, showing their talents and standing on the podium, “It brings me chances to win prizes.” (P04). Competition is more about the act of competing with others, not winning alone. One participant stated, "I only take part in non-professional competitions, personally speaking, I don’t give it [prizes] a shit, I do it [compete] only for fun.” (P06).

Vertigo

Vertigo is a general dimension that encompasses participating for the thrill, excitement, danger, and risk. These experiences are at the core of extreme sports. The Vertigo general dimension comprised four first-order themes: Danger, Extreme Experience, Excitement, and Risk. Danger is exposure to harm or injury, or peril. One climber said, “You know, we came across an accident when we were climbing on a snow mountain last August, and it was so dangerous.” (P09). Extreme experience relates to functioning at the edge of what is possible. One climber described it like this,

> The most unforgettable experience occurs when we climbed a virgin mountain. …we finally made it the third time… we had to camp at where we were at that moment, on the cliff rock! … all you had was a place 30cm or so. You had to sit there hanging in the air whole night praying for dawn, it was really dangerous and tough. (P14)

Excitement is a feeling of great enthusiasm and eagerness. One participant stated, “It’s exciting; it makes me feel being challenged.” (P04). Risk is a probability or threat of damage, injury, loss, or any other negative occurrence caused by external or internal vulnerabilities, that may be avoided through preemptive action. One climber told us, “They think climbing is risk, you know they have little knowledge about the sport, hanging in the air seems quite unacceptable to them.” (P06).

Catharsis

Catharsis is a general dimension reflecting a motive that has been defined as releasing emotional tension such as after an overwhelming experience that restores the one's spirit (Reeck, Ames, Ochsner, 2016). Catharsis encompassed two first-order themes, Spirit and Refreshment. Spirit included 41 raw-data statements, indicating the breadth of experience of this spiritual element of the Catharsis motive. Spirit refers to a special attitude, an inclination or impulse. It has also been described as a transcendent experience (Wong, 2016). One participant described it as, "I think it has already been a sort of belief of mine, I mean part of my spirit. So I can't figure out a specific reason, it's just so natural to me." (P07). There were five first-order themes in Refreshment, which reflects the sense of feeling refreshed as a result of experiencing the extreme sport. One participant said this, "the sport brings so much, it gives you the chance to experience extreme feelings, both visually and mentally. And get you refreshed." (P01).

As in most content analyses, statements that participants made often included reference to several dimensions. For example, terms like challenge, excitement, and achievement arose in statements that also referred to aspects of mastery, psychological condition, vertigo, and catharsis. In this section, we have presented meaningful statements as participants enunciated them, whereas we have included the specific words or phrases within the appropriate dimensions in the inductive content analysis.

Discussion

We drew two main conclusions in this qualitative study exploring the motives for participating in leisure-time extreme sports among 14 Chinese participants in high-level extreme sport activities. First, the participants identified seven motives for participation that were consistent with motives frequently identified in participation motivation research examining traditional sports. The general dimension motives were mastery, enjoyment,

physical condition (health), and affiliation, psychological condition (wellbeing), others' expectations, and competition/ego (Molanorouzi et al., 2014, 2015; Roychowdhury, 2018). Second, we identified vertigo and catharsis as two motives that have not been reported in research on participation motives in traditional sports and PA, but have been reported in research on attitudes to physical activity (Kenyon, 1968; Smoll & Schutz, 1980). These two motives were particularly important to the serious leisure-time extreme sports participants in this study. Previous qualitative studies have reported risk, thrill, and excitement as reasons for participating in extreme sports, which is consistent with the first-order themes that make up the vertigo dimension in the present study (Davis-Berman et al., 2002; Demirhan, 2005; Heggie & Heggie, 2012). To our knowledge, researchers have not previously identified catharsis as a motive for participation in extreme sports (Lyng, 1990), although the identification of elements of freedom (Brymer & Schweitzer, 2013) and positive transformation (Allman et al., 2009) could be related to catharsis.

The seven general dimensions that correspond to motives for participation in traditional sports are well established in research on participation motivation (Gill, Gross, & Huddleston, 1983; Molanorouzi et al., 2014). Further, the motives are measured by validated questionnaires, such as the MPAR-R (Ryan et al., 1997), which includes mastery, enjoyment, health, and social motives, and the PALMS (Morris & Rogers, 2004), which includes all seven motives. No questionnaires on motives for participation in PA have systematically included extreme sports in their development or validation studies. The identification of these seven motives in the reasons given for participation by leisure-time extreme sport athletes supports the universality of these motives across the breadth of physical activity. The only motive present in both the MPAM-R and the PALMS that was not reported by extreme sport athletes was appearance. It is not surprising that athletes performing activities in which they risk serious injury or death are not primarily motivated by improving their appearance. This was exemplified by a mountaineer's statement in which he referred to hanging off a cliff

overnight in the pitch dark just praying for dawn. It should be acknowledged that most of the participants in the present study participated in sports at the high-risk level of extreme sports.

The frequency with which certain reasons for participation were cited should be noted. It was clear that participants in the present study considered mastery, enjoyment, and psychological condition to be key motives for participating in their activity, whereas physical condition, others' expectations, affiliation, and competition/ego were less prominent. A high level of physical condition is essential for most of the extreme sports represented in the current research, but it is not a major reason for participating. The few participants with paid jobs in their activity, reported doing the jobs to fund their participation, rather than participating to obtain employment. Also, many participants undertook their extreme sport alone most of the time (lower affiliation motive) and did not compete against other people (lower competition/ego), often focusing on the challenge of "beating" an imposing peak, an ice field, or a treacherously steep bicycle mountain descent. This reinforced the element of a nature-challenge hobby (Stebbins, 2015) among the participants.

Although the process of identifying the general dimensions was inductive content analysis, we recognized their alignment with familiar motives operationalized in questionnaires, such as the PMQ (Gill et al., 1983), the MPAM-R (Ryan et al., 1997), and the PALMS (Morris & Rogers, 2004). Consequently, naming the seven general dimensions involved an element of deductive analysis. Similarly, the themes that resolved into the two new dimensions seemed to resonate with the concepts of vertigo and catharsis, with which we were familiar from the work of Kenyon (1968a, b). This application of deductive processes toward the end of an inductive analysis has become accepted practice in studies where established conceptualizations exist that correspond to themes and dimensions that emerge through inductive processes (Charmaz, 2006).

The two general dimensions of pursuit of vertigo and catharsis have not been reported in research on motives for participation in traditional sport and physical activity. They are not

included in any popular questionnaires on this topic, so they would not have been identified had we adopted a quantitative approach to the present research question. Kenyon (1968a) identified six attitudes to physical education, labelling two of them pursuit of vertigo and catharsis. His descriptions of these attitudes appear to correspond to the content of the general dimensions that emerged from our interviews, so we named them pursuit of vertigo and catharsis. We acknowledge that we shifted from the inductive process to a deductive conclusion, using terms previously applied to similar qualities, but in the different context of attitudes, not motives.

Kenyon (1968a) defined the conception of pursuit of vertigo as, "those physical experiences providing, at some risk to the participant, an element of thrill through the medium of speed, acceleration, sudden change of direction, or exposure to dangerous situations, with the participant usually remaining in control" (p. 100). The pursuit of vertigo highlights the attraction of activities involving risk, thrill, danger, and excitement. Kenyon argued that because individuals usually approach vertigo, without actually achieving it, "the experience becomes the *pursuit* (italics from original) of vertigo." (p. 100). We identified the four first-order themes, constituting the general dimension vertigo, as risk, extreme experience, danger, and excitement, based on the way participants described their reasons for participating in their chosen leisure-time extreme sport. We consider that these elements form the essence of extreme sports, whether those activities involve competition with other people or a battle with the elements. A number of studies of extreme sports have also reported the risk and the danger as major reasons why individuals participated (Brymer & Schweitzer, 2012; Reiman et al., 2007).

Kenyon (1968a) proposed that physical activity can be "perceived as having a cathartic function, that is, the belief that physical activity can provide release from frustration and so-called pent-up emotions created by pressures of modern living" (p. 101). Kenyon

acknowledged that this definition "departs somewhat from the meaning the term has in the context of Greek drama" (p. 100-101), but observed that, nonetheless, writers from philosophers to psychiatrists have employed catharsis in the more general sense of a socially acceptable outlet for frustration or aggression. In the interviews in the present study, participants expressed this through the use of terms like freedom of spirit and refreshment, which reflect positive outcomes of the release of pent-up emotions through participation in extreme sport activity. We identified spirit and refreshment as the two first-order themes that resolved into the general dimension of catharsis. Participants in the interviews repeatedly talked about how involvement in their leisure-time extreme sport lifted their spirit. They also frequently reported being refreshed as a result of their extreme-sport experiences. The passion with which participants referred to these outcomes led us to conclude that catharsis can be described as a release of emotional energy, as after an overwhelming experience, that restores or refreshes the spirit, which reflects the essence of catharsis in the way the extreme sport participants in this study described it.

An essential distinction between vertigo and catharsis appears to be that vertigo is experienced during performance of the activity, whereas catharsis is an outcome of participation. Leisure-time extreme sports participants in this study referred to the risk, extreme experience, danger, and excitement they experienced while they participated. They referred to the raising of their spirit and refreshment that they enjoyed following completion of a momentous challenge in their activity. Catharsis has rarely been reported in studies of the experiences of extreme sport participants (Perinbanayagam, 2006). Further research examining the experience of catharsis in extreme sports seems to be warranted.

Seven well-established motives and two new motives for participating emerged from inductive-deductive content analysis of the interviews with Chinese leisure-time extreme sport athletes. The emergence of the seven well-established motives in the context of extreme sports supports the universality of these motives. Most importantly, the two new motives,

vertigo and catharsis, seem to depict the essence of extreme sports, yet they need to be replicated in diverse leisure-time extreme sport samples.

Limitations

This study was exploratory, so a number of limitations should be noted. First, the extreme sports that constituted the sample were chosen on the basis of access to highly-committed participants. The sports comprised mountaineering, rock climbing, ice climbing, mountain biking, and paragliding. These activities reflect particular aspects of the diverse range of extreme sports. Replication of the present research is essential with extreme sports that represent the diversity of the genre, including aerial sports, water sports, bungee jumping, BASE jumping, extreme hiking, and ultra-endurance races (Mei-Dan &Carmont, 2013).

Within the sample, the extreme sport representation was unbalanced. Mountain climbers of several types dominated the sample. A number of raw-data statements and themes probably reflect their experiences. Categorization of the verbatim statements into broader themes resulted in general dimensions that we consider sufficiently generic to reflect motives likely to be endorsed in the wide range of leisure-time extreme sports. Further study of the vertigo and catharsis motives identified here, alongside the established traditional sport motives, would be valuable.

Given the diversity of gender**,** age, experience, and level of participation up to globally outstanding mountain climbers, it was not possible to derive patterns from the data for these important variables. Identifying variations in primary motives for key demographic variables will require research with much larger samples of leisure-time extreme sport participants, using quantitative methods, involving self-report questionnaires. This study provides an important step towards developing instruments to be used in such large sample, quantitative research, including the key motives of vertigo and catharsis.

Future Research

Examining the motives for participation of individuals involved in a wider range of leisure-time extreme sports should be informative. It is important to examine whether the motives identified in the present study are reflected across diverse extreme sports to determine if the present results are generalizable. Purposive sampling by activity to ensure comparison of a diverse sample of extreme sports, each comprising an adequate number of participants, should be a priority to extend the present research. Further research of this kind will also determine whether the motives of vertigo and catharsis play a key role in participation in extreme sports, as is suggested by their prominence in the present sample.

Although rich insights can be gained from qualitative studies, quantitative methods are useful to examine patterns for variables, such as gender, age, playing level, and types of activity. The similarities between the motives for participation in extreme sports with motives for participation in traditional sports, e.g., PALMS (Morris & Rogers, 2004), suggests that a fruitful approach could be to develop items following the PALMS format for the two new extreme sport motives, vertigo and catharsis. An extended version of PALMS could then be administered to participants in various types of activities to examine similarities and differences in motives. A comparison could be made between motives for participation in traditional sports in general and extreme sports in general. We predict that leisure-time extreme sport participants would certainly acknowledge motives, such as mastery and enjoyment as important reasons for participating in their extreme activities. However, we would expect vertigo and catharsis to be the highest-rated motives among extreme sport participants. This is based on indicative findings of previous research and on our results in the present study. As noted in reviewing the literature, risk, thrill, and excitement, which reflect the vertigo motive, have been highlighted in previous studies (e.g., Ewert et al., 2013; Ko et al., 2008), whereas freedom and positive transformation have been reported, which reflect the catharsis motive (e.g., Allman et al., 2009; Brymer & Schweitzer, 2013). In the

present extreme sport research, most participants not only reported vertigo and catharsis, many participants frequently referring to these reasons for participating, but the high intensity, often passion, of the statements made by participants also reflected the pre-eminent position participants attributed to these motives. Similarly, while mastery, enjoyment, and psychological condition would be expected to rate highly among traditional sport participants, we anticipate that vertigo and catharsis would be acknowledged as motives, especially by participants in some of the more dynamic or physically-demanding traditional activities.

Further understanding of differences in primary motives for participation in extreme sports compared to traditional sports, and different types of extreme sport is a fruitful direction for future research. It would consider a comparison of ratings of participants in different types of leisure-time extreme sports on an extended version of PALMS, including vertigo and catharsis motive sub-scales, based on the demands the activities place on the body and mind of participants. Research on different types of traditional sport, including team sports, individual body movement sports, racquet sports, exercise activities, and martial arts has identified different profiles of motives for those different types of activity (Molanorouzi et al., 2015; Morris et al., 1995). Similarly, it could be that group extreme sports show a different profile of motives to individual extreme sports, or that intense, endurance extreme activities, such as mountaineering and ultra-marathon, demonstrate a different pattern of motives to short, explosive activities, such as bungee-jumping, base jumping, and paragliding. Examination of differences for the new motives, vertigo and catharsis, as well as the balance between those motives and the established motives for participation in traditional sports, exercise activities, and martial arts, could provide the basis for the development of strategies to increase participation in all physical activities to enhance global health and wellbeing.

Implications for Practice

Studies using questionnaires to examine differences between motives for extreme and traditional sports and physical activities, as well as between different types of extreme sports should provide insights that could be used to increase understanding of motives for participation in traditional and extreme sports. These motives should be a focus of the promotion (Willig, 2008) of extreme sport programs and activities. In particular, promotion material for extreme sport may include elements of catharsis and vertigo in the images and text. This could lead to an increased level of actual participation. We consider that a major aim in the area of motivation in physical activity is to increase the proportion of the population that participates in physical activity, as well as increasing the amount of activity among those who are already physically active. Understanding the motives of physically active people should guide the development of strategies to encourage increased participation. This would achieve an important goal in terms of participation in physical activity for population health and wellbeing in the long term.

A key factor affecting participation in leisure-time physical activity is access to different activities (Powell, Slater, Chaloupka, & Harper, 2006). Research on leisure-time extreme sports has identified characteristics that make access more challenging than for many traditional sports, such as distant or difficult to reach geographical locations, highly specialized equipment, and demanding physical conditions (Heggie & Heggie, 2009). It seems likely that the growing popularity of serious leisure-time extreme sports might be increased further were opportunities to participate made more accessible. This seems to be a challenge for the leisure industry to address that has the potential to provide many more people with life-enhancing experiences through leisure-time extreme sports.

Conclusion

In this study, we aimed to examine motives for participation of highly-committed, leisure-time extreme sport participants, using in-depth interviews. Inductive-deductive

content analysis of the interviews revealed a substantial degree of commonality with the motives of traditional sport and physical activity participants. Importantly, two new motives, vertigo and catharsis, emerged from the analysis that appear to strike at the heart of the extreme sport experience.

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Table 1

Inductive Content Analysis showing Raw Data Themes, First-order Themes, and General Dimensions of Motives for Participating in Extreme Sports

Raw data themes	First-order themes	General dimensions
Push yourself to the edge (4) Effort and perseverance, finally succeed (12) Sense of achievement (4) Finish a route (2) Climb to a brand new height (1) The accomplishment of conquering (11) Conquered all five peaks (16) Finished challenge…crossed your limit (8) I felt so proud of myself (16) Very impressed (14) I can get the feeling of achievement (2) Go beyond yourself (4) First gold medal for China (1)	Achievement	Mastery

Makes me feel challenged (18) Process of ultimate challenge (37) Challenge my target (6) Challenge…like challenges (6) Was very challenging (19) Hardness during process of climbing (11) Battle….enemy of self (6) I like doing some adventure (3) I like being challenged (3)	Challenge	
Just for fun (6) Like to have fun (21) Climbed for fun (3) It was so fun (3) Do it only for fun (2) Leisure elements and fun (31) I play it just for fun (26) I took it up for fun (5)	Fun	Enjoyment
Such passion (3) Fell in love with it – passion (21) Became so passionate (7) Relieve your passion (49) Can't hold your desire (52)	Passion	

Interesting (83) Find it fascinating (1) Charm of climbing (65)	Interest	
Enjoy the process (46) I enjoy it so much (30) Just do what I want (18) I like it (6)	Enjoyment	
Train our ability of thinking and judgment (6) Develop one's character (45) Train my mind (1) View of life and values are so different (29) Elevates you to whole new level (11) It is like taking a drug (93) Became more determined and confident (1)	Enhanced mental state	Psychological condition
Chance of self-relaxing (32) Get relaxed when under pressure (6) It can help me to relax (3)	Relaxation	

Stronger mentally (38) Makes me tougher when I encounter difficulties (1) Made me stronger (1) Tougher to conquer difficulties (29) Makes me tougher (29) What doesn't kill you, makes you stronger (1) Know one's limit (62)	Mental toughness	
Keeps us healthy (13) Good for health (23) Move my body (17) Riding makes me healthier (25)	Health	Physical condition
Stronger – physical (37) Physical level – makes stronger (10)	Physical strength	
I can make a living doing this (1) It will be my occupation (6) That's my job (1)	Occupation	Others' Expectations
Material wealth (25) Got prize (3)	Financial rewards	
Promote a kin bond (family) (11) With the support of your family (71)	Family support	Affiliation

Better to be with team members (1) Keep each other company (1) Partner's company (30) Hanging out with people… enjoy same interests (13) At least two friends make a team (6) Made friends (3) The atmosphere of our group (25) Lots of interesting people (1)	Affiliation	
Win prizes (19) Show my talents (7) Stand on podium (3) Achieve the top three (34) Show me earning place in top eight (38) They came to congratulate (1)	Recognition in competition	Competition
Competition (21)	Competition	
The more dangerous you feel (7) Almost has killed me (37) Weather…awful…very cliffy (5) Really dangerous and tough (47)	Danger	Vertigo

Experience extreme feelings (9) Under the extreme pressure (6) Rush downhill, while snowing (42) Extreme (30) Virgin mountains, none made it (before) (8) Explored extreme environment…true colors (7) Go beyond yourself (56)	Extreme experience	
Exciting (17) Pursue something more exciting (74) It is exciting (3)	Excitement	
Like risks (68) Height means risk…but safe (3) Run away in risky situations (30)	Risk	
Part of my spirit (41)	Spirit	
Get refreshed (10) Feel crystal clear (8) Kind of relaxing & freedom (16) I feel so refreshed (17) Doing extreme sports can help me refresh bodily and mentally (5)	Refreshment	Catharsis