BEHAVIOR REGULATIONS AND MOTIVES TO PARTICIPATE IN PHYSICAL ACTIVITY OF FINNISH TEAM SPORTS ATHLETES

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Master's Thesis in Sport and
Exercise Psychology
Spring 2014

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ACKNOWLEDGEMENTS

First of all, I would like to thank my thesis supervisors Dr. Montse Ruiz and Dr. Mary Hassandra for their constant guidance and encouragement in my journey of writing master thesis. I would also like to thank Professor Taru Lintunen for her support and leadership to the department.

The journey would not be possible without my classmates in the 2012-14 Sport and Exercise Psychology Master Program, especially to the project coworkers, Chunli Kok, Paula Thesleff, Yara Rietdijk, and Yang Tao. Thank you all for inspirations and contributions.

And finally, to my family and friends, you make me who I am today.

ABSTRACT

Houyuan Huang, 2014. Behavior regulations and motives to participate in physical activity of Finnish team sports athletes. Master's Thesis in Sport and Exercise Psychology. Department of Sport Sciences. University of Jyväskylä. 55 p.

The study examined the motivation to participate and behavior regulation in team sports among Finnish athletes. It explored differences across gender and among various team sport types. One hundred and seventy five girls and 142 boys (aged 12 to 24 years old) participated in the study. Motives to participate were measured on the Physical Activity and Leisure Motivation Scale (PALMS, Morris & Rogers, 2004), while behavior regulations were measured on the Behavior Regulation in Sport Questionnaire (BRSQ, Lonsdale, Hodge & Rose, 2008). Others' expectation was excluded from calculations due to low reliability. Participants scored higher on mastery, enjoyment and physical condition in PALMS scales. In regards of behavior regulations, participants reported higher intrinsic regulation, integrated regulation and identified regulation. Sums of scores from both PALMS and BRSQ subscales generally exhibited a simplex pattern ordering. In PALMS, physical condition showed a higher correlation with psychological condition and appearance, while in BRSQ Integrated regulation showed a higher correlation with identified regulation. Comparing between two questionnaires, mastery and physical condition were correlated with identified regulation. An independent sample t-test indicated that girls reported significantly higher means in integrated regulation, mastery, affiliation, physical condition and appearance while boys showed significantly higher means in competition/ego. A one-way between-groups analysis for variance indicated significant differences in PALMS and BRSQ subscales for team ball games participants and aesthetic sports participants. Post- hoc comparisons indicated that aesthetic team sports (e.g., synchronized skating) reported significantly higher means than invasion contact ballgames (e.g., ice-hockey) on item mastery. Aesthetic group also reported significant higher means than invasion non-contact ballgames (e.g., basketball) on item identified regulation, mastery and affiliation. Invasion contact ballgames and invasion non-contact ballgames both showed significantly higher means than aesthetic team sports on item competition/ego. Discussion and conclusion were made and further research direction was suggested.

Keywords: Behavior regulation, Motivation, team sports, PALMS, BRSQ, gender, sport type

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1 INTRODUCTION

Participation in physical activities has been suggested by previous researchers as a solution to reduce the disadvantages of sedentary lifestyle (Biddle & Mutrie, 2001). However, a considerable percentage of the population worldwide is not meeting the recommendations for sufficient physically active lifestyle suggested by WHO (2010). To facilitate participation in sports, exercise or other forms of physical activity, understanding the motives behind the active behaviors is a crucial element in order to design appropriate programs, to establish better interventions as well as to promote relative events with higher participation rate and lower dropout possibility. In addition, it is also essential to understand the motives of youth taking part in physical activities to develop more adequate and early interventions to prevent future inactivity and possible diseases related to sedentary lifestyle. However, the forms of exercise, sports or other physical activities are different from each other depending on the nature of each activity type. Moreover, exercise activities and sport activities require people having different motives to participate, i.e., a daily amateur jogger might have different motives compare to a professional sprint runner. Even within the same category of exercise or sport there exists various types of activities that motivate people in different ways, i.e., in individual sports, people who compete in swimming might enjoy the activity in a different way compare to those who perform in gymnastic contests. Moreover, people who participate in physical activity might be motivated in different ways between different gender groups, i.e., a boy might report different motivations from what a girl does even though both are participating in soccer clubs. In conclusion, having better knowledge on how different groups are motivated helps design, promote and facilitate physical activities and raise up the participating population in both quantity and quality.

2 LITERATURE REVIEW

2.1 Physical Activity, Exercise, Sports and their benefits

Physical activity can be described as any form of human body movements which consume energy (Caspersen, Powell, & Christenson, 1985). Caspersen, et al (1985) stated that physical activity comes in many different forms in our daily life, such as household activities, labor activities in workplace, or others. Secondly, in the case that a physical activity is planned, structured and is also repetitive, in order to improve or maintain one's physical ability which can be measured by energy expenditure for example, it is defined as an exercise which is also under the category of physical activity (Caspersen et. al, 1985). Finally, sports, according to Caspersen et al (1985), is another form of physical activities which people also carry out to enhance their physical fitness, i.e. cardio respiratory endurance, muscular strength, agility or coordination. In this case, sport practitioners are often trained in a regular or irregular manner and also perform in a planned and structured competition. In conclusion, physical activity, exercise and sport share more or less similar features with each other, but also can be categorized to each own definition. Thus, the present research focused on the sports category in which participants practice their sports to compete. In the relation between physical activities and health, it has been confirmed that physical activities, including sports and exercise, help prevent chronic diseases and people who reported more physically inactive are exposed to higher risks of health problems (Warburton, Nicol, Bredin, 2006). Furthermore, according to a study, when participating in regular physical activities, even with limited amount of time per week, people tend to gain better mental health (Hamer, Stamatakis, & Steptoe, 2009). Having a physically active lifestyle changes not only the body but also the way one thinks through the functions of cardio, nervous and hormone system.

2.2 Theoretical frameworks

To understand how people are willing to spend their time being physically active, numerous studies have dedicated in exploring the role of motivation in conducting exercise or sport behavior (Dishman, 1988, 1994; Calfas, Sallis, Lovato, & Campbell, 1994; Marcus, King, Clark, Pinto, & Bock, 1996; Cardinal, 1997; Lee, Nigg, DiClemente, & Courneya, 2001; Buckworth & Wallace, 2002). Motivation plays as one of the essential elements in the psychological process of deciding whether participating in physical activities. Motivation can be described as the force that activates a behavior. In this section, two major theories are presented namely achievement goal theory (Nicholls, 1984) and self-determination theory (Deci & Ryan, 1985).

Achievement goal theory has been adopted by many researchers (Waldron & Krane, 2005, 2001; Xiang, McBride, & Bruene, 2003) for investigating participation in physical activity field. It has been developed through studies in education, sports and other domains. For decades, researchers (Ames, 1992; Nicholls, 1984; Elliott & Dweck, 1988; Duda & Hall, 2001) have been working on constructing and reviewing the theory to make it more adaptable to human behaviors. Accordingly the theory was constructed by two fundamental dimensions: mastery and performance. The mastery dimension can be described as a tendency to learn or to practice a certain skill to fulfill a task which brings satisfactory itself to an individual, namely a task-oriented force which drives the person to master the skill. In line with Nicholls (1989) have stated, task-oriented indicates a person who participates in a certain event for the purpose of improving a skill or obtaining new knowledge. On the other hand, the performance dimension describes how ego is involved when an individual conducts a certain behavior that would affect his or her own perceived competence, namely a ego-oriented force which drives the person's behavior either to avoid shame or to gain self-confidence. An

ego-oriented person's behavior is meant to demonstrate a superior status by carry out a greater result or a same result but with less effort, or to preserve one's own ego by simply hiding a lack of competence.

The second theory is self-determination theory (Deci & Ryan, 1985). Deci and Ryan (1985, 2000) have been researching the relations between human behaviors and psychological needs through decades in order to understand why some people conduct their behaviors in a more self-motivated way while some reveal more passive tendency and some do not even engage at all. Self-determination theory assumes that people have an innate tendency to actively participate in their physical and social environment to absorb and adapt to the knowledge of the environment (Niemiec & Ryan, 2009). According to the theory (Deci & Ryan, 1985, 2000; Ryan & Deci, 2000), human behaviors are driven by the force that comes from inside or outside of individuals, which results a motivation continuum that includes different stages of motives namely intrinsic motivation, extrinsic motivation and amotivation. Depending on how an individual is motivated, he or she carries out different behavior quality in an activity. The theory explains that 3 innate psychological needs of an individual, namely autonomy, competence and relatedness, have to be satisfied to produce the energy to conduct a behavior. The level of the energy influences his or her degree of participating (different continuum) in a particular activity. Deci and Ryan (1985) stated that the 3 basic psychological needs for autonomy, competence and relatedness are the keys to foster engagement and enjoyment in human behaviors. First, the need for autonomy refers to one's desire to decide and to take action. Competence implies to a person's need to dominate the outcome and feel mastery. Finally, relatedness is described as an individual's need to feel acceptance, belongingness and connectedness in a social context or by significant others (Ryan & Deci, 2007). The intrinsic motivation drives an

individual to participate in an event for the enjoyment and fun itself (Deci, 1971). The force comes from deep inside the individual that he or she determines to engage in the activity. A formerly developed sub-theory called Cognitive evaluation theory (Ryan & Deci, 1985) which specifically explains the impact of social context on one's autonomy support and competence concerns fostering intrinsic motivation (Ryan & Deci, 1985). In addition, Deci and Ryan (1985) also indicated that in the context with external stimulations, like rewards, pressures or obligations, could lead to a decrease of intrinsic motivation. In contrast to intrinsic motivation, people who are motivated due to external controlling mechanisms are described as having external motivation. Stimulations such as salary, penalty, deadlines, or pressure make a person accomplish tasks in order to obtain benefits or avoid negative consequences. In other words, external motivation refers to an individual's engagement in an activity in order to obtain an outcome or to avoid disadvantages. Deci and Ryan (1985) had proposed another sub-theory, Organismic integration theory, to explain how extrinsically motivated behavior is regulated. The sub-theory addresses different levels of extrinsic motivation depending on the degree of internalization. The more internalized the extrinsic motivation is the closer to self-determined a person will be when conducting a behavior. Thus, in Organismic integration theory, four different types of extrinsic motivation have been revealed, namely external regulation, introjected regulation, identified regulation and integrated regulation (Deci & Ryan, 1985). First, external regulation refers to a person carries out a behavior to gain reward or to avoid a punishment. In this case, autonomy is experienced in the least degree. Secondly, introjected regulation describes one's behavior which is conducted to avoid negative feelings or to maintain one's pride (Deci & Ryan, 1995). External sources that might make an individual feel guilty, shame, fear or a need to retain one's self-esteem facilitate this type of extrinsic motivation. The next form of extrinsic motivation is identified regulation which involves a goal or a behavior

that is consciously given value by an individual who performs the behavior as personally significant (Ryan & Deci, 2000). Lastly, integrated regulation is the most autonomous extrinsic motivation. With a similarity to intrinsic motivation, an integrated motivated individual recognizes the value of a behavior and takes it into his or her own evaluation and beliefs. However, an individual still attaches to the external worth and not takes part for pure enjoyment (Deci & Ryan, 1985; Ryan, 2009; Ryan & Deci, 2000). Organismic integration theory indicates that supports for autonomy, competence and relatedness promote the degree of internalization. Eventually, if a person has no interest on playing football and does not want to conduct any effort on doing it no matter what the consequence is, this person is described as amotivation in the activity. Amotivation implies the devaluation of the current context due to lack of either competence attention, autonomy support or sense of relatedness. When the three basic needs are fulfilled, an individual is self-determined and has greater level of psychological health and well-being. It is described that intrinsic motivation is the most self-determined. It exists when the three basic needs are most satisfied and it drives an individual to participate in an event for the enjoyment and fun itself (Deci, 1971). In contrast, one is more likely to experience low self-motivation and higher ill-being when lacking of the 3 needs (Ryan, 2009).

Studies in physical activity domain using self-determination theory have shown a strong correlation between sports behaviors and intrinsic/extrinsic motives. Markland and Ingledew (2007) pointed out that intrinsic motives tend to last longer compare to extrinsic motives for individuals engaging in physical activities. Hagger and Chatzisarantis (2008) indicated in their research that positive emotions were more likely to happen when participants experienced greater competence and autonomy in their sport. Other studies (Whitehead, 1993; Vallerand, 2001; Kilpatrick, Hebert, &

Bartholomew, 2005; Motl, 2007) also supported the correlation between positive outcomes and intrinsic motivation. In addition, Cooper, Schuett, and Phillips (2012) investigated participant motives from students participated in recreational university intramural sports. They reported that students aged 20 and under took parts for competence, appearance and fitness reasons while students aged between 21 and 24 reported greater tendencies on interest/enjoyment and social motives. In researching on how extrinsic motives influence behavior, Zhang (2009) indicated that intrinsic motivation and integrated, identified regulations types of extrinsic motivations were positively correlated with participants' enjoyment and perceived effort. Nevertheless, the significance of social relatedness has been indicated by showing how peer support promotes physical activity engagement. Researchers have suggested that peers or significant others could positively facilitate higher level of physical activity (Andersen & Wold, 1992; Prochaska, Rodgers & Sallis, 2002).

In the aspect of investigating motives among different groups in participating sports, gender differences have been researched widely for the past few decades.
Self-determination theory has also been used for gender comparison in sports. Cooper and colleagues (2012) stated that girls showed significant higher interest on appearance and social relatedness compare to boys. Previous studies have found that female athletes tend to seek and receive emotional support more than male athletes do in terms of social relatedness (Hardy, Richman, & Rosenfeld, 1991). Fortier, Vallerand, Briere and Provencher (1995) compared gender differences in motivation and the result suggested that female participants are more intrinsically motivated to accomplish tasks and showed higher tendency in identified regulation than male participants. In a research among Spanish population, female athletes reported greater self-determined orientation while male athletes reported higher scores on amotivation and external regulation

(Nunez, Martin-Albo, Navarro & Gonzalez, 2006). Other studies also reported similar results (Brière, Vallerand, Blais & Pelletier, 1995; Pelletier, Fortier, Vallerand, Tuson, Briere, & Blais, 1995). Furthermore, Gill (2002) reported that male participants are more competitive and have greater desire to win than female participants. Hom, Glenn and Wentzel (1993) stated that among late adolescences, male participants tend to use competitive outcomes (e.g., numbers, scores) as sources while female participants tend to use self-comparisons, internal information, and feedback from peers as sources. Similarly, a research from Ebbeck (1990) indicated that female weight training program participants are more likely to use self-referenced sources such as goal achievement, effort, skill improvement, and learning status. In a research among female youth population, Allen (2003) indicated that social motivational constructs (perceived belonging, relatedness etc.) are important reasons of participation. Differently, in contrast to finding from Hom and colleagues (1993), Ebbeck (1990) showed that men tend to use peer feedback than women. Researchers (Morris, Clayton, Power & Han, 1995; Chowdhury, 2012) also found male participants in team sports rated affiliation higher than competition as a primary motive for participating in physical activity. In additional to majority findings, a few of previous studies suggested that the main reason of girls participating in physical activity is appearance (Frederick, 1991; Frederick & Ryan, 1993; Frederick & Morrison, 1996; Frederick, Morrison, & Manning, 1996; Weinberg et al., 2000; Chowdhury, 2012). Interestingly, Nunez and colleagues (2006) did not find any significant difference in terms of intrinsic motivation between genders. They suggested that socioeconomic status, age and cultural factors may act as mediators when interpreting gender differences.

Furthermore, previous research also investigated motives among different types of sports. According to the nature of movement, competition or performance, sports can be

sorted in many ways. For example, gross sports (football) and fine sports (archery), open sports (ice hockey) and closed sports (figure skating), team sports and individual sport etc.. Various situations might result in diverse psychological processes (Hanrahan & Biddle, 1998, 2002). Taylor (1999) mentioned that each sport has unique physical, technical features that require special skills for athletes. For example, studies investigated in comparing team and individual sports had reported that team sport participants and individual sports participants are regulated differently in motivation. Team sports athletes had better scores in motivation and control anxiety while in individual sports was reported with higher score in confidence (Elferink & Gemser, 2004). Czech, Burke, Joyner and Hardy (2002) reported that team sport athletes are more win oriented than individual sport athletes. In contrast to the research, Pradeep and Ajeesh (2013) conducted a research comparing achievement motivation between participants of athletics and hockey. The result indicated that athletics participants were more motivated towards achievement than hockey ones. Besides, Many studies (Carron, Colman, Wheeler & Stevens, 2002; Turman, 2003; Spink, Nickel, Wilson, & Odnokon, 2005) stated that team sport athletes may experience greater fears of failure because typically they want to have their teammates' acceptance which is usually achieved by consistently performing well (e.g., to score a goal) and not to let down the team (e.g., to avoid mistakes). In the field of investigating aesthetic sports, Quested and Duda (2011) had stated that student dancers are more likely to be self-determined if their autonomy is supported. In contrast, in an environment lacking in autonomy support tend to result in amotivated dancers who are exposed in a higher risk of becoming ill-being.

In order to measure motives for participation in physical activity, researchers have developed several standardized instruments for the purpose of understanding humans' motivation under theoretical frameworks.

Based on self-determination theory, the Sport Motivation Scale (SMS; Fortier, Vallerand, Biere, & Provencher, 1995) and the Exercise Motivation Scale (EMS; Li, 1999) were developed to investigate participants' motives on a continuum with intrinsic and extrinsic motivation. SMS has 28 items that come from 7 subscales, namely intrinsic motivation to know, accomplish things, and experience
stimulation, external regulation, introjected regulation, identified regulation, and amotivation) and EMS has 32 items that suit into 8 subscales, namely intrinsic motivation to learn, to accomplish and experience sensation, external regulation, introjected regulation, identified regulation, integrated regulation, and amotivation) These two instruments were meant to cover the broad range of motives on the continuum, however they are not able to include the wide varieties of motives reported by individuals. Recently, a revised version of SMS was developed to overcome problems that the original SMS has, namely SMS-II (Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013). Pelletier et al. (2013) conducted a two-staged study and stated that the SMS-II "performs as well as or better than the original scale" and also shows better consistency with SDT (p. 338; p. 339).

The Situational Motivation Scale was developed with 16 items on 4 subscales, namely intrinsic motivation, identified regulation, external regulation and amotivation, to assess situational intrinsic and extrinsic motivation by asking about current status in a specific physical activity (SIMS; Guay & Vallerand, 1995; Guay, Vallerand & Blanchard, 2000). It is not supported by previous research on how the questionnaire relates to the real physical activity. Besides, extrinsic motivation and intrinsic motivation are not measured equally regarding to dimensions.

Another instrument is called Exercise Motivation Inventory (EMI; Markland & Hardy, 1993), which has 44 items on 12 subscales, namely, stress management, weight management, recreation, social recognition, enjoyment, appearance, personal development, affiliation, ill health avoidance, competition, fitness, and health pressures. Though the questionnaire has displayed good validity in research, it was not valid to assess fitness-related reasons for exercising. Besides, the health-related scales were presented negatively (e.g., health pressures, ill-health). Furthermore, the EMI does not function for non-exercisers and only works for currently active participants. Hence, an updated version of EMI was released with 69 items, namely Exercise Motivation Inventory-2 (EMI-2; Markland & Ingledew, 1997), contains a positive fitness scale and separated fitness scale of strength, endurance and nimbleness. The EMI-2 was criticized on its length that might result defective data due to fatigue.

The 23-item Motivation for Physical Activity Measure (MPAM, Frederick and Ryan, 1993) was developed to identify 3 motivational factors, namely interest/enjoyment, competence motivation and body-related motivation that were abstracted from literatures, pilot studies and self-determination theory. Different motives were found between individual sport participants and fitness group participants. However, it does not cover social motives and the original sample group for standardization was small. Consequently, Ryan, Frederick, Lepes, Rubio and Sheldon (1997) developed a revised version namely Motivation for Physical Activity Measure – Revised (MPAM-R) with 30 items on 5 categories, namely fitness, appearance, competence, enjoyment, and social. The original body-relation factor was split into two factors, fitness and appearance as well as social motives was added in the new version. Nevertheless, the questionnaire did not cover the sport participation but only in exercise. Also, the two instruments fit motives to the intrinsic/extrinsic dichotomy of the self-determination

theory in a retrospective fashion (Chowdhury, 2012). Finally, the questionnaires were still unable to represent the wide range of participation motives that were discovered in research.

In addition, Gill, Gross, and Huddleston (1983) developed the 30-item Participation Motivation Questionnaire (PMQ) with an empirical approach of participation motives. Gill and the colleagues asked adolescents open-ended questions like “I want to ” and “I like to” and narrowed down collected data to 8 subscales namely achievement, team (affiliation/social), fitness, energy release, to be with others, skill, friends, and fun. Based on the PMQ, many researchers have developed different versions with various Likert scales through their studies on a wide range of population involves different genders, physical activities, ages etc. (Gould, Feltz, & Weiss,1985; Klint & Weiss, 1987; Longhurst & Spink, 1987; Brodkin & Weiss, 1990; Morris & Han, 1991; Buonamano, Cei, & Mussino 1995; Sutherland & Morris, 1997; Kirkby, Kolt, & Liu, 1999; Kolt, Kirkby, Bar-Eli, Blumenstein, Chadha, Liu, & Kerr, 1999; Weinberg, Tenenbaum, McKenzie, Jackson, Anshel, Grove, & Fogarty, 2000).

In a study conducted on 2,601 Australian samples (1,164 men and 1,437 women, aged from 6 to over 80 years old), Morris, Clayton, Power, and Han (1995) examined motives for participation in physical activity by looking at age, gender, and activity type with a 50-item version of the PMQ with 5-point Likert Scales. The research involved a wide range of physical activities categorized in 5 types, namely body movement sports (e.g., swimming), racquet sports (e.g., squash), team ball games (e.g., volleyball), exercise activities (e.g., weight training), and martial arts (e.g., tai chi). Nine factors was yielded after conducting an exploratory factor analysis, namely skills, challenge, fun, health, relaxation/aesthetic, affiliation, status, the environment, and to be occupied. As a

result, Morris et al. (1995) found affiliation and health were rated higher by females than males while challenge and status were found to be more important for males than females. Besides, Morris et al. (1996) used discriminant function analyses to compare each sport type with the rest of the sample. They found challenge to be the main discriminator for racquet sports. For team ball games, affiliation was reported as the strongest factor. Exercisers rated health/fitness as a more important motive.

The shortcomings of PMQ are that the studies involved were unsystematic in terms of sample size, level of participation, variety of activity type, also it is not based on any theory of motivation (Frederick-Recascino & Morris, 2004) and there is not yet a stable version of the PMQ as the existing versions varying from 22 to 55 items and 4 to 11 factors.

The Recreational Exercise Motivation Measure (REMM; Rogers, 2000) was developed with 73 items that consist of eight subscales, namely mastery, physical condition, affiliation, psychological condition, appearance, others' expectations, enjoyment, and competition/ego, on 5-point Likert scale. The original purpose of developing the questionnaire was to explore participation goals of 11 recreational adult exercisers, including 7 females and 4 males, by conducting structured interviews through the achievement goal orientations (Rogers, 2000). There were 13 first order themes (competition/ego, social comparison, appearance, rewards, others' expectation, affiliation/social, fitness, medical, psychological well-being, self-esteem, relaxation/stress release, mastery, and enjoyment) found from the interviews, and, 7 second order themes (competition/ego, extrinsic rewards, social, physical health, psychological health, mastery, and enjoyment) were concentrated afterwards, while eventually 2 general motivations, intrinsic (mastery and enjoyment) and extrinsic

motivation (competition/ego, extrinsic rewards, social, physical health, psychological health) which compose the main two components of SDT, were formed (Rogers, Morris & Moore, 2008). Roger (2000) stated that self-determination theory could better describe the motives reflected from the participants since the motives spread over a wide range more than task/ego oriented. Rogers (2000) also indicated that male participants reported higher scores on competition/ego than the female participants while female group rated higher on the appearance subscale.

The REMM was also validated in Turkish and Finland in sports and exercise fields. Caglar, Canlan and Demir (2009) examined 298 adolescents and young adults (from 15 to 24 years old) in Turkey. The Turkish version consists of 5 subscales namely health, competition/ego, appearance, enjoyment, and skill development. Additionally, Pajunen (2004) validated REMM with 764 exercise participants (551 girls and 210 boys) in Finland with difference on the factor structure of the scale which was examined under 4 second order motivations (Intrinsic Motivation: mastery and enjoyment; Social Motivation: competition/ego and affiliation; Mind and Body Wellness: appearance, psychological condition and physical condition; Others' Expectation: others' expectation) (Aypar, 2012). The 8 dimensions' alpha coefficients ranged between .76 to .89.

However, Morris and Rogers (2004) suggested that REMM has potential problem with its large amount of questions that might lead to fatigue to individuals and affect the collected data. As a result, the Physical Activity and Leisure Motivation Scale (PALMS) was developed by selecting the 5 strongest items on each of the 8 factors in the REMM as a shorter version with 40 items (Morris & Rogers, 2004). To achieve a shorter version of REMM, Morris and Rogers (2004) conducted several analyses, including

examination of means and standard deviations, skewness and kurtosis, factor loadings, item-subscale correlations, and deleted alpha coefficient values, and 3 items were excluded from the subscales of physical condition, affiliation, others' expectations, and enjoyment, and eight items were left out of the competition/ego subscale. PALMS has been validated and applied in its original language and translated language (Zach, Bar-Eli, Morris, & Rogers, in press; Aypar, 2012; RoyChowdhury, 2012) and was found to have similar factor structure as the original measure (REMM). Further research on its reliability and consistency is needed.

Moreover, Lonsdale, Hodge, and Rose (2008) developed the Behavioral Regulation in Sport Questionnaire (BRSQ) as an alternative measure for sport motivation as an applied tool of self-determination theory. There were two versions of BRSQ proposed, the BRSQ-8 and the BRSQ-6. BRSQ-8 examines integrated, identified, introjected, and external regulation, amotivation, and the three forms of intrinsic motivation (knowledge, experience stimulation, and accomplishment) (Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013). In addition, the BRSQ-6 contains the same dimensions but examines general intrinsic motivation rather than three types of intrinsic motivation. The validation studies of BRSQ have shown that the scale had good factorial validity, good 1 week test–retest reliability, and the subscales had all good internal consistency.

3 PURPOSE OF THE STUDY

The present study aimed to examine the behavior regulations and participation motives in physical activity among Finnish team sports athletes. More precisely, the study verifies across gender and athletes participating in different sport event. By understanding better on the motives behind sports behavior with perspectives of self-determination theory and achievement goal theory could help reduce the dropout rate in physical activity programs (Boiché & Sarrazin, 2009). Reeve (2002) conducted a research that indicated that intrinsic motivation has a strong tie with positive behavioral factors (e.g., continuous effort, positive interpretation, and positive affection). Thus, investigating in motivation in order to rise up intrinsic motivation facilitates the quality of sports behavior and general well brings.

Hypothesis of the present study were made as following:

Hypothesis 1. Girls are more intrinsically motivated compare to boys.

Hypothesis 2. Boys score higher on competition/ego than girls.

Hypothesis 3. Aesthetic team sports participants are more intrinsically motivated compare to ballgames participants.

Hypothesis 4. Invasion contact ballgames participants scores higher on competition/ego than other team sports participants.

4 METHODS

4.1 Participants

A number of 317 participants consisted of 175 girls and 142 boys, aged from 12 to 24 years old (M = 17.04, SD = 1.73) took part in present research. They were either sport club members, regular school students or sport class students recruited from different parts of Finland. There were thirteen different sports attended by the participants. Table 1 shows the sport types distribution and numbers in each category.

Table 1. *Sport types and categories*

	Sport	*N*
Invasion contact ballgames (N = 49)	Ice-hockey	43
	American football	4
	Water polo	2
Invasion non-contact ballgames (N = 160)	Soccer	73
	Basketball	45
	Floorball	40
	Futsal	2
Non-invasion ballgames (N = 27)	Finnish Baseball	14
	Volleyball	9
	Beach volleyball	4
Aesthetic team sports (N = 81)	Synchronized Skating	60
	Team gymnastics	17
	Cheerleading	4
	Total	317

4.2 Measures

The Physical Activity and Leisure Motivation Scale (PALMS, Morris & Rogers, 2004) was used to measure motivations in participating in sports. PALMS questionnaire contains 40 items under 8 subscales. Participants answered all questions based on the 8 subscales, namely Mastery (e.g., I undertake physical activity to improve existing skills, Enjoyment (e.g., I undertake physical activity because it is fun), Affiliation (e.g., I undertake physical activity to be with friends), Competition/ego (e.g., I undertake physical activity to be fitter than others), Others' expectations (e.g., I undertake physical activity because it was prescribed by a doctor or physiotherapist), Physical condition (e.g., I undertake physical activity because it keeps me healthy), Psychological condition (e.g., I undertake physical activity because it acts as a stress release), and Appearance (e.g., I undertake physical activity to improve body shape). Participants answered the questionnaire on a 5-point Likert scale, ranging from 1 (Strongly disagree) to 5 (Strongly agree). A Finnish version of PALMS questionnaire which has been translated was used in this research. Internal consistency of this version was acceptable with Cronbach alphas ranging from .83 (Psychological Condition) to .94 (Intrinsic Motivation and Affiliation) (preliminary evidence, Aypar, 2012).

Behavioral Regulation in Sport Questionnaire (BRSQ, Lonsdale, Hodge & Rose, 2008) was used to measure behavior regulations in sports. BRSQ questionnaire was used to measure competitive athletes' intrinsic motivation, extrinsic motivation and amotivation. It contains 24 items which are under 6 different categories: Intrinsic motivation (e.g., I participate in my sport because I enjoy it), Integrated regulation (e.g., I participate in my sport because it’s a part of who I am), Identified regulation (e.g., I participate in my sport because I value the benefits of sport), Introjected regulation (e.g., I participate in my sport because I would feel guilty if I quit), External regulation (e.g., I participate in

my sport because if I didn't other people will not be pleased with me), and Amotivation (e.g., I participate in my sport but I question why I continue). Participants answered the questionnaire on a 7-point Likert scale, ranging from 1 (not at all true) to 7 (very true). A Finnish version of BRSQ questionnaire which has been translated and validated (Ruiz, Haapanen, Tolvanen, & Robazza, under review) was used in this research. Internal consistency of this version was acceptable with Cronbach alphas ranging from .72 (integrated regulation) to .88 (intrinsic motivation).

4.3 Procedure

The present study was conducted following the approval from the ethics committee of University of Jyväskylä. Permits of collecting data were given by the responsible personnel of the organizations, e.g., a school principle or a team coach. Written consents were obtained from each participant. After purpose of the study was explained and assurances of confidentiality given, consent forms were also signed by parents of participants who were under eighteen years old for legal reason. Before filling in the questionnaire, participants also filled in their demographic information regarding their ages, genders and the sport that they participate.

4.4 Data Analysis

Data were scattered and the normality assumptions of data were also checked with several methods, e.g., skewness and kurtosis values, histograms, missing values. Descriptive statistics were calculated with SPSS 22. The internal consistency of each subscale of PALMS and BRSQ was examined with Cronbach's alpha value and also correlation between all subscales was tested. An independent-sample T-test was conducted to explore differences on motivation to participate in physical activity and

behavior regulation across gender. In addition, a one-way ANOVA test was carried out to examine differences in all motivational variables among various sport type groups.

5 RESULTS

The total data from 317 participants was tested (missing data was less than 1.3 percent). Descriptive statistics and Cronbach alphas are presented below in Table 2. All subscales, except Others' expectations and Mastery, had satisfactory values ($\alpha > .7$). The subscale Others' expectations subscale from PALMS showed a low reliability of .25. Deleting any item from the subscale category didn't affect the reliability. Therefore this subscale was removed from further analyses. In addition, the subscale Mastery had a Cronbach alpha value of .65. Deleting the item "to keep up the current skill level" increased the value to .70. However the subscale was kept to maintain the completeness. Table 2 shows the reliability of PALMS and BRSQ subscales with Cronbach's Alpha.

Table 2. *Means, std. deviations, reliability of study variables*

	Cronbachs' Alpha	*M*	*SD*	*Skewness*	*Kurtosis*
Motivation of participate in sport					
Mastery	.65	4.43	.49	-.80	.32
Enjoyment	.81	4.68	.41	-1.84	4.33
Affiliation	.85	4.06	.71	-.77	.44
Competition/ego	.87	3.27	.94	-.17	-.78
Others' expectations	.25	1.95	.56	.65	.58
Physical condition	.80	4.20	.61	-1.11	2.09
Psychological condition	.70	3.58	.68	-.21	-.16
Appearance	.85	3.20	.90	-.24	-.60
Behavior regulations					
Intrinsic motivation	.87	6.44	.78	-2.10	4.98
Integrated regulation	.77	5.52	1.03	-.77	.62
Identified regulation	.74	5.54	1.01	-.57	-.06
Introjected regulation	.78	2.60	1.25	.69	-.04
External regulation	.77	1.69	.98	2.46	7.91
Amotivation	.83	1.72	1.00	1.91	3.82

5.1 Subscale intercorrelations

Table 3 shows the intercorrelation between PALMS and BRSQ. Significant and higher correlations are presented as following: In PALMS subscales, subscales exhibited a simplex pattern ordering. Physical condition showed a higher correlation associated to psychological condition and appearance. In BRSQ subscales, simplex pattern was exhibited as well. Integrated regulation showed a higher correlation associated to identified regulation. In between PALMS and BRSQ subscales, a higher correlation between intrinsic regulation and enjoyment was reported. It is also worth noting that identified regulation also reported a higher correlation with mastery and physical condition.

Table 3. *Intercorrelations of PALMS and BRSQ subscales*

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
1 Intrinsic motivation	-	.56**	.50**	-.08	-.27**	-.51**	.42**	.67**	.06	.17**	.14*	.15**	-.03
2 Integrated regulation		-	.58**	.02	-.10	-.28**	.45**	.48**	.11	.29**	.30**	.28**	.11
3 Identified regulation			-	.16**	-.04	-.20**	.48**	.31**	.22**	.21**	.49**	.26**	.29**
4 Introjected reg.				-	.56**	.39**	.06	-.13*	.04	.26**	.11*	.05	.21**
5 Extrinsic reg.					-	.53**	-.07	-.24**	-.01	.11*	.02	-.01	.13*
6 Amotivation						-	-.19**	-.34**	.01	-.01	-.02	-.05	.15**
7 Mastery							-	.43**	.17**	.22**	.33**	.26**	.16**
8 Enjoyment								-	.10	.20**	.20**	.27**	-.01
9 Affiliation									-	-.06	.32**	.19**	.28**
10 Competition/ego										-	.09	.19**	.24**
11 Physical condition											-	.46**	.49**
12 Psych. condition												-	.28**
13 Appearance													-

Note. ** $p < .01$, * $p < .05$; Psych. = Psychological; reg. = regulation

5.2 Group differences

ANOVA tests indicated that significant differences existed with higher mean values in female group. In PALMS, mastery, affiliation, physical condition and Appearance were reported higher in female group, while in BRSQ, integrated regulation was also reported higher in the female group (see Table 4). In male group, only competition/ego in PALMS scales was reported significantly higher than the female group. On item Mastery, *F* value was significant (*Sig.* = .02) therefore the equal variances not assumed value has been reported in table 4.

In addition, a one-way between-groups analysis of variance was conducted to explore the difference of team sports types on motivational variables and behavior regulations (see Table 5). In PALMS subscales, there were statistically significant differences in mastery, affiliation and competition/ego across sport categories. Post-hoc comparisons using the Tukey HSD test indicated that aesthetic team sports reported significantly higher score than both invasion contact ballgames and invasion non-contact ballgames on subscale mastery. Aesthetic team sports also reported significantly higher score than invasion non-contact ballgames on subscale affiliation. On the subscale competition/ego, both invasion contact ballgames and invasion non-contact ballgames reported significantly higher scores than aesthetic team sports. In BRSQ subscales, significant differences were found in identified regulation and external regulation across sport categories. Post-hoc comparisons using the Tukey HSD test indicated that aesthetic team sports reported significantly higher score than invasion non-contact ballgames on subscale identified regulation. Besides, Invasion non-contact ballgames reported significantly higher score than aesthetic team sports on subscale external regulation.

Table 4. *Mean, Std. deviation and significance of gender comparison*

	boys			*girls*					
	M	*SD*	*N*	*M*	*SD*	*N*	*T*	*df*	*p*
Motivation of participate in sport									
Mastery $_a$	4.33	.52	142	4.50	.45	175	-3.06	279.47	.00**
Enjoyment	4.65	.44	142	4.70	.38	175	-1.03	315	.30
Affiliation	3.94	.69	142	4.15	.71	175	-2.68	315	.01**
Competition/ego	3.64	.85	142	2.97	.90	175	6.69	315	.00**
Physical condition	4.10	.66	142	4.28	.55	175	-2.70	315	.01**
Psychological condition	3.52	.69	142	3.62	.66	175	-1.29	315	.20
Appearance	3.04	.91	142	3.32	.88	175	-2.75**	315	.01**
Behavior regulations									
Intrinsic motivation	6.40	.81	141	6.46	.76	175	-.65	314	.51
Integrated regulation	5.31	1.08	141	5.69	.96	175	-3.32	314	.00**
Identified regulation	5.42	1.03	138	5.64	.98	174	-1.91	310	.06
Introjected regulation	2.71	1.27	141	2.51	1.23	175	1.44	314	.15
External regulation	1.78	1.10	141	1.61	.86	175	1.53	314	.13
Amotivation	1.67	.98	141	1.75	1.01	175	-.73	314	.47

**. $p < .01$, $_a$: equal variances not assumed

Table 5. *Mean, std. deviation of team sport type's comparisons*

	Team sport types							
	Invasion contact ballgames (n=49)		*Invasion non-contact ballgames(n=160)*		*Non-invasion ballgames(n=27)*		*Aesthetic sports(n=81)*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Motivation of participate in sport								
Mastery	4.33	.57	4.36	.50	4.40	.42	4.62	.35
Enjoyment	4.78	.30	4.65	.46	4.61	.47	4.71	.33
Affiliation	4.05	.77	3.97	.73	3.94	.60	4.26	.62
Competition/ego	3.61	.90	3.47	.90	3.13	.97	2.72	.79
Physical condition	4.07	.70	4.22	.60	4.27	.48	4.21	.61
Psychological condition	3.59	.80	3.59	.62	3.70	.55	3.50	.74
Appearance	3.01	.91	3.18	.91	3.33	.75	3.29	.93
Behavior regulations								
Intrinsic motivation	6.60	.55	6.34	.90	6.33	.79	6.54	.58
Integrated regulation	5.61	.89	5.41	1.11	5.36	1.09	5.71	.87
Identified regulation	5.40	1.14	5.45	1.03	5.35	1.02	5.85	.77
Introjected regulation	2.32	1.14	2.79	1.38	2.45	1.20	2.42	.98
External regulation	1.57	.70	1.86	1.18	1.62	.68	1.43	.63
Amotivation	1.59	1.03	1.78	1.06	1.60	.80	1.68	.89

6 DISCUSSION

The purpose of this study was to explore the motivational and behavior regulation variables of team sport participants among Finnish athletes. Hypotheses were made to assume that girls are more intrinsically motivated than boys, boys care more about competition than girls, aesthetic team sports participants are more intrinsically motivated than ballgames participants, and invasion contact ballgames participants care more about competition than other team sports. According to the result, gender differences in participating physical activity were found as well as differences among various team sports types. Hypotheses are partially supported by the results.

Comparing gender differences in PALMS subscales, girls' higher scores in mastery showed an intrinsically oriented motivation. Meanwhile, girls also rated higher scores on affiliation, physical condition and appearance that indicate an extrinsic oriented motivation. Besides, the only higher score from boys was competition/ego, which indicated an extrinsic oriented motivation. In BRSQ subscales, integrated regulation was the only subscale that differentiated genders with a higher girls' score. Hypothesis 1 was supported that girls were more intrinsically motivated than boys with higher scores on mastery (PALMS) and integrated regulation (BRSQ). In addition, hypothesis 2 was supported that boys rated competition/ego more important than girls. In general, female group demonstrated a greater self-determined behavior in physical activity

compare to male participants. This finding echoes to what previous researchers (Ebbeck, 1990; Hom & et al., 1993; Fortier & et al., 1995; Nunez & et al., 2006) had reported that girls evaluate skills, performances, effort in themselves and also refer to self-comparisons. In addition, the female group also indicated higher scores on the affiliation subscale. It reflected that for female group the social environment in sport context serves as a relatively important reason for participating compare to the male group. Same finding was also reported in the research of Morris et al. (1995). It is close to what researchers have stated that girls are more likely to seek and receive emotional support from peers (Hardy & et al., 1991; Hom & et al., 1993; Allen, 2003). Furthermore, the female group also reported relatively higher scores on physical condition and appearance. It suggested that being physically healthy and fit were more important for female participants than male ones. Coherently, according to Ebbeck (1990) and Hom et al. (1993), female participants tend to use more internal information as their references. In the current case, self-body image (appearance) and self-health (physical condition) might serve as indicators for female participants to evaluate themselves in conducting sport behaviors. The higher score of appearance might also come from the feminine image that they potentially received from the society. However, although the female group showed a significant higher score in appearance than the male group, the score was relatively lower (second to the last) than other PALMS subscales within the group. It indicated that appearance was less important but relatively important (compare to boys) for girls as in line with previous studies (e.g., Chowdhury, 2012). In addition, it is worth noting that the appearance variable showed a high

correlation with amotivation. Thus, female participants were more likely to feel demotivated than male participants in this case. Meanwhile, in line with previous studies (Hom & et al., 1993; Morris et al., 1995; Rogers, 2000; Gill, 2002; Nunez & et al., 2006), male participants in current research reported significant higher scores in Competition/ego and showed a higher tendency of extrinsic regulation. The significantly higher score in competition/ego represented a higher priority of being competitive in the group and being better than others. The attempts of winning and performing better than the others might drive boys to focus more on the competitive results such as distances, scores, duration and so forth that they could maintain their ego from a subjective perspective. In other words, male participants might be more likely to feel demotivated compare to female participants if they do not have enough sources to support their ego and to feel competitive. However, the score of competition/ego was ranked in the middle comparing to other PALMS subscales within the male group.

Something to be considered are, although significant differences between genders have been found in present research, both boys and girls also reported high scores in some subscales that were not significantly different. For example both gender reported high mean scores in enjoyment in PALMS subscales as well as intrinsic motivation and identified motivation in BRSQ subscales. It indicated that those dimensions were equally important for both genders in a sport setting. Moreover, within the significant gender difference findings, some lower scored subscales in male group might still hold high mean values within their group. For example, girls reported significantly higher

scores in integrated motivation, mastery, affiliation and physical condition than boys, while boys also reported relatively high mean scores in those subscales within boys' group. It revealed that those dimensions are important for both gender participants.

Next, comparing among different team sports types in PALMS subscales, aesthetic team sports participants reported significantly higher scores than both invasion contact and invasion non-contact ballgames in mastery as well as another higher score in affiliation than invasion non-contact ballgames. Meanwhile, Invasion contact and invasion non-contact ballgames both reported significant higher scores on competition/ego subscale than aesthetic team sports. Similar outcomes were shown in BRSQ subscales that aesthetic team sports participants rated significantly higher scores on identified regulation than invasion non-contact ballgames participants, while invasion non-contact ballgames reported a higher score on external regulation than aesthetic team sports. Accordingly, aesthetic team sport participants represented relatively higher interests of achieving greater performance (mastery), spending time with others in the sport (affiliation) and seeing the sports as a benefit in life (identified regulation). Thus, hypothesis 3 was supported that aesthetic team sports participants were more intrinsically motivated compare to ballgames players because of the higher tendency of mastery and identified regulation. Different from a previous finding (Morris et al., 1996), affiliation was found significant in aesthetic group rather than in ballgames groups. The majority of female participants in the aesthetic group might have a potential influence on the results.

In addition, both invasion ballgames participants reported significantly higher scores than aesthetic team sport participants on competitive/ego. Although the scores of competitive/ego were relatively lower within both invasion groups, the significant difference still represented a higher tendency of wanting to be tough and undefeatable in those groups compare to the aesthetic one. The finding was supported by the previous research in which team sports players were found having higher winning orientation (Czech & et al., 2002), but it was different from what Pradeep (2013) have stated that team sports players (hockey) had lower motivation towards achievement compare to individual athletes (athletics). Thus, hypothesis 4 was partially support that invasion contact ballgames participants scored higher on competition/ego than participants in non-invasion ballgames and aesthetic group but not significantly higher than invasion non-contact ballgames. Moreover, invasion non-contact ballgames also showed a significantly higher mean score than aesthetic team sport participants in external regulation, which indicated a lack of autonomy involved in participating physical activity. Similarly, the score itself was relatively low comparing to the other BRSQ subscales within the same group (the second lowest), however it still suggested a higher tendency of feeling forced or pressured from their social environment for invasion non-contact ballgame participants. Interestingly, because of significantly higher scores in competition/ego and external regulation than aesthetic sports group, it seems that invasion non-contact ballgame participants were more likely to be driven towards sport behaviors due to, either being compared with (competitive/ego) or being forced by

(external regulation), their social environment. The finding might be referred to what previous studies (e.g., Carron & et al., 2002) have indicated that team sports players had greater fears of failure from their social environment due to the need to be accepted. In this case, wanting to be accepted reveals an extrinsically regulated motive that is controlled by the social context. Surprisingly, non-invasion ballgames reported no any significant difference when comparing to the other groups. It might suggest that non-invasion ballgame participants generally held similar motives as the others. At the same time, invasion contact ballgames and invasion non-contact ballgames also reported no significant difference between each other. It might suggest that among the participants in the present research, the level of body contact did not differentiate sport motives in these three ballgame groups.

6.1 Limitations

The current research includes some limitations. First of all, the unbalanced numbers of participants from each sport type group might affect the objectivity of the result. For example, the Invasion non-contact ballgames category was the majority of the participants (50.5 percent) and the Non-invasion ballgames category had relatively less participants (8.5 percent). Secondly, female group had larger number than male group, especially in Aesthetic team sports category. This might be attributed to that, normally, there is more female participation in aesthetic sports than male participation. This might also have impact on the result when comparing among groups since gender differences already exist.

6.2 Practical implications

As one of the applications for practical fields, understanding motivations of sport participants might lower down dropout rate and rise up participation to support the increasing needs of sport and health promotion. As mentioned in previous chapters, a need of better intervention plans or proper physical activity programs is rising in the current society due to lack of proper physical activities, especially among children and adolescents who are exposed in a high risk of adulthood diseases caused by physical inactivity. Designing programs or promotions according to different needs from each gender might help rise the active level of both genders and prevent dropouts. Also when guiding young adolescents choosing suitable physical activities, suggestions can be made according to different motives reported in studies along with their personalities and preferences. Practically, a school physical education teacher can design activities according to various gender motives to create a learning environment where different individuals can enjoy and engage; a sport coach may apply different methods to arouse athletes' determination according to various motives of different sport types. A coach can, for example, end up a drill with a small individual competition in a boys basketball team for making them feel competitive. Besides, an individual may choose a more suitable activity by taking diverse sport motives into account.

6.3 Future research directions

In conclusion, the present research indicated that, generally speaking, Finnish adolescents participated in sports with more intrinsically and task orientated motives. Next, female adolescents had higher tendency to be self-determined as well as aesthetic team sport participants compare to their counterparts. Moreover, male adolescents and invasion ballgame participants are more likely to gain motivation by comparing with others than female adolescents and aesthetic participants. In addition, social environment can motivate sports participants by either making participants feel connected (Affiliation), competed (Competition/ego) or forced (External regulation). Understanding motivations in sports might help practitioners utilize resources to mobilize athletes properly. Looking at the future research direction, since there was no significant result among three ballgame categories, it is recommended to research ballgame participants with a different approach or study design as well as to research sports motives with another classification. Besides, the variable of PALMS questionnaire "Others' expectations" had a low reliability value. Therefore it is suggested to modify items of the variable for future research.

7 REFERENCES

Allen, J. B. (2003). Social motivation in youth sport. *Journal of Sport & Exercise Psychology*, 25(4).

Ames, C. (1992). Achievement goals and the classroom motivational climate. *Student perceptions in the classroom*, 327-348.

Ames, C. (1992). Achievement goals, motivational climate and motivational processes. In G. C. Roberts (Ed.), *Motivation in sport and exercise* (pp. 161-176). Champaign, IL: Human Kinetics.

Armstrong, N., & Van Mechelen, W. (1998). Are young people fit and active. *Young and active*, 69-97.

Aypar, E. (2012). Motivation to participate in leisure time physical activity and sport in Finnish high school students: preliminary validation of the physical activity and leisure motivation scale (PALMS). (Unpublished master thesis, University of Jyväskylä)

Biddle, S. J. H., & Hanrahan, S. (1998). Attributions and attributional style. *Advances in*

sport and exercise psychology measurement, (7), 3-19.

Boiché, J. C. S., & Sarrazin, P. G. (2009). Proximal and distal factors associated with dropout versus maintained participation in organized sport. *Journal of Sports Science and Medicine*, 8, 9-16.

Brière, N. M., Vallerand, R. J., Blais, M. R., & Pelletier, L. G. (1995). Développement et Validation d'une Mesure de Motivation Intrinsèque, Extrinsèque et d'Amotivation en Contexte Sportif: L'Échelle de Motivation dans les Sports (ÉMS). *International Journal of Sport Psychology*.

Brodkin, P., & Weiss, M. (1990). Developmental differences in motivation in competitive swimming. *Journal of Sport & Exercise Psychology*, 12, 248-263.

Buckworth, J., & Wallace, L. S. (2002). Application of the transtheoretical model to physically active adults. *Journal of Sports Medicine and Physical Fitness*, 42, 360–367.

Buckworth, J., Lee, R. E., Regan, G., Schneider, L. K., & DiClemente, C. C. (2007). Decomposing intrinsic and extrinsic motivation for exercise: Application to stages of motivational readiness. *Psychology of Sport and Exercise*, 8(4), 441-461.

Buonamano, R., Cei, A., & Mussino, A. (1995). Participation motivation in Italian youth

sport. *The Sport Psychologist*, 9, 265-281.

Caglar, E., Canlan, Y., & Demir, M. (2009). Recreational exercise motives of adolescents and young adults. *Journal of Human Kinetics, 22,* 83-90.

Calfas, K. J., Sallis, J. F., Lovato, C. Y., & Campbell, J. (1994). Physical activity and its determinants before and after college graduation. *Medicine, Exercise, Nutrition, and Health*, 3(323-334).

Cardinal, B. J. (1997). Interaction between stage of exercise and relapse. *Medicine and Science in Sports and Exercise*, 29, S119.

Cervelló, E. M., Escartí, A., & Guzmán, J. F. (2007). Youth sport dropout from the achievement goal theory. *Psicothema*, 19(1).

Chowdhury, D. R. (2012). Examining reasons for participation in sport and exercise using the Physical Activity and Leisure Motivation Scale (PALMS) (Doctoral dissertation, Victoria University).

Czech, D. R., Burke, K. L., Joyner, A. B., & Hardy, C. J. (2002). An exploratory investigation of optimism, pessimism and sport orientation among NCAA Division I college athletes. *International Sports Journal*, *6*(2), 136-145.

Deci, E. L. (1971). Effect of externally mediated rewards on intrinsic motivation.

Journal of Personality and Social Psychology, 18, 105e115.

Deci, E. L., & Ryan, R. M. (1985). Cognitive evaluation theory. In *Intrinsic Motivation and Self-Determination in Human Behavior* (pp. 43-85). Springer US.

Deci, E. L., & Ryan, R. M. (1991, January). A motivational approach to self: Integration in personality. In *Nebraska symposium on motivation* (Vol. 38, pp. 237-288).

Deci, E. L., & Ryan, R. M. (1995). Human autonomy. In Efficacy, agency, and self-esteem (pp. 31-49). Springer US.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: human needs and the self-determination theory. *Psychological Inquiry*, 11, 227e268.

Deci, E. L., & Ryan, R. M. Intrinsic motivation and self-determination in human behavior, 1985.

Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, 62, 119–142.

Dishman, R. K. (1988). *Exercise adherence: Its impact on public health*. Human Kinetics.

Dishman, R. K. (1994). *Advances in exercise adherence*. Champaign, IL: Human Kinetics.

Duda, J. L. (2001). Achievement goal research in sport: Pushing the boundaries and clarifying some misunderstandings. *Advances in motivation in sport and exercise*, 129, 182.

Duda, J. L., & Hall, H. (2001). Achievement goal theory in sport: Recent extensions and future directions. *Handbook of sport psychology*, 2, 417-443.

Ebbeck, V. (1990). Sources of performance information in the exercise setting. *Journal of Sport & Exercise Psychology*, 12, 56-65.

Elliott, E. S., & Dweck, C. S. (1988). Goals: An approach to motivation and achievement. *Journal of Personality and Social Psychology*, 54, 5-12.

Fortier, M. S., Vallerand, R. J., Briere, N. M., & Provencher, P. J. (1995). Competitive and recreational sport structures and gender: A test of their relationship with sport motivation. *International journal of sport psychology*, 26, 24-24.

Frederick, C. M., & Ryan, R. M. (1993). Differences in motivation for sport and exercise and their relationships with participation and mental health. *Journal of Sport Behavior*, 16, 125-145.

Gill, D., Gross, J., & Huddleston, S. (1983). Participation motivation in youth sports. *International Journal of Sport Psychology*, 14, 1-14.

Gould, D., Feltz, D. L., & Weiss, R. R. (1985). Motives for participating in competitive youth swimming. *International Journal of Sport Psychology*, 16, 126-140.

Guay, F., & Vallerand, R.J. (1995). The Situational Motivation Scale (SIMS). Paper presented at the annual convention of the American Psychological Society, New York.

Guay, F., Vallerand, R.J., & Blanchard, C. (2000). On the assessment of state intrinsic and extrinsic motivation: The situational motivation scale (SIMS). Motivation and Emotion, 24, 175-213.

Hamer, M., Stamatakis, E., & Steptoe, A. (2009). Dose-response relationship between physical activity and mental health: the Scottish Health Survey. *British Journal of Sports Medicine*, 43(14), 1111-1114.

Hanrahan, S., & Biddle, S. (2002). Measurement of achievement orientations: psychometric measures, gender, and sport differences. *European Journal of Sport Science*, 2(5), 1-12.

Horn, T. S., Glenn, S. D., & Wentzell, A. B. (1993). Sources of Information Underlying Personal Ability Judgment in High School Athletes. *Pediatric Exercise Science*, 5(3).

Jõesaar, H., Hein, V., & Hagger, M. S. (2011). Peer influence on young athletes' need satisfaction, intrinsic motivation and persistence in sport: A 12-month prospective study. *Psychology of Sport and Exercise*, 12(5), 500-508.

Kajbafnezhad, H., Ahadi, H., Heidarie, A. R., Askari, P., & Enayati, M. (2011). Difference between Team and Individual Sports with Respect to Psychological Skills, Overall Emotional Intelligence and Athletic Success Motivation in Shiraz City Athletes. *Journal of Basic and Applied Scientific Research*, 1(11), 1904-1909.

Kirby, R., Kolt, G. & Liu, J. (1999). Participation motives of young Australian and Chinese gymnasts. Perceptual and Motor Skills, 88 (2), 363-373.

Klint, K., & Weiss, M. (1987). Dropping in and dropping out: Participation motives of current and former youth gymnasts. *Canadian Journal of Applied Sport Sciences*, 11, 106-114.

Kolt, G., Kirby, R., Bar-Eli, M., Blumenstein, B., Chadha, N., Liu, J., & Kerr, G. (1999). A cross-cultural investigation of reasons for participation in gymnastics. *International Journal of Sport Psychology*, 30, 381-398.

Lee, R. E., & DiClemente, C. C. (2001). Extrinsic and intrinsic motivation: Which is important for exercise? *Medicine and Science in Sports and Exercise*, 33, S112.

Li, F. (1999). The Exercise Motivation Scale: Its multifaceted structure and construct validity. *Journal of Applied Sport Psychology*, 11, 97-115.

Longhurst, K., & Spink, K. (1987). Participation motivation of Australian children involved in organized sport. *Canadian Journal of sport Sciences*, 12, 24-30.

Lonsdale, C., Hodge, K., & Rose, E. A. (2008). The behavioral regulation in sport questionnaire (BRSQ): instrument development and initial validity evidence. *Journal of Sport & Exercise Psychology*, 30(3).

Lonsdale, C., Hodge, K., & Rose, E. A. (2008). The behavioral regulation in sport questionnaire (BRSQ): instrument development and initial validity evidence. *Journal of Sport & Exercise Psychology*, 30(3).

Lonsdale, C., Hodge, K., Hargreaves, E. A., & Ng, J. Y. (2014). Comparing sport motivation scales: A response to Pelletier et al. *Psychology of Sport and Exercise*, 15(5), 446-452.

Lonsdale, C., Hodge, K., Hargreaves, E. A., & Ng, J. Y. (2014). Comparing sport motivation scales: A response to Pelletier et al. *Psychology of Sport and Exercise*, 15(5), 446-452.

Marcus, B. H., King, T. K., Clark, M. M., Pinto, B. M., & Bock, B. C. (1996). Theories and techniques for promoting physical activity behaviours. *Sports Medicine*, 22, 321–331.

Markland, D., & Hardy, L. (1993). The exercise motivations inventory: Preliminary development and validity of a measure of individuals' reasons for participation in regular physical exercise. Personality and Individual Differences, 15(3), 289-296.

Markland, D., & Ingledew, D. (1997). The measurement of exercise motives: Factorial validity and invariance across gender of a revised Exercise Motivation Inventory. *British Journal of Health Psychology*, 2, 361-376.

Markland, D., & Ingledew, D. K. (2007). The relationships between body mass and body image and relative autonomy for exercise among adolescent males and females. *Psychology of Sport and Exercise*, 8(5), 836-853.

Morris, T., & Han, J. (1991). Motives for taking up tai-chi. A paper presented at the first Asian South Pacific Association of Sport Psychology International Congress, Melbourne, Australia.

Morris, T., & Rogers, H. (2004). Measuring motives for physical activity. In *Sport and Chance of Life: Proceedings of 2004 International Sport Science Congress* (pp. 242- 250). Seoul, Korea: KAHPERD.

Morris, T., Clayton, H., Power, H., & Han, J. (1995). Gender and motives for participation in sport and exercise. Proceedings of the FEPSAC 9th European Congress of Sport Psychology (pp. 364-373). Brussels, Belgium: FEPSAC.

Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review*, 91, 328-346.

Nicholls, J. G. (1989). *The competitive ethos and democratic education*. Harvard University Press.

Nicholls, J. G., & Miller, A. (1984). Development and its discontents: The differentiation of the concept of ability. In J. Nicholls (Ed.), *Advances in motivation and achievement*, (pp. 185-218).Greenwich, CT: JAI

Ntoumanis, N., & Biddle, S. J. H. (1999). A review of motivational climate in physical activity. *Journal of Sports Sciences*, 17, 643-665.

Nunez, J. L., Martin-Albo, J., Navarro, J. G., & Gonzalez, V. M. (2006). Preliminary validation of a Spanish version of the sport motivation scale 1. *Perceptual and Motor Skills*, 102(3), 919-930.

Pajunen, K. (2004). *Vapaa-ajan liikunnan motivaatiomittarin psykometriset ominaisuudet* (Unpublished master thesis). University of Jyväskylä.

Pelletier, L. G., Fortier, M. S., Vallerand, R. J., & Brière, N. M. (2001). Associations between perceived autonomy support, forms of self-regulation, and persistence: a prospective study. *Motivation and Emotion*, 4, 279-306.

Pelletier, L. G., Fortier, M. S., Vallerand, R. J., Tuson, K. M., Briere, N. M., & Blais, M. R. (1995). Toward a new measure of intrinsic motivation, extrinsic motivation, and amotivation in sports: The Sport Motivation Scale (SMS). *Journal of Sport and Exercise Psychology*, 17, 35-35.

Pelletier, L. G., Rocchi, M. A., Vallerand, R. J., Deci, E. L., & Ryan, R. M. (2013). Validation of the revised sport motivation scale (SMS-II). *Psychology of Sport and Exercise*, 14(3), 329-341.

Pelletier, L., Fortier, M., Vallerand, R., Tuson, K., Briere, N., & Blais, N. (1995). Toward a new measure of intrinsic motivation, extrinsic motivation and amotivation in sports: The Sports Motivation Scale (SMS). *Journal of Sport and Exercise Psychology*, 17, 35-53.

Pradeep, C. S., & Ajeesh, P. T. (2013). A study on achievement motivation among Athletes and Hockey players. *International Journal of Behavioural Social and Movement Sciences*, 2(2), 24-30.

Quested, E., & Duda, J. L. (2011). Perceived autonomy support, motivation regulations and the self-evaluative tendencies of student dancers. *Journal of Dance Medicine & Science*, 15(1).

Reeve, J. (2002). Self-determination theory applied to educational settings. In E. L. Deci, & R. M. Ryan (Eds.), *Handbook on self-determination research: Theoretical and applied issues*. Rochester, NY: University of Rochester Press.

Rogers, H. E. (2000). *Development of a recreational exercise motivation questionnaire* (Unpublished doctoral dissertation). Victoria University of Technology, Melbourne, Australia.

Rogers, H., Morris, T., & Moore, M. (2008). A qualitative study of the achievement goals of recreational exercise participants. *The Qualitative Report, 13,* 706-734.

Ryan, R. M. (2009, June). Self-determination theory and wellbeing. *WeD Research Review 1*.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68e78.

Ryan, R. M., & Deci, E. L. (2002). An overview of self-determination theory: an organismic- dialectical perspective. In E. L. Deci, & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3-33). Rochester, NY: The University of Rochester Press.

Ryan, R. M., & La Guardia. J. G. (in press). What is being optimized over development?: A self-determination theory perspective on basic psychological needs across the life span. In S. Quails & R. Abeles (Eds.), *Dialogues on psychology and aging*. Washington, DC: American Psychological Association.

Ryan, R. M., Frederick, C. M., Lepes, D., Rubio, N., & Sheldon, K. M. (1997). Intrinsic motivation and exercise adherence. *International Journal of Sport Psychology*, 28,

335-354.

Ryan, R. M., Stiller, J., & Lynch, J. H. (1994). Representations of relationships to teachers, parents, and friends as predictors of academic motivation and self-esteem. *Journal of Early Adolescence*, 14, 226–249.

Sallis, J. F., & Hovell, M. F. (1990). Determinants of exercise behavior. *Exercise and Sport Sciences Reviews*, 11, 307–330.

Sarrazin, P., Vallerand, R. J., Guillet, E., Pelletier, L. G., & Cury, F. (2002). Motivation and dropout in female handballers: a 21-month prospective study. *European Journal of Social Psychology*, 32, 395-418.

Sutherland, G., & Morris, T. (1997). Gender and participation motivation in 13-to 15-year- old adolescents. In R Lidor & M Bar-Eli (Eds.), Proceedings of the IX World Congress of Sport Psychology (pp. 676-678). Netanya, Israel: ISSP.

Taylor, J. (1995). A conceptual model of the integration of athletic needs and sport demands in the development of competitive mental preparation strategies. *The Sport Psychologist*, 9, 339-357.

Tenenbaum, G., & Eklund, R. C. (Eds.). (2007). *Handbook of sport psychology*(pp. 516-518). New York: Wiley.

US Department of Health and Human Services. (1996). Physical activity and health: a report of the surgeon general. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention. *National Center for Chronic Disease Prevention and Health Promotion*, 147.

Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In M. P. Zanna (Ed.), Advances in experimental social psychology (Vol. 29, pp. 271–360). San Diego, CA: Academic Press.

Vallerand, R. J. (1997). Towards a hierarchical model of intrinsic and extrinsic motivation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (pp. 271-359). New York: Academic Press.

Vallerand, R. J., Fortier, M. S., & Guay, F. (1997). Self-determination and persistence in a real-life setting: toward a motivational model of high school dropout. *Journal of Personality and Social Psychology*, 72, 1161e1176.

Warburton, D. E., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: the evidence. *Canadian medical association journal*, 174(6), 801-809.

Weinberg, R., Tenenbaum, G., McKenzie, A., Jackson, S., Anshel, M., Grove, R. & Fogarty, G. (2000). Motivation for youth participation in sport and physical activity:

relationships to culture, self-reported activity levels, and gender. *International Journal of Sport Psychology*, 31(3), 321-346.

Zach, S., Bar-Eli, M., Morris, T., & Rogers, H. (in press). *Measuring motivation for physical activity: Validation of the physical activity and leisure motivation scale*. Manuscript submitted for publication.