

ABSTRACT

Title of Dissertation: MOTIVATION FOR AND SOURCES OF ENJOYMENT FROM
 PHYSICAL ACTIVITY ACROSS THE ADULT LIFESPAN

Dorothy C. Hyman, Doctor of Philosophy, 1996

Dissertation directed by: Professor Donald H. Steel
 Department of Kinesiology

This research describes the development and validation of measures designed to assess physical activity motivation and physical activity enjoyment across the adult lifespan. Two stages were used with samples of 259 and 275 adults respectively counterbalanced for age and sex. All respondents were currently engaged in a variety of sport and exercise activities and settings appropriate for all age groups.

Stage one respondents completed an initial 50-item physical activity motivation inventory and an initial 39-item physical activity enjoyment inventory. Results were used to identify factors and items for physical activity motivation and enjoyment that appeared consistent and stable across the adult lifespan in order to develop the Physical Activity Motivation Scale (PAMS) and the Physical Activity Enjoyment Scale (PAES). Alpha reliabilities were calculated for each sub-scale of the PAMS and PAES, and a convenience sample (n=40) completed the PAMS and PAES two weeks apart to determine test-retest reliabilities.

Stage two respondents completed the PAMS, PAES, the short form of the Leisure Motivation Scale, the short form of the Leisure Satisfaction

Scale, and the Center for Epidemiological Studies Depression Scale in order to confirm PAMS and PAES stage one factor structures, determine the convergent and divergent validity of the PAMS and PAES, and describe adult patterns of physical activity motivation and enjoyment across the lifespan. Additionally, results from stage two were used to distinguish between motivation for and enjoyment from physical activity.

The Physical Activity Motivation Scale (PAMS) consists of 22 items and five sub-scales: Mastery and Autonomy, Social Recognition and Rewards, Affiliation, Family, and Self-Control. The Physical Activity Enjoyment Scale (PAES) consists of 14 items and sub-scales: Self Rewards, Social Recognition and Rewards, and Responsibility/Family. The PAMS and PAES sub-scales have acceptable internal consistency and test-retest reliability, share expected variance with related constructs, and appear relatively stable and consistent across the adult lifespan.

In stage two, the relationship between motivation and enjoyment in the physical activity setting was explored and preliminary support found for their cyclic, yet distinguishable natures. Directions for further research are proposed.

MOTIVATION FOR AND SOURCES OF ENJOYMENT FROM PHYSICAL ACTIVITY
ACROSS THE ADULT LIFESPAN

By

Dorothy C. Hyman

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Advisory Committee:

Professor Donald H. Steel, Chair/Advisor
Professor John Burt
Dr. Laurence Chalip
Dr. Bradley Hatfield
Professor Seppo Iso-Ahola

Maryland
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mod
Hyman
D.C.

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CHAPTER I

INTRODUCTION

Motivation is a complex phenomenon generally defined as arousal to action and considered a driving force for the initiation and maintenance of an individual's behavior (Franken, 1982). Although the above definition is often used, motivation should not be confused with arousal, "activation of the various organs of the body that are under control of the autonomic nervous system" (Cox, 1994, p.134). The distinction between motivation and arousal is that motivation provides the cognitive energization for human behavior, while arousal provides the physiological energization necessary for human action and behavior performance.

Motivation provides the underlying energy for human behavior by determining the selection, intensity or vigor, and persistence of an individual's activities. Although there is no universally accepted, systematic approach to motivational theory at the present time, Cattell and Kline (1977) suggested there is a consensus among psychologists concerning three recognizable aspects for motivated behavior: the tendency to attend spontaneously to some things rather than others, a course of action with a specific goal as its end, and a characteristic emotion specific to the action. Accordingly, motivated behavior is goal-directed activity accompanied by an affective response.

What goals and affective responses are associated with exercise and sport participation? Willis and Campbell (1992) identified the following recurring primary motives for exercise from their review of

research on exercise and fitness motives: increased health and fitness and psychological benefits. Weiss and Chaumeton (1992) identified the following fairly consistent set of sport-general and sport-specific motivational factors from their review of descriptive studies on participation motivation in young athletes: competence (learn and improve skills, achieve goals), fitness (get in shape or get stronger), affiliation (be with friends or make new ones), team aspects (be part of a group or team), competition (win, be successful), and fun (excitement, challenge, action). Both reviews identified fun and enjoyment as exercise and sport participation motives rather than positive affective responses associated with physical activity involvement and outcome evaluation by the individual and others. Additionally, although two positive affective components of motivation, fun and enjoyment, were identified; other positive feeling states such as revitalization and tranquility associated with exercise involvement during and after participation (Gauvin & Rejeski, 1993) were absent. Also absent was satisfaction, defined by Ragheb and Beard (1980, p.330) as "positive perceptions or feelings which an individual forms, elicits, or gains as a result of engaging in leisure activities and choices." Because sport and exercise are leisure activities, it would be useful to explore the relationships between sources of enjoyment from participation in these physical activities and the more general construct of leisure satisfaction.

People across the age spectrum from childhood to later adulthood frequently cite fun and enjoyment as their primary reasons for engaging in sport and exercise activities (Broer & Holland, 1954; Clough, Sheperd

& Maughan, 1989; Ewing & Seefeldt, 1990; Gill, Gross & Huddleston, 1983; Gould, Feltz & Weiss, 1985; Raugh & Wall, 1987; Weick, 1975; Youngblood & Suinn, 1978). The robustness of this finding clearly suggests that the role of positive affect is a key to understanding and explaining the physical activity experience and motivation for participation in sport and exercise. Fun and enjoyment can occur during and after physical activity as the individual's response to the activity itself and to the outcome evaluation of the activity by self and others. Unfortunately, few existing measurement tools enable researchers to fully explore enjoyment from participation in physical activity as an integrated, multi-factor, social-psychological construct because they do not differentiate between motivation and enjoyment. Most current physical activity, sport, or exercise inventories and questionnaires include fun and enjoyment as reasons for participation in physical activities rather than positive feelings generated during those movement experiences and resulting from sport and exercise participation.

The more fundamental question raised by reviews of sport and exercise motivation is the relationship between motivation and enjoyment. Because motivation and enjoyment are latent factors, determining their relationship to one another is somewhat problematic. One of the purposes of this research was to develop assessment tools through which sport and exercise motivation and enjoyment could be differentiated and reliably, validly measured for individuals participating in physical activities across the adult lifespan.

One rationale for a distinction between motivation and enjoyment is based on the definition of motivation as an individual's cognitive

energization for behavior and enjoyment as the positive global affective response associated by the individual with the experience itself. Accordingly, in relation to actual behavior, motivation occurs a priori, enjoyment occurs post hoc, and motivation and enjoyment both occur during the activity. Motivation sparks the initiation of behavior, motivation and enjoyment both impact on the maintenance of behavior, and enjoyment plays a key role in the continuation or adherence to activity. According to Wankel (1993, p.151), "enjoyment may facilitate continued involvement in activity and in turn afford attainment of health benefits to more participants." For this reason, it is necessary to examine both motivation and enjoyment to develop a more comprehensive answer to the question of why people play sports and exercise across the adult lifespan.

This still leaves the question of what specific motives and sources of enjoyment are relevant to and impact upon adult participation in sports and exercise. While there is a great deal of literature and previous research in the area of sport and exercise motivation, there is very little separate research and literature concerning sport and exercise enjoyment. The initial motivation inventory developed for this research was grounded in previous sport, exercise, and physical activity instruments and distinguished not by its content but by its population sample from across the adult lifespan. The initial enjoyment inventory was based on a conceptual link between Denzin's (1984) levels of human emotions and the subsequent possible sources of enjoyment from participation in physical activity defined within his fourth level of emotion, feelings of the self and moral person. These sources of

enjoyment look somewhat suspiciously similar to participation motives. This is because the enjoyment derived from sport and exercise participation is a consequence of the experience itself and thus incontrovertibly linked to reasons for sport and exercise participation. Any participation motive is a possible source of enjoyment from sport and exercise participation. A graduate-level seminar class in Sport Psychology during the Spring 1993 semester at the University of Maryland, College Park confirmed this when they evaluated a list of 52 items previously used to assess sport participation motivation for their appropriateness as sources of enjoyment from sport and exercise participation. All agreed that the items suggested represented both motives and sources of enjoyment for physical activity. No additional items were suggested by the focus group.

The relationship between habitual exercise and both individual and public health is well-documented and includes a broad spectrum of conditions upon which habitual exercise has an allegedly favorable influence (Dishman, 1988). Empirical evidence has linked physically active lifestyles to improved mental (Seraganian, 1993) and physical (Brill, Kohl, & Blair, 1992) well-being. However, epidemiologists report that less than 20% of the 18-to-65-year-old population in the United States exercises at sufficient levels of intensity, duration, and frequency to achieve positive health and fitness benefits (Powell, Spain, Christenson, & Mollenkamp, 1986). In addition, although there are relatively few descriptive studies of sport or exercise motivation from a developmental perspective (Brodkin & Weiss, 1990; Cousins & Burgess, 1992; Duncan & McAuley, 1993; Heitman, 1986; McPherson, 1984;

Rudman, 1986), the values and beliefs held by exercise participants may be subject to significant modification as a function of age, sex, activity history, and differences in objective/subjective responses to exercise (Rejeski, 1992).

Well-documented statistics also indicate that approximately 50% of those who begin organized fitness and exercise programs withdraw before any health benefits have been realized (Dishman, 1982; Morgan, 1977; Oldridge, 1982). A better understanding of why individuals choose to participate in exercise activities and why they continue such participation throughout the adult lifecycle could provide a means for decreasing this drop-out rate (Herbert & Teague, 1988-89). An emphasis on enjoyment of physical activity may have significant positive outcomes by facilitating continued involvement in activity, countering stress, and facilitating positive psychological health (Wankel, 1993). Thus, it seems valuable to determine the preferred sport and exercise activities, perceived participation motives, specific affective responses to physical activity participation, and physical activity involvement history for individuals across the lifespan from early to late adulthood. This information should provide insights not only into why individuals play sports and exercise, but also into how to plan and implement physical activity programs that attract and retain more adults of varying ages.

Purpose of Study and Hypotheses

The purpose of this research was to design valid, reliable, objective inventories to measure motivation and sources of enjoyment from physical activity across the adult lifespan from early to late

adulthood within an inclusive, integrated theoretical framework. For this reason, items and sub-scales for each inventory were grounded in the literatures from exercise motivation, sport participation motivation, leisure motivation, leisure satisfaction, and sport enjoyment. The selection of items for the preliminary inventories attempted to include all primary physical activity participation motives for the motivation inventory and all possible positive affective responses logically associated with each primary motive for the enjoyment inventory. Sub-scales were chosen to reflect motivation factors identified from previous research and universal social needs identified by Mannell (1989) and Deci and Ryan (1991).

The hypotheses tested were:

1. Motivation for and sources of enjoyment from physical activity are multi-factor social-psychological constructs that are positively and highly associated, but distinguishable.
2. The motivation scale is positively and significantly related to individual self-reports of time actually spent participating in physical activity.
3. The enjoyment scale is positively and significantly related to individual self-reports of the amount of time preferred spent participating in physical activity if there were no participation barriers or constraints.
4. The level of motivation and sources of enjoyment from physical activity in each scale and sub-scale vary across the adult lifespan.
5. The level of motivation and sources of enjoyment from physical

activity in each scale and sub-scale vary according to sex.

6. The motivation scale is positively and significantly correlated with the short form of the Leisure Motivation Scale, and all sub-scales are positively correlated (Beard & Ragheb, 1983).
7. The enjoyment scale is positively and significantly correlated with the short form of the Leisure Satisfaction Scale, and all sub-scales are positively correlated (Ragheb & Beard, 1980).
8. The motivation scale and sub-scales and the enjoyment scale and sub-scales are negatively correlated with the Depressed Affect, Somatic and Retarded Activity, and Interpersonal Affect sub-scales of the Center for Epidemiological Studies Depression Scale (Radloff, 1977) and negatively and significantly correlated with the Positive Affect sub-scale of the Center for Epidemiological Studies Depression Scale.

Implications for Future Research

The motivation and enjoyment inventories developed from this research should provide valuable psychometric tools with increased measurement efficacy for both constructs. The PAMS and PAES could be used to examine and describe participants in specific types of physical activities in order to provide settings, services, instruction, and leadership that encourage adherence or continued involvement of current participants as well as those that will attract new participants. Motivation and enjoyment profiles could also be examined and compared for each individual as he or she participates in a variety of physical activities. Such descriptions should enhance activity selections that maximize enjoyment while meeting individual motivational needs. This,

in turn, should improve adherence.

Data collected from individual and group research using multi-factor motivation and enjoyment inventories also have direct implications for provision of sport and exercise by public and private organizations. Results should indicate participant expectations from physical activity and the relationship of those expectations to activity enjoyment. These impact upon the types and number of activities that should be offered by public and private organizations to adequately meet the public's needs, facility design, instruction, supervision, and program evaluation. Specific information concerning each of the above are areas for future research.

Definition of Terms

The following terms are operationally defined for use in this research:

exercise - planned, structured, repetitive physical activity with the primary objective of improving or maintaining physical fitness

sport - voluntary, organized, competitive, physical activities with both intrinsic and extrinsic rewards. There is a clear beginning and end to the competition, consequences are limited, competition is against either an opponent or a standard of achievement, and the outcome has not been pre-determined.

physical activity - playing sports, practicing sports skills, and exercising

motivation - a driving cognitive force for the initiation and

maintenance of goal-directed behavior

enjoyment - the global positive affective response to the outcome

evaluation of goal-directed behavior

CHAPTER II

REVIEW OF LITERATURE

Motivation for physical activity is a complex phenomenon that provides the underlying energy for individual sport and exercise behavior and determines the selection, intensity or vigor, and persistence of an individual's participation in physical activities. In order to more fully understand participation motivation, a brief historical summary of motivation theory and constructs that have been applied in sport, exercise, and leisure settings is useful. Descriptions of relevant motivation questionnaires and inventories designed for exercise, sport, and leisure participation and their relationship to motivation theory and the initial motivation inventory designed for the present research are included for each motivation theory. Next, a summary of enjoyment and satisfaction theoretical constructs that have been applied in physical activity and leisure settings are presented. Enjoyment and satisfaction questionnaires and inventories designed for sport, exercise, and leisure are described and their relationships to the present proposed enjoyment inventory delineated within relevant theoretical constructs. Finally, exercise and sport participation are considered from a developmental perspective across the adult lifespan.

Trait Theory

Trait theory (Allport, 1937) is based upon the premise that personality can be described in terms of stable, enduring traits or factors that remain consistent across a variety of differing situations.

These traits are considered synonymous with predispositions to act in a certain way, although such predispositions do not mean the individual will always act in the expected manner. The traits with particular relevance to sport and exercise participation motivation include self-motivation (Dishman, Ickes, & Morgan, 1980), achievement motivation (Duda, 1993 review), self-efficacy (Bandura, 1986; McAuley, 1992 review), and sport confidence (Vealy; 1986, 1988).

Self-Motivation. Using a trait theory approach to exercise, Dishman, Ickes, and Morgan (1980) developed the 40-item Self-Motivation Inventory (SMI) as a dispositional measure of behavioral persistence designed to assess the individual's tendency to engage in vigorous physical activity regardless of extrinsic reinforcement. Eleven factors accounted for 40.5% of the total variance. In initial research, the SMI predicted compliance of women to crew training and middle-aged adult males to a health-oriented exercise program and was valuable in discriminating between drop-outs and adherers in organized fitness/rehabilitation programs. Even though the SMI was predictive in initial research, in some research it did not assist in classifying those who eventually dropped out of a structured fitness program (Ward & Morgan, 1984) nor was it related to fitness program attendance (Wankel, 1984). Rejeski (1994) suggested these inconsistencies might be accounted for by the restrictiveness inherent in the trait theory upon which the SMI was founded. They could also be the result of basing the SMI on a factor structure that explained less than half of the variance in the initial sample and consequently may well have eliminated one or more important, untapped sources of motivation.

Sport Confidence. A second trait identified in sport settings is sport confidence, "the belief or degree of certainty individuals possess about their ability to be successful in sport (Vealey, 1986, p.222). According to Vealey (1986, 1988), the athlete brings to the objective competitive sport situation a personality trait of sport confidence and a particular competitive orientation which are predictive of the level of situational state-specific sport confidence exhibited by the athlete during actual sport competition. This situation-specific sport confidence is predictive of overt behavioral responses or performance which, in turn, lead to subjective perceptions of outcome by the athlete including satisfaction, perception of success, and outcome attributions. Subjective perceptions of outcome influence and are influenced by both the athlete's competitive orientation and personality trait of sport confidence. Thus, the motivational mechanism in this model is limited to mastery and excludes social motives for sport participation. Also, because self-confidence and self-efficacy are used interchangeably by Vealey (1986), additional limitations of sport confidence for adequately explaining sport participation motivation are more fully explained in the discussion of self-efficacy.

Achievement Motivation. The McClelland-Atkinson model of achievement motivation (1953) proposes that achievement motivation is based upon two psychological constructs: the motive to achieve success and fear of failure. Within the sport setting, achievement motivation has been defined as "the athlete's predisposition to approach or avoid a competitive situation" (Cox, 1994, p. 212). In a broader sense, achievement motivation represents the desire or drive to excel. As

such, achievement can be conceptualized as a drive or need, and achievement motivation can be viewed from the perspective of drive theory even though it is not quite so simplistic.

The motive to achieve success is believed to represent the athlete's intrinsic motivation to engage in an interesting and exciting activity, while fear of failure is associated with cognitive state anxiety (Cox, 1994). Maehr and Nicholls (1980) suggest achievement motivation may take a variety of forms derived from individuals' primary goals for participation and the meanings they attach to success and failure. Maehr and Nicholls identified three categories of achievement goal orientations: ability-oriented, task-oriented, and social approval-oriented behaviors.

Ability-oriented behavior is characterized as the desire to maintain favorable perceptions of personal ability with the primary goal of maximizing the probability of demonstrating high ability or minimizing the probability of demonstrating low ability. Social comparison is the predominant source of information for ability goal orientation, and performance outcomes attributed to high ability are subjectively experienced as success and result in positive affect and the expectation of future success in similar situations. Outcomes attributed to low ability are perceived as failure which result in negative affect and lead to expectations of failure in future mastery attempts in similar situations.

Task-oriented behavior focuses on the process of involvement in achievement situations rather than the outcome. Success is experienced as intrinsic motivation derived from mastery of the task itself, and the

criteria against which such performances are evaluated are inherent in the task or based on previous individual performances and not those of others.

The goal of social approval-oriented behavior is to maximize the probability of demonstrating virtuous intent and thus gain social approval for these intentions. The role of effort is emphasized in the social approval orientation because effort is viewed as being voluntarily controlled by the individual and thus indicative of social conformity. Thus, goal attainment for individuals in competitive situations such as sport who are either ability-, task-, or social approval-oriented implies some measure of individual competence. For this reason, achievement motivation can be linked to competence motivation theory (Harter, 1978, 1980; White, 1959) and the roles played by perceived competence and perceived control in determining motivational orientation, evaluation of performance, affect, and future expectations in similar sport situations.

Competence Motivation. According to Harter (1978, 1980), perceived competence is a multidimensional motive that directs individuals in the cognitive, social, and physical domains. Success and failure are evaluated by significant others such as parents, teachers, coaches, and peers. Perceived competence and intrinsic pleasure resulting from positive evaluations and positive feedback indicate success and increase achievement striving. Perceptions of incompetence and displeasure result from negative evaluation and negative feedback from significant others, are associated with failure, and presumably lead to anxiety and a decrease in achievement motivation. Thus,

individuals who perceive themselves as competent in sport and exercise activities should be more likely to participate in sport and exercise than individuals who perceive themselves as incompetent in sport and exercise settings. Unfortunately, the relationship between competence and participation in sport activities is weak (Feltz & Brown, 1984; Feltz & Petlickoff, 1983; Ulrich, 1987).

The initial motivation inventory designed for the present research accounted for both achievement and competence theories of motivation. The motivation inventory included three sub-scales that attempted to directly assess perceived personal competence, social competence, and control. In addition, individual items addressed the importance of winning, being better than others, improving skills, and being respected by others.

Social Learning Theory

A second major school of thought in human behavior and motivation is social learning theory (Bandura, 1977; Hull, 1943; Rotter, 1954). According to social learning theory, human behavior is a function of social learning and the strength of the situation. Individuals learn to behave through modeling the observed behavior of others and through social reinforcement or rewards received for specific behaviors. In social learning theory, self-efficacy is a term used to describe the conviction an individual has in his/her ability to successfully execute the behavior required to produce a certain outcome (Bandura, 1977).

Social learning theorists have identified a problem of getting people to take immediate steps toward long-term rewards. They have attributed this problem to a general lack of motivation caused by the

delayed consequences associated with health outcomes. Most people seem to seek immediate gratification and act in a particular way because they expect that their behavior will produce some desired outcome. When outcomes occur only after a training period of eight to ten weeks as in the case of exercise, the expectancy and reinforcement values of the exercise behavior are affected. However, the individual's perception or belief in his or her ability to control outcomes and subsequent reinforcement are still significant tenets in social learning theory and deserve attention in sport and exercise research. For this reason, the scales for perceived freedom or personal choice and control and social recognition and rewards were included in the initial inventories developed for the present research (see Appendix A). More specifically, it is essential to recognize that reinforcements exist in hierarchies that vary for each individual within each sport experience and exercise session. Enjoyment is one such reinforcement, and its sources within the sport and exercise settings might provide insights into both the individual's hierarchy of physical activity needs or motives and the relative values of these motives in determining the individual's general and specific enjoyment from physical activity participation.

The Health Belief Model. The Health Belief Model (Becker, 1974) proposes the following determinants of compliance to health behaviors: 1) readiness to undertake behavior determined by motivations, value of illness threat reduction, and probability that compliant behavior will reduce threat and 2) modifying and enabling factors including demographics, structural components, attitudes, interaction with doctors, past experience with behavior, and social pressure. Although

Willis and Campbell (1992) identified health and fitness as a recurring primary motivator for exercise participation, Rejeski (1992) seriously questioned the theoretical merit of the Health Belief Model and its application in the exercise setting on the following grounds: the limits defined by the motivating and enabling dimension of the Health Belief Model are ambiguous and create considerable error variance from one study to another because of the multiple meanings given to terms, systematic definitions are not specified, individual differences such as health locus of control are not recognized, delay of gratification and hierarchy of needs are not addressed, and the extent to which other exercise motives exist reduces the predictive power of the Health Belief Model. However, because health and fitness are recurring primary motives for both sport and exercise participation, they were directly included by item 9 of the Personal Competence sub-scale and may have been indirectly measured by items 2, 4, 5, 7, and 10 of the Personal Competence sub-scale and items 4 and 5 of the Variety and Change sub-scale in the initial motivation inventory designed for the present research (see Appendix A).

Theories of Reasoned Action and Planned Behavior. Fishbein and Ajzen (1975) developed the theory of reasoned action to predict and explain voluntary behavior. According to the theory of reasoned action, attitude and social norms lead to intention which leads to behavior. Attitude is comprised of outcome expectancies and the values attached to outcomes, while social norms contain the normative beliefs of significant others and motivation to comply. One major limitation of the theory of reasoned action is its restriction to behavior completely

under volitional control and its consequent inapplicability to behavior restricted by available resources. To account for goal-directed behavior in situations in which the individual does not have complete volitional control, Ajzen (1985) added a behavioral control construct to the theory of reasoned action in his theory of planned behavior. Behavioral control in this context is very similar to the perception of self-efficacy (Ajzen, 1991).

Wankel, Mummery, Stephens, and Craig (1994) investigated the utility of attitude, perceived behavioral control, and perceived social support measures as operationalizations of the theories of reasoned action and planned behavior in order to assess the effectiveness of each theory for predicting physical activity intentions of 1733 male and 1946 female participants in the 1981 Canada Fitness Survey. The theory of planned behavior accounted for 31% of the behavior intention variance, while the theory of reasoned action accounted for only 15% of the behavior intention variance. In other words, the addition of perceived behavioral control increased the amount of explained variance for behavioral intention from 15% to 31% even though a measure of social support for activity was substituted for that of subjective norm when operationalizing both theories. The authors suggested that general predictions from the theory of planned behavior were supported when the constructs were operationalized in a less than optimal manner which supported the construct validity of the theory and added confidence in its robustness. A t test indicated that the behavioral intentions of males and females were not significantly different, and the relative contributions of the three predictor variables were similar. Perceived

behavioral control was the most important predictor of activity intention, followed by attitude, and social support. However, there was a successive decrease across age in the intention to be active with a significant difference between the youngest age group (20-39) and all others. In the initial inventories developed for the present research, control was tapped by items in the Perceived Freedom sub-scale, and social support was addressed by items in the Social Competence and Affiliation sub-scale. Through its delineation of specific sources of enjoyment from physical activity, the enjoyment inventory also provided a means for assessing why individuals like to participate in sports and exercise. This provided a measure of the sources of positive attitudes toward physical activity participation (see Appendix A).

Model of Interpersonal Behavior. Triandis (1977) model of interpersonal behavior proposed that the probability of an act is a function of intentions, habit strength, and facilitating conditions. Additionally, intentions are determined by four factors: social, cognitive, affective, and personal normative beliefs. The social component constitutes the individual's perception of the "appropriateness" of the behavior in relation to his/her reference group, role expectations, and self-concept. Perceived consequences times the value of these consequences is the cognitive component, while personal normative beliefs are the individual's perceived moral obligation to perform the act in question. Affect taps the individual's feelings and includes enjoyment derived from the behavior addressed through the initial enjoyment inventory developed for the present research. Moral obligation is a component not addressed in other

motivation questionnaires or inventories, but one suggested by Triandis and included in the initial inventories developed for the proposed research as a "responsibility" factor measured by items 6 and 7 of the Social Competence and Affiliation sub-scale (see Appendix A). Value was measured on a 1 to 5 Likert scale by asking respondents to rate how often items in the initial physical activity motivation scale were important reasons for participating in their weekly physical activities and how often items in the initial physical activity enjoyment inventory were important sources of enjoyment from their weekly physical activities. A rating of five was "always," four was "usually," three was "sometimes," two was "occasionally," and one was "never."

Valois, Desharnais, and Godin (1988) contrasted Fishbein and Ajzen's theory with Triandis' model in the exercise setting using data collected from 166 university employees on questionnaires designed to tap the components of each theoretical position. Results indicated that attitudes were the only significant component of Fishbein and Ajzen's theory for this sample, and attitudes and the subjective norm component predicted 9% of the variance in intentions. However, the affect, cognition, social, and personal normative beliefs factors from Triandis' model predicted 25% of the variance in intention. Intention to exercise from Fishbein and Ajzen's theory explained 32% of the variance in exercise behavior, while habit multiplied by the facilitating factor from Triandis' model explained 33% of the variance in exercise behavior. It was affect, not cognition, that shared variance with the intentions part of Triandis' model. Also, the social component of Fishbein and Ajzen's theory was unrelated to intentions, but the social factor in

Triandis' model had a significant beta weight. This suggests that normative beliefs, role expectations, and self-concept may be important determinants for exercise intention. Normative beliefs are reflected in each item of the initial motivation inventory designed for the present research. Role expectations and self-concept are contained in the Personal Competence, Social Competence and Affiliation, and Cognitive Consistency scales (see Appendix A).

Self-Efficacy. Self-efficacy theory is a social cognitive approach to behavioral causation. It posits that behavior, cognitive and physiological factors, and environmental influences operate as interacting determinants of one another (Bandura, 1986). Self-efficacy theory focuses on the role of self-referent thought in psychosocial functioning and provides a common mechanism through which individuals demonstrate control over their motivation and behavior (McAuley, 1992). More specifically, self-efficacy cognitions are the beliefs an individual has in his/her capabilities to engage successfully in a course of action sufficient to satisfy the demands of the situation. Bandura (1986) has argued that the measurement of self-efficacy cognitions should be conducted along three dimensions: strength, level, and generality. Strength of self-efficacy is an index of the individual's confidence ratings for successful participation in a specific behavior or course of action despite potential barriers or obstacles. Level of self-efficacy refers to the individual's expected performance attainment within a progression of increasingly difficult tasks, while generality is the number of domains in which an individual considers him/herself efficacious.

McAuley (1992) reviewed self-efficacy and exercise research from two perspectives: how self-efficacy has influenced and can influence exercise behavior and how exercise behavior has enhanced or can enhance self-efficacy. The first perspective considers self-efficacy as an antecedent to exercise, while the second perspective views self-efficacy as a consequence of exercise. He concluded that self-efficacy is influenced by information based on previous exercise/physical activity performance; influences adoption of and adherence to such activities; and plays an important role in the effects of and effects on goal-setting, social support, and coping responses. For these reasons, he suggested using self-efficacy as a theoretical framework to better understand and predict exercise behavior in conjunction with other supposedly potent influences on exercise such as goal orientations, coping strategies, goal-setting, motivational climate, and social support mechanisms.

Dzewaltowski (1988) developed the Exercise Motivation Questionnaire to assess exercise motivation based on the theory of reasoned action and social cognition theory. The questionnaire assessed self-efficacy and outcome expectations in relation to exercise behavior using self-efficacy scores that represented an average of the individual's confidence in adhering to an exercise program in spite of his/her work schedule, when physically fatigued, or when exercise is boring. Behavioral intention and subjective norm were also measured. Multiple regression analyses of data collected from 328 undergraduate students indicated that social cognitive theory constructs accounted for 14% of the variance in predicting exercise behavior, while attitude and

subjective norm accounted for 20% of the behavioral intention to exercise. Commonality analysis indicated that the theory of reasoned action constructs did not account for any unique variance in exercise behavior when compared to constructs from social cognitive theory.

Garcia and King (1991) administered a self-motivation inventory and self-efficacy questionnaire to 74 sedentary men and women age 50 to 64 to compare predictors of exercise adherence based on social-cognitive theory (self-efficacy) with exercise adherence predictors derived from a trait approach (self-motivation). Subjects were randomly assigned to one of three exercise regimens or to an assessment-only control group. Subjects in the exercise conditions recorded each bout of exercise and rated the experience in terms of perceived exertion, enjoyment, and convenience. Self-efficacy was significantly associated with exercise adherence at both six months and one year. Self-motivation was not significantly associated with exercise adherence. Contrary to the researchers' expectations, perceived exertion, enjoyment, and convenience measured during the first six months did not make a significant contribution to the total variance in adherence during the second six months. One possible explanation is that perceived exertion, enjoyment, and perceptions of convenience changed for the subjects after initial measurement and as a result of exercise. Periodic measurements of these factors would appear necessary in future research. The initial physical activity enjoyment inventory designed for the present research could provide a means for one such measurement.

Duncan and McAuley (1993) examined the relationship among social support, self-efficacy, and the ongoing exercise behavior of 851

sedentary adults aged 45 to 64. Latent growth modeling techniques were used to determine whether self-efficacy served a mediational role in the influence of social support on exercise behaviors. Results suggested that self-efficacy cognitions did serve a mediational role in the relationship between social support and health-promoting behaviors for an at-risk population sample.

Self-Determination Theory

Deci (1975, 1987, 1994), Deci and Ryan (1985, 1987, 1989), and Deci et. al. (1991, 1992, 1994) conducted a research program of intrinsic motivation that led to the formulation of a theory of self-determination. According to self-determination theory, people are inherently motivated by needs for competence, autonomy, and relatedness. According to Deci & Ryan (1991):

The needs for competence and self-determination (autonomy) provide a comprehensive explanation for a wide range of exploratory and mastery behaviors and for the idea that individuals strive to develop their interests and capacities. Thus in most contexts these two needs are emphasized as the bases of intrinsic or mastery motivation. However, an exclusive focus on mastery motivation fails to take account of the intrinsic social need that directs people's interest toward the development of relational bonds and toward a concern for interpersonally valued and culturally relevant activities. (p. 242)

Social contexts that facilitate the satisfaction of needs for competence, self-determination, and relatedness by providing optimal challenge, informational feedback, interpersonal involvement, and

autonomy support promote both intrinsic motivation and self-determined forms of extrinsic motivation. These, in turn, are positively associated with high quality learning and personal adjustment (Deci et. al., 1991, Deci & Ryan, 1994). Additionally, the relative autonomy of a person's motivated actions is more useful for characterizing the motivational basis of learning than the undifferentiated intrinsic-extrinsic motivation dichotomy (Rigby et. al., 1992). Accordingly, extrinsic rewards can be perceived by the individual as either informational or controlling. Informational external rewards enhance the individual's sense of accomplishment and self-determination and increase levels of intrinsic motivation; while external rewards perceived by the individual as controlling decrease feelings of self-determination and the level of intrinsic motivation.

Deci and Ryan (1987) detailed the contextual and personal factors that tend to promote autonomy and those that tend to control by reviewing research related to the initiation and regulation of intentional behavior. They concluded that autonomy support or the promotion of choice rather than pressure toward specific outcomes has generally been associated with more intrinsic motivation, greater interest, less pressure and tension, more creativity, more cognitive flexibility, better conceptual learning, a more positive emotional tone, higher self-esteem, more trust, greater persistence of behavior change, and better physical and psychological health. Based on these results, Deci and Ryan presented an organismic perspective in which they argued that the regulation of intentional behavior varies along a continuum from autonomous or self-determined to controlled. The sub-scale,

Perceived Freedom, was included in the initial inventories for both motivation and enjoyment developed for the present research in an attempt to at least partially measure levels of self-determination. In addition, the item "trying to reach personal goals" implies autonomy inasmuch as personal goals imply goals developed by the individual. Relatedness is measured by the sub-scales Social Competence and Affiliation and Social Recognition and Rewards.

Self-determination theory also suggests that intrinsic motivation varies in line with perceptions and feelings of competence. Vallerand and Reid (1984) conducted a study to determine whether the effects of verbal feedback (informational extrinsic motivation) on intrinsic motivation are mediated by perceived competence and concluded that positive feedback increased while negative feedback decreased both intrinsic motivation and perceived competence. Results of their path analysis using verbal feedback, perceived competence, and intrinsic motivation supported the mediating effects of perceived competence on intrinsic motivation and provided strong support for the theory of self-determination. The sub-scale, Personal Competence, was included in the initial motivation and enjoyment inventories developed for the present research in an attempt to measure the importance specific types of competence related to or derived from physical activity have for both the individual's motivation and enjoyment in a variety of activity settings.

Briere et al. (in press) developed a new measure of motivation toward sport based on the tenets of Deci and Ryan's self-determination theory, the Echelle de Motivation vis-a-vis les Sports (EMS), that was

translated from French and validated in English by Pelletier et al. (1995). The English version was labeled the Sport Motivation Scale (SMS) and consists of seven sub-scales that measure three types of intrinsic motivation (intrinsic motivation to know, intrinsic motivation to accomplish things, and intrinsic motivation to experience stimulation), three forms of regulation for extrinsic motivation (identified, introjected, and external), and amotivation. Intrinsic motivation to know was defined as performing an activity for the pleasure and satisfaction one experiences while learning, exploring, or trying to understand something new. Intrinsic motivation to accomplish something was related to mastery motivation, efficacy motivation, and task-orientation and referred to engaging in an activity for the pleasure and satisfaction experienced when one attempts to accomplish or create something. Trying to master difficult training techniques in order to experience personal satisfaction was one example of intrinsic motivation to accomplish something. Intrinsic motivation to experience stimulation was defined as engaging in an activity in order to experience stimulating sensations such as sensory pleasure, aesthetic experiences, fun, excitement, flow, and peak experiences. External regulation referred to behavior controlled by external sources such as material rewards and constraints imposed by others in order to obtain rewards such as praise and avoid negative consequences such as criticism from parents. Introjection was defined as an external source of motivation internalized such that its actual presence is no longer necessary to initiate behavior. The authors used sport participation because of pressures such as anxiety and guilt are examples of

introjection. Identification was defined as extrinsic motivation in which the individual has come to value and judge the behavior as important and chooses to initiate the behavior albeit for extrinsic rewards. Athletes who participate in sport to achieve personal goals such as personal growth and development were cited as an example of identification. The last sub-scale, amotivation, was compared to learned helplessness and referred to individuals who were neither intrinsically nor extrinsically motivated. Rather, these athletes perceived no contingencies between their action and the outcomes of their actions and experienced feelings of incompetence and lack of control.

The preliminary and validation studies for the EMS (Briere et al., in press) involved approximately 600 athletes (mean age 18.4 years) participating on athletic teams in the Canadian province of Quebec in the following sports: basketball, volleyball, swimming, ice hockey, football, handball, soccer, and badminton. Data analyses revealed that the EMS had satisfactory internal consistency levels (a mean alpha score of .82), moderate to high indices of temporal stability (a mean test-retest correlation of .69 over a one-month period), a seven-factor structure confirmed by confirmatory factor analysis with LISREL, construct validity of the scale supported by a series of correlational analyses among the seven sub-scales as well as between the sub-scales and other constructs relevant to the sport domain (interest toward sport, sport satisfaction, and positive emotions experienced during sport practice), and predictive validity for sport drop-out.

Pelletier et al. (1995) translated the EMS from French to English

and administered an experimental version of the SMS to 319 males and 274 females (mean age 19.2 years) who had at least two years of competitive experience at the high school or college level and were currently members of athletic teams in the Canadian province of Ontario in the following sports: basketball, volleyball, swimming, ice hockey, football, track and field, cross country running, soccer, and rugby. Data analyses revealed the SMS had adequate internal consistency levels considered equivalent to those obtained with the original scale (a mean alpha of .75), confirmed the seven-factor structure of the EMS, and showed agreement with the sub-scale correlations from the EMS. These correlations among the sub-scales revealed a simplex pattern that confirmed the self-determination continuum and thus provided support for the construct validity of the SMS. Gender differences were similar to those obtained from the EMS with female athletes scoring higher than male athletes on the Intrinsic Motivation to Know and Intrinsic Motivation to Accomplish Something sub-scales and lower on the External Regulation sub-scale.

A second study was conducted using 31 female and 19 male soccer players (mean age 18.4 years) competing at the provincial level in the Ottawa region of Canada to assess temporal stability of the SMS. Sub-scale internal consistency alphas for the sub-scales ranged from .71 to .85 (mean .78) on the pretest and from .69 to .85 (mean .75) on the posttest. Test-retest correlations on the sub-scales ranged from .58 to .84 (mean .6986). These results were very close to those observed with the EMS and offered support for the reliability of the scale.

Pelletier et al. admit that the exclusion of integrated

regulation, a type of extrinsic motivation postulated by Deci and Ryan (1985) in their theory of self-determination, was one shortcoming of the EMS and consequently the SMS. Deci et al. (1994, p.121) defined integration as "internalization in which the person identifies with the value of an activity and accepts full responsibility for doing it. ...One does the behavior wholly volitionally because of its utility or importance for one's personal goals." Briere et al. included this type of extrinsic motivation in the EMS but renamed it identification.

The initial inventories developed for the present research included items and sub-scales consistent with those in the SMS but intentionally differentiated feelings of pleasure and satisfaction from reasons for participation in sport and exercise activities. An underlying assumption for this differentiation was that human behavior is, at some level, based on the pursuit of pleasure and avoidance of pain. Therefore, it is redundant and possibly confusing to link feelings of satisfaction, enjoyment, fun, and pleasure to motives. Certainly positive affect impacts on behavior and is often cited as a reason for participation in sport and exercise, but one purpose of the present research was to attempt to provide a means for distinguishing between motivation and enjoyment. In addition, the present research was not limited to athletes or young adults, but sought to measure motivation and positive affect derived from participation in exercise and sport activities across the adult lifespan.

Motivational Control Theory

Hyland (1988) proposed motivational control theory, a meta-theoretic framework that differs from conventional theories of

motivation by being at a more fundamental level of description. He argued that the following four motivational research programs are complementary and focus on different aspects of a single underlying mechanism: the work of Atkinson and colleagues referred to in its modern version as the dynamics of action; the concept of goal setting and the associated concepts of intention, task, set, and level of aspiration; cognitive or attributional approaches to motivation; and the need for self-determination that arose from effectance and competence motivation. Hyland's motivational control theory describes a single process that integrates each of the above and is based on control theory, a branch of engineering developed to enable machines to do things previously done only by people.

The central unit of motivational control theory is the negative feedback loop. The underlying process for the negative feedback loop begins with perceptual input from the environment and its comparison to a reference criterion by a comparator. The difference between the two generates detected error that is amplified or reduced by error sensitivity, but in either case elicits behavior to reduce the discrepancy between the reference criterion and perceptual input. This negative feedback loop is thus a reconceptualization of the accepted idea that behavior is shaped by its consequences. However, motivational control theory adds several ideas that provide a framework from which other motivational theories can be discussed and integrated.

Hyland suggested four categories of reference criterion: end states (outcomes), a rate of progress toward an end state, a particular type of action (doing or being), or a particular emotion. Perceptual

input was defined as a selected aspect from the person's perceived environment that takes different forms corresponding to the different kinds of reference criterion. When the reference criterion is an end state or the rate of progress toward an end state, the perceptual input is some aspect of the situation surrounding the person that can be used to evaluate whether the expected outcome has been reached, the designated task has been accomplished, or acceptable progress has been made. When the reference criterion is the person's actions, the perceptual input is the individual's awareness of what he or she is doing and its comparison to intended actions. When the reference criterion is a particular emotion, the perceptual input derives from the individual's internal environment of thoughts, feelings, and mental states.

When the reference criterion and perceptual input are compared, the difference generates a signal called the detected error that either directly or indirectly selects and energizes a particular behavior that tends to eliminate the difference between the reference criterion and the perceptual input. Detected error is relevant to both positive and negative goals and may have emotional consequences. In addition, error in one control loop due to external change may have indirect effects on the detected error of other feedback loops. According to Hyland, error sensitivity determines the level of behavioral response for any given level of detected error and is responsible for both the direction and intensity of goal-directed behavior. Therefore, the relative strength of error sensitivities among control loops is an important determinant of goal priorities and consequent behavior choice.

According to motivational control theory, the organization of goals is a top down causal hierarchy of control loops wherein detected error at a higher level control loop activates a reference criterion at a lower level. The reference criterion of the highest level control loop represents a superordinate goal, while the reference criterion of lower level control loops are sub-goals and provide means for reaching the superordinate goal.

Hyland admitted that one weakness of motivational control theory is the lack of an explanation for the emergence of high level control loops. He suggested two possible answers to the question of the derivation of high level control loops. The first is that the control hierarchy is actually a heterarchy in which low level control loops can have some influence on the high level reference criterion thus reflecting past behaviors and the formation of of reference criterion that represent a baseline derived from prior experience. The second explanation he proposed is the existence of some independent cognitive decision-making system people use to work out the sort of person they want to be. Regardless, both superordinate and subordinate loops are essential for motivational control theory.

Hyland used motivational control theory as an integrative meta-theoretical framework. In his view, theories of motivation focus on different aspects of the single process described by his motivational control theory. The first type of motivation theory focuses on error sensitivity and the antecedents of error sensitivity of one or a small number of control loops. This type of theory includes need theories such as McClelland and Atkinson's theory based on the needs to achieve

success and avoid failure and Weiner's theory based on the need for information concerning ability and excellence. The second type of motivation theory focuses on the reference criteria for a number of control loops and is represented by goal-setting theories. The third type of theory focuses on the organization of goals within a hierarchy wherein the relation between means and ends is a learned cognition and the form of the relation between means and ends predicts purposive behavior. This type of theory is represented by both self-determination and self-efficacy theories.

Hyland's integration of motivation theories using a single process model for behavior is consistent with the view that mechanistic (behavioral), cognitive, and social cognitive theories of motivation are not antagonistic approaches to the explanation of human behavior but represent layers of complexity that interact as ever-changing hierarchies. The "right" theory of motivation is thus a "total" theory that simultaneously includes behavioral, cognitive, and social cognitive views of humans and their reasons for initiating and maintaining behavior.

Sport and Exercise Motivation Inventories

A variety of questionnaires have been developed and used to study exercise motivation from a social-psychological perspective (Ostrow, 1990). Descriptive exercise motivation research has focused on personal incentives for exercise and physical activity (Duda & Tappe, 1989; Kenyon, 1966), exercise goals and commitment (Burton, Raedeke, & Carroll, 1989; Seigel, Johnson, & Newhof, 1987), exercise adherence and drop-out (Seigel, Johnson, & Newhof, 1987), barriers to exercise

(Burton, Raedeke, & Carroll, 1989), positive exercise-induced feelings (Gauvin & Rejeski, 1993), and sport and exercise from a developmental perspective (Heitman, 1986; McPherson, 1984; Rudman, 1986). Because the present research is concerned with why individuals exercise and the sources of enjoyment from exercise and sport across the adult lifespan, exercise adherence, drop-out, barriers and other possible explanations for why individuals do not exercise will not be addressed.

Kenyon (1968) attempted to develop a multi-dimensional conceptual model to characterizing physical activity as a socio-psychological phenomenon. His object was to identify the perceived instrumental values physical education held for individuals and, through them, determine whether the domain of physical activity could be reduced to several independent or quasi-independent subdomains. He first formulated a structural model whose components represented various hypothesized manifest or latent instrumental values of physical activity based on a combination of his intuitive perceptions and traditional conceptions of the dimensions of physical activity. These were: physical health, mind-body dichotomy, cooperation-competition, mental health, social intercourse, and patriotism. Statements thought to represent each of these six postulated domains of physical activity were incorporated into an inventory and administered to a sample of 756 non-institutionalized, non-military adults over the age of 21 living in Wisconsin and a convenient group of approximately 100 college students.

Based partially on the results from this study and partially upon further reflection, Kenyon formulated a second structure also consisting of six subdomains: social experience, health and fitness, pursuit of

vertigo, aesthetic experience, recreational experience, and competitive experience. The integrity of this configuration was tested using 73 Likert-type attitude statements evaluated by an undisclosed number of judges, revised, incorporated into an inventory, and administered to a second sample of 176 college men and women. Results were still unsatisfactory for the subdomains recreational experience and competitive experience. Consequently, these two subdomains were revised and defined as catharsis and ascetic experience, and, in addition to social experience, health and fitness, pursuit of vertigo, and aesthetic experience, became the basis for Kenyon's third and final model.

The integrity of Kenyon's third model was evaluated by determining the internal consistency of each subdomain using Cronbach's alpha and the factor intercorrelations resulting from oblique rotation of the six incomplete image factors using the data collected from the responses of a third sample of 353 men and 215 women college freshmen at the University of Wisconsin-Madison to an inventory of Likert-type attitude statements thought to represent each subdomain. Based on his results, Kenyon concluded that his conceptual model had some validity but made no claim that the model was any more than a crude beginning at characterizing physical activity as a socio-psychological phenomenon (1968, p. 96-105). However, his Attitude Toward Physical Activity Inventory has since been used and/or modified to provide some empirical support for the model and its subdomains (Martindale, Devlin & Vyse, 1990; Wenger, 1980).

Kenyon's work appears to support the social psychological nature of sport and exercise participation motivation. His use of attitudinal

statements regarding physical activity clearly reflects the affect associated with individual beliefs toward the value of physical activity and impacts on individual awareness of potential satisfaction from and expectations toward sport and exercise participation. For this reason, his six subdomains were incorporated within the initial inventories designed for the present research (see Appendix A) as follows: fitness and health were contained within the Personal Competence sub-scales, pursuit of vertigo and catharsis were contained in the sub-scales for variety and change, the social experience was tapped within the sub-scales for social recognition and rewards and social competence and affiliation, ascetic experience was contained in the sub-scale for perceived freedom, and the aesthetic experience was captured by the sub-scales concerning the activity itself.

Siegel, Johnson, and Newhof (1987) developed the 20-item Adherence to Exercise Questionnaire and administered it to 186 college women in exercise classes. Construct validity was demonstrated when this questionnaire discriminated between 135 college women who completed the exercise classes and the 51 college women who dropped out, but reliability of the questionnaire was not reported. Women who completed the exercise classes were more positive about developing and utilizing personal skills, using their minds in physical activity, and being involved in social interactions. The initial physical activity motivation inventory developed for the proposed research used several items in the Personal Competence sub-scale to address developing and utilizing personal skills. Using the mind was defined more specifically through such items as "directing your own activity," "achieving

consistency in your performance," and "disciplining your mind and body." Social interactions were inherent in the items in the initial physical activity motivation inventory sub-scales for social competence and affiliation and social recognition and rewards (see Appendix A).

Burton, Raedeke, and Carroll (1989) developed the 66-item, 10-scale Exercise and Sport Goal Inventory to assess the goals individuals express toward the values of exercise and sport. Confirmatory factor analysis of the responses of 292 current and former adult members of faculty/staff wellness programs from three universities and a community college in the Northwest supported the following exercise/sport goals: health/fitness, performance, involvement, outcome, recognition, solitude, social, mental health, muscular fitness, and "feel good." Each of these goals were contained in one or more of the initial motivation items or sub-scales developed for the present research except "feel good." One of the purposes of the initial enjoyment inventory designed for the proposed research was to more specifically define and measure positive affective feelings that cause exercise participants to feel good.

Duda and Tappe (1989) developed the Personal Incentives for Exercise Questionnaire to evaluate the personal incentives individuals express for participating in exercise. Open-ended responses from 165 adult exercise participants and a review of the exercise psychology literature were used to generate 85 items which were administered to 212 male and 313 female undergraduates at a large midwestern university. Principal component factor analyses led to the retention of ten factors and 48 items which were then administered to a new sample 135 male and

217 female college students. Factor analyses supported a stable factor structure across the two samples. These were: flexibility/agility, appearance, competition, weight management, mastery, affiliation, social recognition, health benefits, mental benefits, and fitness (strength/endurance). Cronbach alpha reliability coefficients ranged from .74 to .94 (Sample 1) and .77 to .92 (Sample 2). A sub-sample (n=106) was readministered Version 2 of the questionnaire after two weeks which yielded test-retest correlations from .58 to .86. The latest or fourth version of the Personal Incentives for Exercise Questionnaire contains new items to further clarify the mastery, flexibility/agility, and weight management subscales and support the existence of a fitness (strength/endurance) exercise incentive. No methods for testing the reliability or determining the validity of this final version were reported.

Leisure Motivation

Leisure activities are self-determined, intrinsically motivated, enjoyable behaviors (Iso-Ahola, 1989). Freedom of choice is a critical factor for individuals to define their activities as leisure and impacts upon both their depth of involvement (Mannell, 1980) and frequency of participation (Wankel & Thompson, 1978). Leisure motivation has two fundamental dimensions: seeking personal and/or interpersonal rewards and escaping personal and/or interpersonal environments (Iso-Ahola, 1989). These two dialectical forces represent approach and avoidance behaviors simultaneously present, in varying degrees, in all leisure behaviors. In achievement situations such as sport, individuals are thought to "approach" success and "avoid" failure (McClelland et al,

1953).

Beard and Ragheb (1983) developed the Leisure Motivation Scale to measure motivation for leisure activities. 150 items were generated to assess approximately 12 major and minor categories of leisure motives. These items were then reduced to 105 items through critical analysis by the investigators and 28 students and faculty associates. The items were formatted into five-point Likert scales preceded by the statement, "One of my reasons for engaging in leisure activities is..." In a pilot study, 65 students were asked to think of their favorite leisure activities and then respond to each item. The scale was reduced to 103 items after appropriate changes and deletions suggested by the pilot study.

Beard and Ragheb administered the 103-item leisure motivation inventory to 174 students. Principal components analysis with Varimax rotation was conducted for seven factors initially hypothesized as major psychological and social motivation categories by Beard and Ragheb. Results indicated six interpretable factors and suggested four sub-scales that accounted for 59% of the variance: intellectual, social, competence-mastery, and stimulus avoidance. 48 items were retained (12 for each sub-scale) and administered to 1205 individuals from high school and college classes and meetings of retired persons and mailed to employees of a university, community college, and several state government agencies. Principal components analysis confirmed the four sub-scales. A short form was developed using eight items for each sub-scale based on their relatively large factor loadings and unidimensionality. Sub-scale correlations ranged from .17 to .48 and

were substantially lower than inter-item correlations for each sub-scale. Alpha reliabilities for the short scale sub-scales were: intellectual, .90; social, .91; mastery-competence, .90; and stimulus avoidance, .89.

Beard and Ragheb used the dominant criteria of parsimony, utility, and communication to arrive at this particular sub-scale structure. Although there are many specific reasons why individuals engage in leisure activities, Beard and Ragheb concluded most of those reasons could easily fit within their four sub-scales. Additionally, the four sub-scales are "manageable in number, usefully different, and understandable" (1983, p. 227). For this reason, the short form of the Leisure Motivation Scale was selected for determination of concurrent validity with the motivation for physical activity scale developed from the present research. (see Appendix B)

Sport and Exercise Enjoyment

Although enjoyment is recognized as an important factor for exercise motivation and adherence (Willis & Campbell, 1992), most sport and exercise research fails to address enjoyment as a specific multi-factor social psychological construct. Instead, enjoyment is simply considered a primary reason for participation in sports and exercise. Such a definition fails to address the critical questions of what makes participation in sports and exercise fun and why such participation is enjoyable for some individuals and not for others. Recent research has focused specifically on the definition of sport enjoyment, sources of enjoyment within sport, and the place of sport enjoyment within a larger model of sport commitment (Kimiecik & Harris, 1994; Scanlan & Simons,

1992; Wankel, 1993). However, there is some disagreement concerning the definition of enjoyment and the relationship of enjoyment to other constructs such as fun, liking, pleasure, intrinsic motivation, flow, attitude, and affect (Kimiecik & Harris, 1994).

Kimiecik and Harris (1994) examined the conceptual and definitional aspects of sport enjoyment by reviewing how it has typically been defined in sport and exercise psychology research and how these definitions compare to constructs for affect, pleasure, fun, intrinsic motivation, flow, and attitude. They found in earlier research that, if defined at all, fun and enjoyment were used interchangeably to refer to a positive affective state resulting from participation in sport or exercise settings (Brustad, 1988; Wankel & Kreisel, 1985; Wankel & Sefton, 1989). In more recent research, Scanlan and Simons operationally defined sport enjoyment as:

a positive affective response to the sport experience that reflects generalized feelings such as pleasure, liking, and fun... more differentiated than global positive affect, but more general than a specific emotion such as excitement. (pp.202-203)

Wankel defined enjoyment as:

a positive emotion, a positive affective state. It may be homeostatic in nature, resulting from the satiation of biological needs (e.g., need to be active), or growth oriented, involving a cognitive dimension focused on the perception of successfully applying one's skills to meet environmental challenges. (p.153)

Kimiecik and Harris critiqued both definitions of sport enjoyment for their inclusion of cognitions and perceptions with affect and instead

defined sport enjoyment by linking intrinsic motivation to Csikszentmihalyi's description of enjoyment and flow (1990, p.46).

According to Kimiecik and Harris, sport enjoyment is:

an optimal psychological experience (i.e., flow) resulting from performing an activity primarily for its own sake and leading to or associated with positive feeling states. (p.14)

Kimiecik and Harris thus view enjoyment as a psychological process that is the experience, not an affective response to or product of that experience.

The premise of the present research is not supportive of Kimiecik and Harris' definition of sport enjoyment for several reasons. First, feeling enjoyment is not limited to only while an individual is participating in an activity. Enjoyment also occurs as a result of cognitive evaluation of the outcomes of the experience. Second, Kimiecik and Harris' definition of sport enjoyment as the process of being in flow intentionally limits the construct of sport enjoyment to separate cognitive or perceptual aspects of enjoyment from positive affective states or responses suggested by previous definitions (Scanlan & Simons, 1992; Wankel, 1993). In contrast, the definition of emotion (Denzin, 1984) upon which Kimiecik and Harris base their definition of enjoyment clearly supports a link between self-feelings and cognitions as well as associations among the following motivation theories: drive and achievement, cognitive, social cognitive, and social psychological.

Denzin's (p.113) first level of emotion is sensible feelings felt through intentional focusing on the body and its parts. As such, sensible feelings are biologically based and reflect feelings of

pleasure (Csikszentmihalyi, 1990) and satisfaction associated with both drive and need achievement theories of motivation.

The second level of emotion (Denzin, p.125) is lived feelings that express a particular value content or meaning found in the world by the individual. Lived feelings are subjective emotional states that occur during actual experiences and, according to Kimiecik and Harris (1994), include sadness, boredom, happiness, and joy. Enjoyment at this level is associated with cognitive theories of motivation that "view humans as being active and initiating action through subjective interpretation of the achievement context" (Roberts, 1992, p.6).

Denzin's third level of emotion is intentional value feelings that "anticipate (or remain after) actual emotional experiences... [They] are part of a person's interpretive framework and exist as orientations toward the world, independent of specific interactional experiences" (p.120). It is at this level that Kimiecik and Harris placed attitudes, defined by Fishbein and Ajzen (1975) as reflections of like-dislike toward an object. Enjoyment at this level supports social cognitive theories of motivation and is associated with the positive feeling state, liking.

Denzin's fourth level of emotion is feelings of the self and moral person derived from intentional reflection on the self as an object of consciousness (p.126). Although Kimiecik and Harris stated that these feelings encompass the totality of the person through purposeful self-reflection, they did not apply this level of feelings to enjoyment. Feelings of the self and moral person arise from intentional reflection on the self and represent the perceived view of oneself not only through

one's own eyes, but also through the eyes of others. Feelings at this level thus reflect the totality of the person within both the individual and social environment and could be associated with the affective response, fun. Podlichak's (1991) argument that fun is inherently a social process and part of an ongoing lived experience requiring interaction with others would appear to support this association. Feelings at this level can also be associated with social psychological theories of motivation that emphasize the interaction of the individual with his or her social environment.

It is at this level of feelings of the self and moral person that positive feeling states associated with the previous levels of emotion can be integrated into a more global construct: enjoyment. It is also at this level that theories of motivation for participation in sport and exercise can be integrated. Consequently, positive affective feeling states associated with the fulfillment of drives and needs, cognitions, and social cognitions could be reflected upon as part of a conscious evaluation of both the self and the outcome of the individual's motivated behavior. As such, enjoyment is the global positive affective response of the individual to the outcome evaluation of goal-directed behavior and sources of enjoyment are inextricably linked to sources of motivation.

In order to empirically test the possibility of a link between sport participation motivation and sport enjoyment, a questionnaire was developed by the present author based upon previous research (Raugh & Wall, 1987; Wall & Raugh, 1985) and the secondary level of themes for sport enjoyment suggested by Scanlan and Simons (1992). Fifty-two items

were generated to reflect possible sources of enjoyment from participation in sports and exercise by adults 55 years old or older and evaluated by a graduate-level seminar class in Sport Psychology for face validity and clarity. These items were categorized according to the needs suggested by Mannell (1990): competence, perceived freedom, affiliation, and variability. Extrinsic rewards and characteristics of the activity itself (the sensations it provides, excitement of this movement, and the physical environment) were added as categories to tap additional sources of enjoyment from exercise and sport. The questionnaire was piloted on 21 subjects between 50 and 70 years old actively involved in either sport or exercise. The questionnaire was then administered to 85 Maryland Senior Olympians and 40 Washington, D.C. Golden Olympians. Five relatively independent sources of enjoyment in sport were identified. In order of their importance to the group, these sources of enjoyment were: vitality; personal goals and performance consistency; affiliation; physical, mental, and emotional control; and social recognition and comparison. Although these results were interesting, a major limitation was that the questionnaire was not validated nor were items reworded from those used previously to assess motivation. Two purposes of the present research were to try to correct both of the above limitations by rewording items to capture the affective definition of enjoyment and by validating the physical activity enjoyment measure with the Leisure Satisfaction Scale and CES-Depression scale.

Using a somewhat different approach to measure enjoyment from exercise, Gauvin and Rejeski (1993) developed and validated a measure

designed to assess positive feeling states that occur in conjunction with acute bouts of physical activity, the Exercise-Induced Feeling Inventory (EFI). They conducted five studies with three different groups of undergraduate students from two different universities ($n = 77, 256, 154$) in order to develop and refine the EFI: establish its content validity, factor structure and structural equation model, internal consistency, concurrent validity, discriminant validity, and construct validity. The final form of the EFI contains 12 items that capture four distinct feeling states: revitalization, tranquility, positive engagement, and physical exhaustion. Its multidimensional structure was supported by confirmatory factor analysis, and reliability was shown with Cronbach alphas for its subscales that ranged from .82 to .91 pre-exercise and .72 to .80 post-exercise. Items in the initial enjoyment inventory developed for this research were generated to tap each positive feeling state identified by Gauvin and Rejeski.

Leisure Satisfaction

Because participation in sports and exercise is often a leisure activity, a brief review of the literature pertaining to leisure satisfaction is relevant to the definition of enjoyment from exercise and sport participation. Mannell (1990) examined existing leisure satisfaction constructs and proposed a leisure satisfaction construct typology to distinguish among them along two dimensions: motivation-based (motivational or non-motivational) and level of specificity (molar or molecular).

Along the first dimension, leisure satisfaction constructs are either anchored to an explicit theory of human needs (motivation-based)

or make no assumptions about basic human motivation and needs (non-motivational). According to motivation-based constructs, being satisfied is the result of the fulfillment of drives, motives, needs, or expectations. Unfortunately, although recent approaches to motivation consider most behavior as the result of biological, learned, and cognitive components to varying degrees, there is little consensus as to what constitutes a complete set of human needs and to what extent they are learned or inherited. From his review of literature, Mannell suggests the following social needs are common to all individuals to some extent: need for variety and change, need for cognitive consistency, need for perceived freedom, need for competency, and need for affiliation. All of the above universal needs were used as sub-scales for the initial motivation and enjoyment inventories except cognitive consistency. Items reflecting cognitive consistency were generated within each sub-scale rather than as a separate category.

Mannell suggested non-motivational constructs for leisure satisfaction rely on measures of subjective well-being and satisfaction appraisal. Along this second dimension, leisure satisfaction is linked to a level of specificity where the more molar the construct the more global its measure of leisure satisfaction. The more molecular the construct, the more it measures facets of leisure satisfaction. In both cases satisfaction implies an act of individual judgment and is based on self-reported comparisons of outcomes to expectancies. Satisfaction is thus distinguished by Mannell from happiness which he described as reflecting the affective feelings of the present moment. In addition, satisfaction reflects an appraisal of how things have gone in the past.

Mannell concluded that the measurement of leisure satisfaction as either need-satisfaction or appraisal-satisfaction is equally problematic because both typically rely on self-reports and suggested instead the development of on-site monitoring and observation to provide leisure satisfaction measures. This emphasizes the importance of continuously watching participants for behavioral measures of satisfaction. However, this can be equally problematic because outward behavior does not always accurately mirror inner feelings and emotions. In addition, behavior at the time of its occurrence can produce very different feelings and emotions within an individual than those affective responses that occur as a result of the outcome of the behavior and its evaluation by the individual and/or others.

The need-satisfaction and appraisal-satisfaction constructs developed by Mannell to conceptualize leisure satisfaction fit into a broader model for satisfaction proposed by Deci (1975). In the first two steps of Deci's model, stimulus inputs lead to an awareness of potential satisfaction. Awareness of potential satisfaction then leads to the formation of goals and plans which, in turn, lead to goal-directed behavior. Goal-directed behavior culminates in rewards and satisfaction that can then become stimulus inputs, lead to awareness of potential satisfaction, . . . and so the process continues. According to Deci, satisfaction is a positive or pleasurable affect, a reward for achieving pre-set goals. From the leisure need-satisfaction perspective, needs are stimulus inputs in the first step of Deci's model. From the leisure appraisal-satisfaction perspective, expectancies provide an awareness of potential satisfaction, the second

step in Deci's model, and are based on previous experience and previous satisfaction, the fourth and final steps in Deci's model.

Deci uses this model to explain intrinsic motivation, and he and Ryan (1985, 1987) use it to conceptualize intrinsic motivation and self-determination in their cognitive evaluation theory of human behavior. Cognitive evaluation theory provides a means for including extrinsically motivated behavior in Deci's model for intrinsic motivation by addressing the effects of external rewards on self-determination, perceptions of competence, and intrinsic motivation. Cognitive evaluation theory suggests two ways extrinsic rewards can be perceived by the individual: as controlling or as informational. When individuals perceive their behavior as being controlled by external forces, their levels of intrinsic motivation decrease. But, when external rewards provide feedback that enhances an individual's sense of competence and self-determination, levels of intrinsic motivation increase. Because feelings of competence and self-determination can impact directly on intrinsic motivation and satisfaction, items to tap both were developed for the initial enjoyment inventory used in this research. The subscale, Perceived Freedom, represents personal choice and control and is synonymous with self-determination.

Although Deci's model for satisfaction is a useful tool for integrating leisure satisfaction models, it too requires integration with other models for a more complete conceptualization of the behavior process for participation in sports and exercise that culminates in satisfaction and enjoyment. Awareness of potential satisfaction need not rely solely on previous experiences or expectancies. Awareness of

potential satisfaction can also be based on beliefs and attitudes. Fishbein and Ajzen's (1975) information-processing attitude model and theories of reasoned action and planned behavior already discussed describe such a behavior process.

Ragheb and Beard (1980) developed the Leisure Satisfaction Scale from theories and models of leisure, recreation, and play. Satisfaction was operationally defined as "the total outcome of a direct experience, which has been lasting for a significant period of time" (p.331). Six sub-scales were derived from factor analysis of items administered to 680 individuals who varied in sex, age, marital status, employment status, and income and were chosen to represent the broader population. These were psychological, educational, social, relaxational, physiological, and aesthetic. Next, a revised version of the Leisure Satisfaction Scale was prepared and administered to 347 individuals to provide confirmation of its component structure by using orthogonal and oblique rotations for factor analysis. Internal consistency reliability coefficients (α) for each sub-scale and the total scale and intercorrelations between the sub-scales were computed. Although the sub-scales were moderately intercorrelated with a range of .38 to .66 and a median of .52, despite some overlap, the differences between the reliabilities of the sub-scales and the sub-scale intercorrelations indicated substantial unique variance in each sub-scale. A short form of the Leisure Satisfaction Scale was developed by selecting four items from each sub-scale based on correlation with the sub-scale factor and a preservation of the content validity of each sub-scale. Sub-scale reliabilities on the short form ranged from .80 to .93, and

intercorrelations of these sub-scales ranged from .35 to .53 with a median of .46. The physiological sub-scale was the most reliably measured and the most clearly differentiated from the remaining sub-scales.

Ragheb and Beard's preliminary findings indicated that female respondents derived more satisfaction from the relaxational aspects of leisure activities than males, while males derived more satisfaction from doing physical activities than females. However, there were more significant differences among age categories than any other category. In a summary of their preliminary findings, Ragheb and Beard reported that satisfaction gained from physical activities was greatest for the young, single, male respondents. A marked and sudden decrease in satisfaction from physical activities occurred at age 65 even though the age group 60-65 had the highest mean for the physiological sub-scale. The purpose of the present research is not to provide further confirmation of this finding, but to attempt to discover more specifically what components impact upon motivation and enjoyment of physical activity for those of all ages across the adult lifespan who are participating in sports and exercise.

Developmental Perspective for Leisure

Rapoport and Rapoport (1980) examined the relationship among leisure, socialization, and the lifecycle. Young adulthood, age 20 to 39, is a period of establishment in which dreams are formed, roles are assumed, and new family patterns are established (Rapoport & Rapoport, 1975). The demands of this period are: establishment of intimacy, development of a "dream," and establishment of competence. Social goals

are a factor in directing leisure involvement because leisure involvement can provide one venue for the young adult to find someone with whom to establish an intimate relationship and facilitate both occupational entry and mobility. Leisure for the young adult is a social space in which an intimate relationship may be explored and developed. The demands of parenting usually reduce the young adult's range of leisure activities, especially the mother. However, childrearing often involves parents in the play world of their children and reestablishes ties with the parents' families. In addition, enjoyment of adult associations outside of marriage and family may affect leisure choices during young adulthood. However, shared leisure may provide a means for maintaining the marriage relationship under the pressures of childrearing as well as a setting in which to experiment with new ideas, lifestyles, and social patterns.

According to Rapoport and Rapoport, middle age is a time of revision in which goals, values, and work styles are critically reviewed. At this stage, a pattern of selective withdrawal or renewed, expanded interests and productivity is initiated by the individual. Although there is a loss of child-centered events and child-determined schedules, the spouse is still significant in leisure activities. Participation in less strenuous sports and physically demanding outdoor recreational activities is typical. Leisure activities with non-family members can lead to resocialization by creating new levels of social involvement. Middle age is thus a time for change or acceptance that life is "finished."

Retirement and aging is the last stage of adulthood and described

by Rapoport and Rapoport as the time in which leisure and maintenance are the major focus of life. The older adult must come to terms with the loss of his/her work identity and work schedule and reconstruct a routine. Leisure can provide a means for continued social relatedness particularly after the death of a spouse. However, there is not automatically more leisure during retirement and aging because limited resources, failing health, questions of personal worth, and disrupted routines may cause a loss of the perceived freedom and intrinsic motivation necessary for activities to be defined as leisure.

Recurrent leisure developmental themes for Rapoport and Rapoport are disengagement versus relatedness, personal freedom, and social interaction. 'Not only what is done, but why, is related to the demands of different periods of a "life career"' (p.127). The inventories developed for this research should provide preliminary empirical evidence concerning why adults of varying ages participate in physical activities, what sources of enjoyment they find from this participation, and how these differ as a function of the lifecycle.

Developmental Perspective for Sport and Exercise Participation

A limited number of studies have addressed the motivation for sport or exercise participation of adults across the lifespan (Cousins & Burgess, 1992; Heitman, 1986; McPherson, 1984; Rudman, 1986).

McPherson (1984) reviewed the literature concerning sport participation across the lifecycle and suggested numerous directions and specific questions for further research. He noted that only a small proportion of adults regularly participate in any type of physical activity and particularly sharp decreases in participation rates occur

when individuals leave formal schooling and when they leave the labor force. McPherson suggested several possible explanations for this pattern of declining involvement in sports and exercise after adolescence. These included: inadequate socialization into sport during youth (generational differences prevail), lack of perceived need for physical activity at the present time, lack of participation opportunities because of ageism, lack of adult role models, other leisure activities with higher priorities, cultural or sub-cultural devaluations of sport and exercise for adults, fear of injury and subsequent loss of earnings, myths that the need for exercise decreases with age and adults do not have the necessary skills for sport participation, lack of encouragement from significant others, and lack of time or commitment due to family and job responsibilities. Because the samples used for the present research were composed only of those adults who are engaged in regular physical activity, data collected from them will have only limited relevance to adults who are not currently participating in sports and exercise. Nonetheless, the majority of McPherson's possible explanations for non-involvement are directly or indirectly addressed in the initial motivation and enjoyment questionnaires developed for the present research. For instance, subjects' self-report of the length of time of their regular participation in sport and exercise activities could provide a partial measure of previous socialization into physical activities. In addition, the role of significant others is measured through responses to items concerning the importance of friends and family to sport and exercise participation as well as positive feelings generated from such

support.

Heitman (1986) surveyed 227 male and female older adults aged 40 to over 70 who were participating in physical activity at nine randomly selected sites by asking them to rank six previously determined motives for exercise from most to least important. In descending order, the rankings for males were: health, achieving, coping, social, appearance, and aesthetics. For females 60 years old or older they were: health, social, coping, appearance, achievement, and aesthetics. For females age 40 to 59 they were: health, appearance, achievement, coping; aesthetics, and social. There were significant mean differences between and among the groups by age and sex. No information describing these six motives, the rationale used for their selection, or methods for determining reliability were presented. Nonetheless, each motive is tapped by at least one item in the initial motivation inventory developed for the present research.

Rudman (1986) analyzed data collected from a national sample of 1319 Americans who reported their sport attitudes and behaviors (Miller Lite Report, 1983) to determine if sport is a developmental task and how patterns of sport participation vary according to age. According to Rudman:

If sport participation is to be considered a developmental task, comparable to occupational tasks, it is necessary to evaluate how sport meets current needs and prepares the individual for future tasks. Under this scheme, sport participation is viewed as a progression of specific stages, each stage meeting new needs and providing the ground work for the next stage of growth. ...In this

study, sport stages are categorized into three distinctive periods: (1) competitive, (2) family, and (3) social. Competitive stages occur during young adulthood, family stages during middle age, and social stages occur at older ages. (p.455-456)

Competitive sport participation during young adulthood meets the immediate needs for social recognition and self-esteem and the transitional needs for leadership skills, cooperation skills, teamwork, and self-discipline while providing a meeting place for participants. Family sport participation during middle age meets the immediate needs of bonding family members, providing family recreation and social interaction, and teaching children social and communication skills. The transitional needs addressed by family sport participation are helping parents remain active in non-work social outings, providing reference at older ages, and teaching small group communication skills. Social sport participation for older adults provides social settings where interaction can take place, allows the individual to remain physically and mentally capable of social interaction, and again provides a reference group.

Rudman calculated regression statistics for 1019 complete data sets collected from the respondents using the following variables and categories relevant to the present proposed research:

1. Age: (1) 18-34(n=462) (2) 35-54(n=368) (3) 55+(n=189)
2. Sports: tennis, golf, bike riding, jogging, ice skating, calisthenics, weight lifting, bowling, swimming, pool/billiards, basketball, softball, football, and soccer
3. Level of participation: (1) never (3) once a month

(5)everyday

Rudman found a steady decrease in sport participation as age increased and a significant negative linear effect of age on sport participation in 13 out of 14 sports when the effects of race, sex, geography, family, and socioeconomic status were controlled. In addition, data suggested that the largest decrease in participation occurs between young adults and the middle-age group. Further age- and sex-specific analyses supported the role of sport participation as a developmental task and a part of successful aging. One purpose of the present research is to extend and/or support these findings.

Summary

A variety of theories have been proposed to explain motivation including trait theory, drive or need theory, and social learning theory. Whether the approach is behavioristic, cognitive, or social psychological; several commonalities exist. Sources of motivation for the initiation of behavior that are consistently identified regardless of the theoretical base can be generally defined as mastery, competence, and relationship. The relative importance of these motives varies according to age and sex. Additionally, internal and external reinforcement are viewed as playing a significant role in the maintenance of behavior.

Consistent with the varied theoretical approaches to motivation, a number of scales and questionnaires have been developed to measure motivation in diverse settings including sport and exercise. Again, aspects of mastery, competence, and relationship are common motivational factors addressed in these scales. In the sport and exercise setting

these specifically include (but are not limited to): health and fitness, skill mastery, skill improvement, friendships, team membership, and competition. The relative importance of specific motives for sport and exercise participation varies according to both age and sex. Internal reinforcement for participation in sports and exercise is typically defined as being derived from the fun or enjoyment experienced from physical activity, while external reinforcement is defined as being derived from external rewards for performance or feedback concerning performance.

Clearly fun and enjoyment play a significant role in the maintenance of sport and exercise behaviors across the adult lifespan, but what is the relationship between motivation for participation and sources of enjoyment from physical activity? There are two current views. The first defines enjoyment as a motive. The second differentiates between motivation and enjoyment based on the premise that motivation occurs before and during physical activity, while enjoyment occurs during and after physical activity. However, enjoyment derived from participation in physical activity during one session can provide motivation for participation in that activity in subsequent sessions. This illustrates the cyclic nature of motivation and enjoyment. It also raises questions as to the sources of enjoyment individuals across the adult lifespan experience from physical activity participation and how these differ from their motivation for such participation.

In conclusion, while descriptive and theory-driven research in sport and exercise motivation provide numerous explanations that appear

to account for some dimension of motivation and its impact on participation in physical activity, few studies attempt to integrate or unify theoretical constructs, and only one approach has directly linked behavior intention to cognitive, social, and affective components (Triandis, 1977). Because Triandis' (1977) model was developed in an attempt to understand interpersonal behavior, there is serious question regarding its appropriateness in the exercise domain (Rejeski, 1992). No applications of Triandis' model have been completed within the sport setting. The initial questionnaires developed for this research attempted to remedy this by capturing the diversity and idiosyncrasy of motivation and sources of enjoyment from exercise and sport across the adult lifespan.

CHAPTER III

STAGE ONE METHODS AND PROCEDURES

The purpose of stage one in this research was to develop two reliable scales with content validity to assess the multi-factor, social-psychological constructs of motivation for and enjoyment from physical activity participation across the adult lifespan.

Development and Content Validity for the PAMS and PAES

Initial Physical Activity Motivation Inventory. A 52-item inventory was developed by revising the Raugh Sport Participation Motivation Inventory (Raugh & Wall, 1987) to reflect possible reasons for participation in sport and exercise activities by adults 55 years old or older. Items were re-scaled into six categories suggested by research in leisure satisfaction (Mannell, 1990), sport enjoyment (Scanlan & Simons, 1992), and sport and aging (Heitman, 1986; Rudman, 1986). These were: competence, perceived freedom, affiliation, extrinsic rewards, variability, and the activity itself. The items and sub-scales were presented to a panel of 10 graduate sport psychology students in an advanced sport psychology seminar and the two sport psychologists teaching the seminar. These students and instructors acted as an expert panel to assess face and content validity. Several items were re-worded for clarity. A questionnaire was developed from the resultant items and administered to 21 adults 55 years old or older currently engaged in exercise or sport activities and known well by the panel of experts. The results from this preliminary pilot study indicated that the inventory appeared to represent the individual

motivational patterns of the respondents for their exercise or sport participation. Based on feedback from the respondents and panel of experts, several items were eliminated and/or re-worded.

The motivation inventory used initially for this research was a revision of the above inventory and contained 50 items and six scales: personal competence, social recognition and rewards, social competence and affiliation, variety and change, perceived freedom, and characteristics of activity (see Appendix A for sub-scales and items and the questionnaire used in stage one). Sub-scales and items were presented to three sport psychologists who regularly participate in sport and exercise activities for their input and evaluation of the content and face validity of the items. This resulted in the addition of one item (being respected) in the social recognition and rewards sub-scale, the addition of one item (coordination and flow) meant to capture a more masculine aesthetic perspective in the characteristics of the activity sub-scale, and the rewording of one item (being rewarded by others) to clarify rewards as extrinsic. Items were rated according to how often they were important reasons for weekly physical activity participation. A five-point Likert scale was used where five was "always," four was "usually," three was "sometimes," two was "occasionally," and one was "never."

Initial Physical Activity Enjoyment Inventory. The preliminary enjoyment inventory was developed by generating a list of 39 positive feelings possibly associated with each item and sub-scale of the initial motivation inventory. Each item was conceptually consistent with the definition of enjoyment as the global positive affective

response to the outcome evaluation of goal-directed behavior because each item represented possible ex post facto positive feelings directly associated with each a priori motive for sport and exercise participation in the initial motivation inventory. The items in the initial enjoyment inventory were evaluated for content and face validity by several experts in sport and exercise psychology who exercise and play sports regularly. (see Appendix A for sub-scales and items and the questionnaire used in stage one). A five-point Likert scale with the same values as those for the physical activity motivation inventory was used for respondents to rate how often each item was an important source of enjoyment from weekly physical activity participation.

Subjects

Data were collected from 95 respondents in their twenties, 82 respondents in their forties, and 82 respondents sixty years old or older. Mean ages for each group were 22.8, 44.6, and 69.4 respectively. There were 45 males and 50 females in their twenties, 43 males and 39 females in their forties, and 38 males and 43 females sixty years old or older. One respondent in the late adulthood sample failed to report his/her sex. All three age samples were predominantly white: 92.6% for the early adulthood group, 95.1% for the middle adulthood group, and 93.9% for the late adulthood group. Table 1 contains a summary of demographic information for each group.

Sampling

Subjects were chosen to represent the three stages of adulthood (Levinson, 1986): early (20-39 years old), middle (40-59 years old), and late (60 years and older). Ages were restricted in the first two age

categories to 20-29 and 40-49 in order to maximize potential developmental differences for the subsequent construction of revised physical activity motivation and enjoyment scales appropriate for use across the adult lifespan. Because subjects were solicited from within a limited geographical area, race was relatively homogenous.

Respondents were solicited from 11 different suburban facilities including a local university, YMCA, public golf course, private golf course, shopping mall, fitness club, pool, public bike trail, private horse farm, and two retirement communities. In addition to these facilities, respondents participated in physical activities in a variety of other private and public settings including their homes and neighborhoods, recreational leagues, church leagues, and other private sports and fitness clubs. The purpose of using such a wide range and variety of sport and exercise settings was to minimize the effects of one type of activity or one activity setting on responses to the initial motivation and enjoyment questionnaires while attempting to balance the number of respondents in each age group involved in similar sport and exercise activities.

Testing Procedures

The researcher approached individuals in each of the eleven settings listed above, introduced herself, explained the purpose of her research, asked if the individuals participated in sports and exercise at least an hour a week, asked if they were in one of the age groups used in this stage, and asked if they would be willing to take about fifteen minutes to fill out two questionnaires. Respondents were assured their answers were confidential and would be reported as mean

data, not individual responses or profiles. The researcher remained close enough to answer any questions and clarify items where necessary.

Table 1

Demographic Information for Stage One Respondents

Age	Twenties	Forties	Sixty and Older
Males	45	43	38
Females	50	39	43
Total	95	82	82
Percent White	92.6	95.1	93.9
Mean Age	22.8	44.6	69.4
Mean Participation			
Sports	5.65 hours/week	2.58 hours/week	3.44 hours/week
Exercise	5.43 hours/week	4.66 hours/week	4.75 hours/week
Total	11.15 hours/week	4.24 hours/week	8.19 hours/week
Mean Desired Activity			
Sports	14.65 hours/week	10.04 hours/week	7.50 hours/week
Exercise	9.15 hours/week	9.05 hours/week	6.50 hours/week
Total	23.80 hours/week	19.09 hours/week	14.09 hours/week
Mean Activities	2.95	2.78	2.19

Subjects in their twenties reported the highest weekly participation rates in sports (5.65 hours/week) and exercise (5.43 hours/week) followed by subjects 60 years or older (3.44 and 4.75

hours/week). Subjects in their forties had the lowest weekly participation rates in both sports (2.58 hours/week) and exercise (4.66 hours/week). The desired amounts of weekly participation in sports and exercise were higher for each age group than actual participation and decreased with age from 23.8 hours per week for subjects in their twenties, to 19.09 hours per week for subjects in their forties, and to 14.09 hours per week for subjects 60 years old or older. The mean number of weekly physical activities also decreased with age from 2.95 to 2.78 to 2.19.

Data Analysis

To test the first research hypothesis, item responses were analyzed for each age group using SPSS/PC+ to calculate frequencies, means, correlations, reliabilities, and principal components for the initial motivation and enjoyment inventories. The number of factors for each age group on each inventory were identified based on principal components extracted with eigenvalues greater than or equal to one. In order to locate simple structure, both varimax and oblimin rotations were used. Varimax factor loadings were reported because oblimin rotations did not change the factor structure.

For both inventories, items were retained for the next factor analysis if they had a factor loading of .50 or higher on only one factor and were present in a factor extracted for at least two of the three age groups. This suggested relative unidimensionality and commonality across the adult lifespan. Those items that met these criteria were reanalyzed to identify subsequent factors and factor loadings. Factor analyses were considered complete when the items that

had factor loadings of .50 or higher on one factor were present on factors extracted for all three age groups. The factors thus identified were conceptually consistent with previous research and used as sub-scales in the physical activity motivation scale (PAMS) and physical activity enjoyment scale (PAES) administered in stage two of this research.

Reliabilities for the PAMS, PAES, and their sub-scales were calculated using Cronbach's alpha as a measure of internal consistency and compared to the correlations among the sub-scales. In addition, a convenience sample of 32 individuals in early adulthood, 7 individuals in middle adulthood, and one individual in late adulthood was retested on the PAMS and PAES after a two week interval to determine test-retest reliability. Pearson product-moment correlations were calculated to determine PAMS and PAES sub-scale intercorrelations.

CHAPTER IV

STAGE ONE RESULTS

The purpose of stage one was to administer two comprehensive inventories designed to assess motivation for and enjoyment from participation in sports and exercise for individuals across the adult lifespan. Analyses of the results from a 50-item physical activity motivation inventory and a 39-item physical activity enjoyment inventory were used to develop two assessment tools for further research, the Physical Activity Motivation Scale (PAMS) and the Physical Activity Enjoyment Scale (PAES).

Physical Activity Motivation Principal Components

Six principal components and 24 items were identified that appeared stable and consistent across the adult lifespan. These principal components were labeled: Mastery and Autonomy, Social Recognition and Rewards, Affiliation, Family, Health and Fitness, and Emotional Control. This confirmed the first research hypothesis concerning the multi-factor, social-psychological nature of motivation for participation in sports and exercise. Items used in the Emotional Control sub-scale of the PAMS loaded with items for Health and Fitness for respondents in their twenties, with items for Mastery and Autonomy for respondents in their forties, and as a separate factor for respondents 60 years old or older. The maximum number of factors was retained for stage two in an effort to capture as much of the complexity of the motivation phenomenon as possible. However, these results raised questions concerning the relationships between the items in the Mastery

and Autonomy, Health and Fitness, and Emotional Control sub-scales.

Table 2 contains the factor loadings for each item and each age group.

Table 2

Stage One PAMS Factor Loadings

<u>Sub-Scale and Item</u>	<u>Mastery and Autonomy</u> Age Loading	<u>Social Recognition and Rewards</u> Age Loading	<u>Affiliation</u> Age Loading	<u>Family</u> Age Loading	<u>Health and Fitness</u> Age Loading	<u>Emotional Control</u> Age Loading
<u>Mastery and Autonomy</u>	20s .79338	20s .06142	20s .11502	20s .03523	20s -.00871	
Trying to be the best you can be	40s .65752	40s .23331	40s .04699	40s .12822	40s .27953	
	60+ .62086	60+ .30728	60+ .28393	60+ -.07381	60+ .16879	60+ .14533
Pushing yourself to your limits	20s .80619	20s .12633	20s .08562	20s .00248	20s .18760	
	40s .77412	40s .12900	40s .08706	40s .01143	40s .02704	
	60+ .71217	60+ .18812	60+ .14725	60+ .26701	60+ -.08675	60+ .19451
Trying to reach personal goals	20s .75345	20s -.06006	20s .01506	20s .19161	20s .20493	
	40s .58289	40s .32257	40s -.05438	40s .02323	40s .40668	
	60+ .56565	60+ .21826	60+ .36195	60+ .16572	60+ .28571	60+ .37699
Improving your skills	20s .68063	20s -.02748	20s .07877	20s -.01277	20s .48357	
	40s .81718	40s .08157	40s -.02555	40s .12692	40s .22625	
	60+ .78194	60+ .02256	60+ .01746	60+ .11445	60+ .31354	60+ .26410

<u>Sub-Scale and Item</u>	<u>Mastery and Autonomy</u> Age Loading	<u>Social Recognition and Rewards</u> Age Loading	<u>Affiliation</u> Age Loading	<u>Family</u> Age Loading	<u>Health and Fitness</u> Age Loading	<u>Emotional Control</u> Age Loading
Disciplining your mind and body	20s .75335 40s .81604 60+ .78646	20s .13933 40s .08326 60+ .09563	20s .20146 40s .16612 60+ .20404	20s .05923 40s .17445 60+ .13553	20s .10061 40s .19093 60+ .33811	60+ .07332
<u>Social Recognition and Rewards</u> Being admired by others	20s -.03238 40s .04924 60+ .04870	20s .84754 40s .85060 60+ .88512	20s .17376 40s -.00638 60+ .14345	20s .15220 40s -.12223 60+ .04735	20s .07456 40s .06387 60+ -.03500	60+ .12074
Others looking up to you	20s .07873 40s .14929 60+ .09840	20s .80785 40s .77894 60+ .80104	20s .05779 40s .04234 60+ .27920	20s .14874 40s .15309 60+ .10673	20s .13337 40s .07267 60+ .05526	60+ .18458
Being better than others	20s .17416 40s .12863 60+ .17549	20s .74466 40s .71736 60+ .87584	20s .08513 40s .10839 60+ .11416	20s .02027 40s .18897 60+ .09610	20s -.15107 40s -.04916 60+ .02114	60+ .00473
Being recognized by others	20s .03370 40s .16392 60+ .09085	20s .84702 40s .83555 60+ .81041	20s .11382 40s .27527 60+ .29909	20s .15994 40s -.03840 60+ .13571	20s .04436 40s -.01867 60+ .06119	60+ .22251

<u>Sub-Scale and Item</u>	<u>Mastery and Autonomy</u> Age Loading	<u>Social Recognition and Rewards</u> Age Loading	<u>Affiliation</u> Age Loading	<u>Family</u> Age Loading	<u>Health and Fitness</u> Age Loading	<u>Emotional Control</u> Age Loading
Being watched by others	20s -.05874 40s .14277 60+ .19633	20s .81483 40s .80283 60+ .75337	20s .15357 40s .14158 60+ .33614	20s .21161 40s .02112 60+ .18244	20s .03516 40s -.09849 60+ .04137	60+ -.16360
<u>Affiliation</u> Being part of a group	20s .03944 40s .02140 60+ .19459	20s .14453 40s .09357 60+ .29383	20s .78066 40s .86004 60+ .79492	20s -.08876 40s .08357 60+ .02898	20s .06024 40s .06808 60+ -.12630	60+ -.15822
Participating with friends	20s .04342 40s .11589 60+ .04080	20s .25003 40s .09021 60+ .20683	20s .77720 40s .76796 60+ .79451	20s .09927 40s .00318 60+ .26921	20s .00264 40s .07455 60+ .08066	60+ .00340
Meeting new people	20s .18135 40s .10149 60+ .29067	20s -.06800 40s .16551 60+ .28215	20s .82606 40s .85727 60+ .78351	20s .06993 40s .04189 60+ .12023	20s .08044 40s .07744 60+ .11239	60+ .03157
Making new friends	20s .20201 40s .10789 60+ .10250	20s .08700 40s .06435 60+ .20436	20s .86429 40s .88257 60+ .82541	20s .02457 40s .10090 60+ .11525	20s .15323 40s .16075 60+ .10025	60+ .20036
Commitment or obligation to another	20s .07029 40s .02145 60+ .12226	20s .22303 40s .35176 60+ .29040	20s .66849 40s .59451 60+ .54977	20s .20947 40s .24974 60+ .50067	20s .14238 40s .15466 60+ -.02193	60+ .38738

<u>Sub-Scale and Item</u>	<u>Mastery and Autonomy</u> Age Loading	<u>Social Recognition and Rewards</u> Age Loading	<u>Affiliation</u> Age Loading	<u>Family</u> Age Loading	<u>Health and Fitness</u> Age Loading	<u>Emotional Control</u> Age Loading
<u>Family Participating with family</u>	20s .17314 40s .27277 60+ .00084	20s .25613 40s .07659 60+ .19942	20s -.03927 40s .12307 60+ .21453	20s .81021 40s .78866 60+ .76524	20s -.03096 40s .06520 60+ -.02727	60+ .00149
<u>Family encouragement</u>	20s .16539 40s -.01788 60+ .17537	20s .22149 40s -.13016 60+ -.04279	20s .13007 40s -.02617 60+ .14313	20s .81080 40s .85768 60+ .80764	20s .06320 40s -.00041 60+ .17152	60+ -.00723
<u>Your family is active</u>	20s -.01700 40s .24778 60+ .19797	20s .13239 40s .29616 60+ .22672	20s .20349 40s .18107 60+ .05260	20s .80013 40s .80015 60+ .69193	20s .11868 40s .12559 60+ .08621	60+ .28291
<u>Health and Fitness Increasing energy and vitality</u>	20s .48009 40s .46237 60+ .25897	20s -.13803 40s -.20490 60+ .05484	20s .10294 40s .20167 60+ .03913	20s .18720 40s -.00264 60+ .03357	20s .63632 40s .63321 60+ .81393	60+ .22234
<u>Maintaining/improving health and fitness</u>	20s .56991 40s .34578 60+ .32659	20s -.02981 40s -.13521 60+ -.10831	20s .05657 40s .12292 60+ -.07844	20s .23241 40s .00134 60+ .05434	20s .43229 40s .78562 60+ .80163	60+ .03676

<u>Sub-Scale and Item</u>	<u>Mastery and Autonomy</u> Age Loading	<u>Social Recognition and Rewards</u> Age Loading	<u>Affiliation</u> Age Loading	<u>Family</u> Age Loading	<u>Health and Fitness</u> Age Loading	<u>Emotional Control</u> Age Loading
Delaying effects of aging	20s .13511 40s .08821 60+ .01612	20s .12323 40s .15718 60+ .12116	20s -.30365 40s .25099 60+ .14845	20s .38668 40s .18047 60+ .11234	20s .45219 40s .78223 60+ .81879	60+ .20942
<u>Emotional Control</u> Reducing stress or relieving tension	20s .12951 40s .42859 60+ .03181	20s -.11344 40s -.13601 60+ .03460	20s .11907 40s .53066 60+ .09977	20s .03797 40s -.10301 60+ .00983	20s .65138 40s .11247 60+ .42162	60+ .76593
Controlling your emotions	20s .07007 40s .64602 60+ .27264	20s .19007 40s .13238 60+ .08720	20s .15315 40s .43863 60+ -.00007	20s .03818 40s .10921 60+ .19704	20s .78730 40s -.13400 60+ .10810	60+ .84990
Overcoming personal weaknesses	20s .29786 40s .55511 60+ .38849	20s .13467 40s .21905 60+ .15764	20s .10675 40s .19131 60+ .00572	20s -.07368 40s .33422 60+ .03986	20s .73144 40s .13948 60+ .11484	60+ .77650

PAMS Sub-Scale Reliabilities

Correlations between the initial 50-item physical activity motivation inventory and the physical activity motivation scale developed in stage one, the PAMS, indicated these two measures shared

93.4%, 93.2%, and 95.3% of their total variance for respondents in their twenties, forties, and 60 or older respectively. Measurement efficacy was virtually unchanged using the shorter scale.

Cronbach's alpha was used as a measure of internal consistency to calculate reliability of the PAMS and its sub-scales. Alpha reliabilities for the total PAMS for respondents in their twenties, forties, and 60 or older respectively were .8762, .8991, and .8991. Test-retest reliability of the PAMS based on results from a convenience sample of 32 individuals in early adulthood, 7 individuals in middle adulthood, and one individual in late adulthood was .7770.

Sub-scale reliabilities for the three age groups in stage one and test-retest reliabilities are presented in Table 3.

Table 3

PAMS Sub-Scale Reliabilities

Sub-Scale	Cronbach's alpha			Test-Retest (aggregate)
	20s	40s	60+	
Mastery and Autonomy	.8625	.8703	.8625	.7280
Social Recognition and Rewards	.8840	.8703	.9192	.8370
Affiliation	.8608	.8779	.8903	.7564
Family	.8272	.8906	.7244	.7426
Health and Fitness	.6373	.7620	.8090	.6904
Emotional Control	.7062	.7160	.8500	.7484

PAMS Sub-Scale Intercorrelations

The PAMS sub-scales were correlated to determine the strengths and directions of their relationships to one another. Correlations less than .3 were considered low, and correlations ranging from .3 to .5 were considered moderate. As shown in Table 4, all sub-scale intercorrelations were positive and either low or moderate. The top score is for respondents in their twenties, the middle score for respondents in their forties, and the bottom score for respondents 60 years old or older. In addition, all sub-scale intercorrelations were less than sub-scale reliabilities using internal consistency and test-retest.

Table 4

PAMS Sub-Scale Intercorrelations

Sub-Scale	Social Recognition and Rewards			Affiliation			Family			Health and Fitness			Emotional Control		
	20s	40s	60+	20s	40s	60+	20s	40s	60+	20s	40s	60+	20s	40s	60+
Mastery and Autonomy	.12	.34	.42	.29	.23	.51	.23	.34	.42	.54	.53	.53	.48	.57	.54
Social Recognition and Rewards				.30	.30	.59	.39	.22	.34	.10	.06	.10	.13	.28	.24
Affiliation							.23	.24	.48	.10	.30	.22	.30	.48	.20
Family										.35	.26	.26	.15	.32	.26

Sub-Scale	Social Recognition and Rewards			Affiliation			Family			Health and Fitness			Emotional Control		
	20s	40s	60+	20s	40s	60+	20s	40s	60+	20s	40s	60+	20s	40s	60+
Health and Fitness													.55	.39	.42

Physical Activity Enjoyment Principal Components

The responses to the initial physical activity enjoyment inventory administered in stage one were subjected to the same statistical procedures as those used for the initial physical activity motivation inventory. Table 5 contains the resultant factor structures and loadings for the three age groups. The multi-factor, social-psychological nature of physical activity enjoyment proposed in the first research hypothesis was upheld.

In stage one, four principal components for physical activity enjoyment and 14 items were identified that appeared stable and consistent across the three age groups of the adult lifespan. The principal components were labeled: self rewards, social recognition and rewards, family, and responsibility. However, for respondents in their forties and 60 or older, items in the Responsibility sub-scale loaded with items in the Family sub-scale. The maximum number of factors was retained in an effort to capture the complexity of the enjoyment phenomenon, but questions were raised concerning the relationships between items in the Responsibility and Family sub-scales.

Table 5

Stage One PAES Factor Loadings

<u>Sub-Scale and Item</u>	<u>Self Rewards</u>		<u>Social Recognition and Rewards</u>		<u>Responsibility</u>		<u>Family</u>	
	Age	Loading	Age	Loading	Age	Loading	Age	Loading
<u>Self Rewards</u>	20s	.89584	20s	-.02261	20s	.14042	20s	.02312
Feeling good about yourself	40s	.85455	40s	.11245	40s	.10281		
	60+	.87709	60+	.17829	60+	-.05827		
Feeling more relaxed	20s	.68880	20s	.22163	20s	-.39116	20s	.13237
	40s	.75135	40s	-.09205	40s	.18667		
	60+	.79496	60+	-.08446	60+	.21892		
Feeling energized	20s	.78820	20s	.13143	20s	-.02967	20s	-.08732
	40s	.76867	40s	.07534	40s	.00876		
	60+	.74638	60+	.09417	60+	.25950		
Feeling better about yourself	20s	.83840	20s	.04546	20s	.08251	20s	.00083
	40s	.81705	40s	.12375	40s	.05216		
	60+	.69704	60+	.19435	60+	.21435		
Feeling satisfied with your amount of physical activity	20s	.69509	20s	.05891	20s	.16190	20s	.21881
	40s	.80164	40s	.08989	40s	-.10836		
	60+	.75051	60+	.13944	60+	-.14966		

<u>Sub-Scale and Item</u>	<u>Self Rewards</u>		<u>Social Recognition and Rewards</u>		<u>Responsibility</u>		<u>Family</u>	
	Age	Loading	Age	Loading	Age	Loading	Age	Loading
<u>Social Recognition and Rewards</u>	20s	.20442	20s	.79209	20s	.18925	20s	.14375
Feeling admired by others	40s	.09697	40s	.85285	40s	-.07024		
	60+	.10538	60+	.88101	60+	.15631		
Feeling respected by others	20s	.29945	20s	.71075	20s	.25040	20s	.12696
	40s	.07594	40s	.83351	40s	.34972		
	60+	.13988	60+	.79330	60+	.20475		
Feeling liked by others	20s	-.02564	20s	.84998	20s	.02932	20s	.15405
	40s	.11611	40s	.73122	40s	.36265		
	60+	.20231	60+	.73287	60+	.41028		
Feeling recognition from others	20s	.10473	20s	.91707	20s	.12749	20s	.06143
	40s	-.02183	40s	.85475	40s	.22389		
	60+	.17825	60+	.85931	60+	.23730		
Feeling rewarded by others	20s	.00201	20s	.70876	20s	.31753	20s	.43977
	40s	.13221	40s	.68595	40s	.48793		
	60+	-.11601	60+	.57210	60+	.55774		

<u>Sub-Scale and Item</u>	<u>Self Rewards</u>		<u>Social Recognition and Rewards</u>		<u>Responsibility</u>		<u>Family</u>	
	Age	Loading	Age	Loading	Age	Loading	Age	Loading
<u>Responsibility</u>	20s	.10595	20s	.31586	20s	.87234	20s	.08049
Feeling responsible	40s	.14944	40s	.34748	40s	.75602		
for another	60+	.12116	60+	.27553	60+	.79005		
Feeling responsible	20s	.05186	20s	.26896	20s	.81635	20s	.28860
for others	40s	.03786	40s	.27933	40s	.77779		
	60+	.08104	60+	.32949	60+	.77300		
<u>Family</u>	20s	.00904	20s	.28634	20s	.14365	20s	.91239
Feeling comfortable	40s	-.02935	40s	.11234	40s	.82677		
with your family	60+	.12719	60+	.08442	60+	.78703		
Feeling supported	20s	.13329	20s	.15588	20s	.13139	20s	.93255
by family	40s	.05724	40s	.11640	40s	.78593		
	60+	.11842	60+	.26409	60+	.79614		

PAES Sub-Scale Reliabilities

Correlations between the initial physical activity enjoyment inventory and the revised scale, the PAES, indicated these two measures shared 86.6%, 86%, and 90.1% of their total variance for respondents in their twenties, forties, and 60 or older respectively. Measurement efficacy was virtually unchanged using the shorter scale.

Using Cronbach's alpha as a measure of internal consistency, PAES

reliabilities in stage one were .8680, .8633, and .8841 respectively for the total scale for respondents in their twenties, forties, and 60 or older. Test-retest reliability of the PAES based on results from a convenient sample of 32 individuals in early adulthood, 7 individuals in middle adulthood, and one individual in late adulthood was .7745. These were considered acceptable. Sub-scale reliabilities shown in Table 6 indicated acceptable internal consistencies for the sub-scales but only a moderate relationship between test and retest scores on the Self Rewards sub-scale.

Table 6

PAES Sub-Scale Reliabilities

Sub-Scale	Cronbach's alpha			Test-Retest (aggregate)
	20s	40s	60+	
Self Rewards	.8426	.8620	.8070	.5290
Social Recognition and Rewards	.9042	.9061	.8804	.8282
Responsibility	.9111	.8189	.9282	.6853
Family	.9365	.7899	.8561	.7466

PAES Sub-Scale Intercorrelations

PAES sub-scale intercorrelations indicated there were low positive relationships between the Self Rewards sub-scale and all other sub-scales for respondents in all three age groups. All other sub-scale correlations were positive and moderate except the high positive

relationship between Responsibility and Family for respondents in their forties. These results indicated that self rewards were relatively independent, while social recognition and rewards, responsibility, and family were perhaps separate dimensions of a single social factor.

In addition, all sub-scale intercorrelations were lower than sub-scale reliabilities calculated using both Cronbach's alpha as a measure of internal consistency and test-retest.

Table 7

PAES Sub-Scale Intercorrelations

Sub-Scale	Social Recognition and Rewards			Responsibility			Family		
	20s	40s	60+	20s	40s	60+	20s	40s	60+
Self Rewards	.2409	.1860	.2911	.1419	.1779	.2506	.1685	.0823	.2472
Social Recognition and Rewards				.5309	.5742	.5647	.4748	.4116	.5045
Responsibility							.3876	.6189	.5484

The findings in this stage supported the first research hypothesis that physical activity participation motivation and enjoyment are multi-factor, social-psychological constructs. The factors and items identified for sports and exercise motivation measured intrinsic motivation, achievement motivation, the need for competence and self-efficacy, autonomy, self-direction and self-control, extrinsic social rewards, family support, affiliation, and commitment to or

responsibility for others. Sources of enjoyment included self esteem, energy level, social recognition, social rewards, family support, comfort within the family, and responsibility for others. Further, the correlation between the total PAMS and PAES was .7936. This supported the hypothesized high positive association between motivation for and sources of enjoyment from physical activity.

CHAPTER V

STAGE TWO METHODS AND PROCEDURES

The purposes of stage two were to determine validity for the PAMS and PAES and to confirm their factor structures using a different sample of 80-100 respondents in each of three age groups: 20-39 (early adulthood), 40-59 (middle adulthood), and 60 and older (late adulthood)..

Subjects

Data were collected from 105 respondents in early adulthood, 87 respondents in middle adulthood, and 83 respondents in late adulthood. Mean ages for each group were 25.8, 48.4, and 72.1 respectively. There were 52 males and 53 females in early adulthood, 42 males and 45 females in middle adulthood, and 38 males and 45 females in late adulthood. All three age samples were predominantly white: 86.9% for the early adulthood group, 96.5% for the middle adulthood group, and 96.4% for the late adulthood group. Table 8 contains a summary of demographic information for each group.

Sampling

Subjects were chosen to represent Levinson's (1986) three stages of adulthood: early adulthood (20-39 years), middle adulthood (40-59 years), and late adulthood (60 years and older). Subjects were solicited from within a limited geographical area, so race was relatively homogenous.

Respondents reported weekly participation in the following activities: basketball, softball, volleyball, golf, tennis, racquetball, squash, aerobics, strength training, walking, running, biking, horseback

riding, self defense, dancing, and swimming. The settings for these activities included public and private courts and golf courses, public roads and trails, homes and neighborhoods, recreational leagues, church leagues, and private sports and fitness clubs. The purpose of using such a wide range and variety of sport and exercise activities and settings was to minimize the effects of one type of activity or one activity setting on responses to the motivation and enjoyment scales while attempting to balance the number of respondents in each age group involved in similar sport and exercise activities.

Testing Procedure

Because subjects in stage one often required clarification of the terms "sports" and "exercise" and still had difficulty separating their weekly physical activities into these two categories, the more general term, "physical activity," was used in stage two. In addition, the item, "How long have you been participating in sport and exercise activities on a regular basis?" was re-worded, "Since the age of ten, how long have you been participating in sport and exercise activities on a regular basis?" in order to provide a baseline. Activity history could then be calculated consistently as a percentage of the subject's current age minus ten and the response to this question. Otherwise, the same testing procedures were used in stage two that were used in stage one.

Table 8

Demographic Information for Stage Two Respondents

Age	Young Adulthood	Middle Adulthood	Late Adulthood
Males	52	42	38
Females	53	45	45
Total	105	87	83
Percent White	86.9	96.5	96.4
Mean Age	25.8	48.4	72.1
Mean Participation in Sports and Exercise			
Males	10.99 hours/week	8.39 hours/week	8.87 hours/week
Females	7.03 hours/week	7.90 hours/week	7.90 hours/week
Total	8.99 hours/week	7.10 hours/week	8.34 hours/week
Mean Desired Activity			
Males	23.97 hours/week	18.09 hours/week	11.78 hours/week
Females	13.03 hours/week	11.14 hours/week	10.63 hours/week
Total	18.50 hours/week	14.50 hours/week	11.17 hours/week
Mean Activities			
Males	3.29	2.97	2.78
Females	3.49	2.84	2.63
Total	3.39	2.90	2.70

Age	Young Adulthood	Middle Adulthood	Late Adulthood
Activity History			
Males	.9084	.8318	.7239
Females	.9459	.8153	.9139
Total	.9273	.8232	.8222

Subjects in early adulthood reported the highest mean weekly participation rate (8.99 hours/week) followed by subjects in late adulthood (8.34 hours/week) and middle adulthood (7.1 hours/week). Weekly participation rates for females were lower than for males in each age group. The means for desired amount of weekly participation for each age group were higher than actual participation, decreased with age from 18.5 hours per week to 11.17 hours per week, and decreased for females within each age group. The mean number of weekly physical activities also decreased with age from 3.39 to 2.70 and decreased for females in middle and late adulthood. However, the mean number of weekly activities was slightly higher for females in early adulthood than for males. Activity history was calculated as the percentage of the individual's age during which he or she participated regularly in sports and exercise. This also decreased as age increased.

Analysis of Factor Structures for the PAMS and PAES

The number of factors for the PAMS and PAES were identified for the total sample based on principal components extracted with

eigenvalues greater than or equal to one. In order to locate simple structure, varimax rotation was used. The subsequent factor structures for the total stage two sample were compared to those identified in stage one.

Concurrent Validity for the PAMS and PAES

Concurrent validity for the PAMS was determined using Pearson product-moment correlations to correlate the total scale and its sub-scale scores with the short form of the LMS as a test of convergent validity and with the CES-D as a test of divergent validity. Concurrent validity for the PAES was determined by correlating the total scale and its sub-scale scores with the short form of the LSS as a test of convergent validity and with the CES-D as a test of divergent validity.

PAMS Description. The PAMS (Appendix B) contains five sub-scales designed to measure motivation for physical activity across the adult lifespan. The Mastery and Autonomy sub-scale consists of six items that examine the role of personal competence, self-determination, and self-discipline for participation in sports and exercise. The Social Recognition and Rewards sub-scale consists of five items that examine the importance of such extrinsic rewards as being admired, being respected, being recognized, being watched, and being better than others. The Affiliation sub-scale consists of five items that examine the importance of relationship and responsibility to another for participation in physical activity. The Family sub-scale consists of three items that examine the impact of family encouragement and family participation on the individual's motivation for participation in sports and exercise. The Self-Control sub-scale consists of three items that

examine the importance of reducing stress and relieving tension, controlling emotions, and delaying the effects of aging by participating in physical activity.

Leisure Motivation Scale Description. Because participation in sports and exercise is a leisure activity, scores from the PAMS were correlated with scores from the short form of the Leisure Motivation Scale in an attempt to establish convergent validity for the PAMS. The short form of the Leisure Motivation Scale contains four sub-scales with four items each (see Appendix B). The Intellectual sub-scale of the LMS measures the extent to which individuals are motivated to engage in leisure activities which involve substantial mental activities such as learning about the self and the external environment, expanding knowledge, exploring new ideas, discovering new things, satisfying curiosity, being creative, and using the imagination (Beard & Ragheb, 1983, p.225). The Social sub-scale of the LMS measures the extent to which individuals are motivated to engage in leisure activities in response to needs for friendship, interpersonal relationships, and the esteem of others (Beard & Ragheb, 1983, p.225). The Competency/Mastery sub-scale assesses the extent to which individuals engage in leisure activities in order to achieve, master, experience challenge, and compete in activities that are usually physical in nature (Beard & Ragheb, 1983, p.225). The Stimulus-Avoidance sub-scale of the LMS measures the extent to which individuals engage in leisure activities in order to avoid social contacts, seek solitude and calm, rest, and unwind. Intercorrelations among these sub-scales suggest a clear distinction between Stimulus Avoidance and the other three sub-scales

consistent with the conceptualization of leisure motivation along two dimensions: seeking personal and/or interpersonal intrinsic rewards and escaping personal and/or interpersonal environments (Iso-Ahola, 1989). Alpha reliabilities for the short form of the Leisure Motivation Scale ranged from .89 to .91.

PAMS Scale and Sub-Scale Hypothesized Relationships to the LMS.

Because both the PAMS and LMS measure motivation in leisure settings, total scores from the two instruments should be significantly and positively related. Hypothesized strengths and directions of the relationships between PAMS and LMS sub-scales are contained in Table 9. The following ranges were used: low is less than .3, moderate is between .3 and .5, and high is .6 or higher.

Table 9

Hypothesized Relationships Between the PAMS and LMS Sub-Scales

LMS Sub-Scale

<u>PAMS Sub-Scale</u>	Intellectual	Social	Competency/Mastery	Stimulus Avoidance
Mastery and Autonomy	Low Positive	Moderate Positive	High Positive	Unrelated
Social Recognition and Rewards	Low Positive	Moderate Positive	Moderate Positive	Unrelated
Affiliation	Low Positive	High Positive	Moderate Positive	Unrelated
Family	Low Positive	High Positive	Moderate Positive	Unrelated
Self-Control	Low Positive	Moderate Positive	Moderate Positive	Unrelated

Although each sub-scale of the PAMS attempted to define a relatively independent motivation factor, opportunities for learning about oneself and others and the other mental activities described in the Intellectual sub-scale of the LMS are available through most of the items contained in each sub-scale of the PAMS. Consequently, each of the PAMS sub-scales should have a low positive correlation to the Intellectual sub-scale of the LMS.

The Social sub-scale of the LMS should be most highly positively related to the Affiliation and Family sub-scales of the PAMS because all three are measures of the importance of relationship for participation in leisure activities. In addition, the Social sub-scale of the LMS should be moderately and positively related to the Self-Control sub-scale of the PAMS because reducing stress or relieving tension, controlling emotions, and delaying the effects of aging can directly affect one's behavior and thus indirectly affect one's interpersonal relationships and evaluation by others. The Mastery and Autonomy and Social Recognition and Rewards sub-scales of the PAMS should be moderately positively correlated to the Social sub-scale of the LMS because items in each represent reasons why others would think well of the individual or demonstrate such admiration and recognition. However, because social recognition and rewards are extrinsic sources of motivation, and leisure by definition is intrinsically motivated (Iso-Ahola, 1989, p.255), the Social Recognition and Rewards sub-scale of the PAMS may be less positively related to the Social and Intellectual sub-scales of the LMS than the other PAMS sub-scales.

The Competency/Mastery sub-scale of the LMS should be most highly

and positively related to the Mastery and Autonomy sub-scale of the PAMS because both are measures of achievement and mastery in physical activity settings. In addition, the Competency/Mastery sub-scale of the LMS should have a moderate positive relationship to the Social Recognition and Rewards, Affiliation, Family, and Self-Control sub-scales of the PAMS because each sub-scale represents a dimension for demonstrating personal achievement.

The Stimulus Avoidance sub-scale of the LMS represents Iso-Ahola's escaping dimension of leisure and should not be closely related to any of the PAMS sub-scales because the PAMS sub-scales represent means for seeking personal and/or interpersonal rewards from participation in physical activity.

PAES Description. The PAES (Appendix B) contains three sub-scales to measure individual sources of enjoyment from participation in sports and exercise. The Self-Rewards sub-scale contains five items that examine the importance of positive self-evaluation and reflect possible individual sources for the "feel good" phenomenon resulting from participation in physical activity. The Social Recognition and Rewards sub-scale consists of five items that examine the importance for enjoyment of participation in physical activity of feeling admired, respected, liked, recognized, and rewarded by others. The Responsibility/Family sub-scale consists of two items that examine how often feelings of responsibility for others are a source of enjoyment from physical activity participation and two items that examine how often feeling supported by family and feeling comfortable with family are sources of enjoyment from physical activity participation.

Short Form of the Leisure Satisfaction Scale. Because participation in sports and exercise is a leisure activity and enjoyment and satisfaction are positive affective responses, scores from the PAES were correlated with scores from the short form of the Leisure Satisfaction Scale in an attempt to establish convergent validity for the PAES. There are six four-item sub-scales for the short form of the Leisure Satisfaction Scale (Ragheb & Beard, 1980, pp.345-346). The Psychological sub-scale measures individuals' evaluations of how interesting their leisure activities are, the impact of leisure activities on their self-confidence and their sense of accomplishment, and their use of many different skills and abilities in their leisure activities (see Appendix B). Although somewhat diverse, when these items are aggregated, they provide a measure of the individual's self-concept and interest in leisure activities. The Educational sub-scale measures the extent to which leisure activities increase knowledge of the external environment, the self, and others as well as provide opportunities to try new things. The Social sub-scale measures the extent to which leisure activities provide social interaction, provide the opportunity to participate with friendly people, help develop close relationships with others, and impact on association with others who also enjoy doing leisure activities. The Relaxation sub-scale assesses the extent to which leisure activities help the individual to relax and relieve stress, contribute to the individual's emotional well-being, and are engaged in simply because the individual likes doing them. The Physical Activity sub-scale measures the extent to which individuals engage in leisure activities that are physically challenging, develop

physical fitness, help them stay healthy, and restore them physically. The Aesthetic sub-scale assesses the extent to which individuals engage in leisure activities in areas that are fresh and clean, interesting, beautiful, and well-designed.

PAES Scale and Sub-Scale Hypothesized Relationships to the LSS.

Because the PAES and LSS both measure positive affect associated with leisure activities, total scores from the two instruments should be significantly and positively related. Additionally, because the PAES measures sources of enjoyment from participation in physical activities, the total PAES score should be most highly positively related to scores on the LSS Physical Activity sub-scale.

The Psychological sub-scale of the LSS should have a moderate positive relationship to the Self Rewards and Social Recognition and Rewards sub-scales of the PAES because all three address self-esteem, self-confidence, and positive evaluations of performance in leisure activities according to oneself or the perceived evaluations of others. The Responsibility/Family sub-scale of the PAES should also be moderately positively related to the Psychological sub-scale of LSS because it contains items that indirectly affect the individual's feeling of self-confidence and self-worth.

The Educational sub-scale of the LSS should have a low positive relationship to each of the PAES sub-scales because self rewards, social recognition, rewards from others, feelings of responsibility, family interaction, and family support each provide means for learning about oneself.

The Social sub-scale of the LSS should be moderately positively

related to all three PAES sub-scales because feeling good about oneself and feeling a sense of accomplishment; feeling socially accepted and recognized and rewarded by others; feeling responsible for others and feeling supported by family can each be associated with the need for relationship with others.

The Relaxation sub-scale of the LSS should be most highly and positively related to the Self Rewards sub-scale of the PAES because both contain items that assess relaxation, stress reduction, and emotional well-being. The Relaxation sub-scale of the LSS should also have a low positive relationship to the Social Recognition and Rewards and Responsibility/Family sub-scales of the PAES because both of these PAES sub-scales contain items that directly influence the individual's self-concept and self-esteem and thus impact upon the individual's emotional well-being.

The Physical Activity sub-scale of the LSS should have a high positive relationship to the Self Rewards sub-scale of the PAES because both are concerned with feelings of competence derived from physical activity participation. The other two PAES sub-scales should have a low positive relationship to the LSS Physical Activity sub-scale because they are linked only by their shared sport and exercise as leisure activities.

The Aesthetic sub-scale of the LSS is concerned with individual levels of satisfaction with the areas or physical settings in which leisure activities take place. Each of the PAES sub-scales should be unrelated to the Aesthetic sub-scale of the LSS because the PAES is a measure of enjoyment from the leisure activity itself and indirectly, at

best, measures enjoyment from engaging in leisure in a specific area or place.

Table 10 contains the above hypotheses concerning the strengths and directions of the relationships between the PAES and LSS sub-scales.

Table 10

Hypothesized Relationships Between the PAES and LSS Sub-Scales

<u>PAES Sub-Scale</u>	<u>LSS Sub-Scale</u>					
	Psychological	Educational	Social	Relaxation	Physical Activity	Aesthetic
Self Rewards	Moderate Positive	Low Positive	Moderate Positive	High Positive	High Positive	Unrelated
Social Recognition and Rewards	Moderate Positive	Low Positive	Moderate Positive	Low Positive	Low Positive	Unrelated
Responsibility/Family	Moderate Positive	Low Positive	Moderate Positive	Low Positive	Low Positive	Unrelated

Center for Epidemiological Depression Scale Description. "In a healthy population, positive and negative affect are expected to co-exist, with a low (negative) correlation" (Radloff, 1977, p. 391). In addition, there is a "feel good" phenomenon associated with participation in vigorous physical activity based on frequent reports of feeling better by individuals following their bouts of vigorous exercise

(Morgan, 1984, 1985; Morgan & O'Connor, 1988; Wankel, 1993). Regular physical activity has also been associated with reduced depression levels (Berger & Owen, 1983) and improved self-esteem (Sonstroem, 1984). For these reasons, scores from the PAMS, PAES, and CES-D were correlated to determine divergent validity for the PAMS and PAES.

The CES-D Scale is a short self-report scale designed to measure depression symptomology in the general population (Radloff, 1977). It contains 20 items and four sub-scales: Depressed Affect, Positive Affect, Somatic and Retarded Activity, and Interpersonal Affect. Depressed Affect contains items concerning feeling depressed, lonely, fearful, sad, like life had been a failure, having crying spells, and feeling unable to shake off the blues even with help from friends and family. The Positive Affect sub-scale contains items such as feeling as good as others, hopeful about the future, happy, and enjoying life. The Somatic and Retarded Activity sub-scale examines changes in perceptions and decreases in normal activities such as being bothered by things that do not usually bother you, having trouble keeping your mind on what you are doing, feeling everything is an effort, talking less than usual, sleeping restlessly, not feeling like eating, and not being able to get "going." The Interpersonal Affect sub-scale contains two items that address feeling people are unfriendly and dislike you. Each item is rated according to how often the respondent felt this way during the past week on a zero to three scale where 0 is rarely or less than one day, 1 is sometime or one to two days, 2 is occasionally or three to four days, and 3 is most of the time or five to seven days (see Appendix B). Responses for the Positive Affect sub-scale are reversed to reflect

the lack of positive affect associated with depression. A total score of 16 or higher is considered a high score.

Hypothesized Relationships Between the PAMS, PAES, and CES-D.

Because subjects in this research were currently involved in sport and exercise activities at least once a week, even this minimal amount of regular physical activity should have an impact on self-esteem and depression. Consequently, the Depression Affect, Somatic and Retarded Activity, and Interpersonal Affect sub-scales of the CES-D should be significantly and negatively related to the PAMS and PAES total scores and each PAMS and PAES sub-scale score. In addition, the Depressed Affect sub-scale of the CES-D should have the strongest negative correlations with the Mastery and Autonomy and Social Recognition and Rewards sub-scales of the PAMS and the Self Rewards and Social Recognition and Rewards sub-scales of the PAES because the Depressed Affect sub-scale of the CES-D measures feelings of incompetence while all of the other sub-scales measure feelings of competence. The Interpersonal Affect sub-scale of the CES-D should have the strongest negative relationship with the Social Recognition and Rewards, Affiliation, and Family sub-scales of the PAMS and the Social Recognition and Rewards and Family sub-scales of the PAES because each sub-scale attempts to measure some aspect of interpersonal relationships.

The Somatic and Retarded Activity sub-scale of the CES-D should also be negatively related to the PAMS, PAES, and their sub-scales because participation in sport and exercise for whatever reasons and with whatever sources of enjoyment can alleviate such symptoms as poor

appetite and restless sleep and also provide an environment in which the individual must "get going" and focus on the task at hand even if it is a great effort.

The Positive Affect sub-scale of the CES-D should be significantly and positively correlated with the total PAMS and PAES scores and with their sub-scale scores because each one was designed to assess an individual's reasons for or positive feelings from participation in sport and exercise activities.

Predictive and Discriminant Validity for the PAMS and PAES

Item responses were analyzed for males and females in three age groups: early adulthood, middle adulthood, and late adulthood using SPSS PC+ to calculate 2X3 MANCOVAs as measures of both the predictive and discriminant validities of the PAMS and PAES. For the PAMS, the independent variables were age group and sex, the covariate was number of hours of weekly physical activity, and the dependent variables were the six PAMS sub-scale scores. For the PAES, the independent variables were age group and sex, the covariate was desired number of weekly physical activity hours, and the dependent variables were the three PAES sub-scale scores. The covariates in the MANCOVAs described above were different and dictated by the hypotheses.

Further, a 2X3 MANCOVA was calculated using age group and sex as independent variables, number of weekly physical activity hours as the covariate, and sub-scale scores for both the PAMS and PAES as dependent variables in order to measure the effects of weekly participation rates in sports and exercise on each sub-scale as well as the main effects and interactions of age group and sex on both physical activity motivation

and enjoyment. Finally, Tukey's test of significance was used post hoc to determine which sub-scale means for the three age groups were significantly different at the .001 level.

Motivation for and Sources of Enjoyment from Physical Activity

The final issue addressed in this research was conceptual and not usually present in the development of psychometric tools. The statistical analyses previously described used summed scores to examine the behaviors of the scales developed to measure motivation for and enjoyment from physical activity by males and females across the adult lifespan. The summed scores are inter-correlated because items are not strictly unidimensional. However, by using summed scores (as would be done in practical application of the scales) one obtains the most accurate description of the behaviors of the scales themselves as applied in situ. But, the final issue addressed in this research was the relationship of the two constructs - motivation for and enjoyment from physical activity - to one another.

An underlying assumption in this research was that motivation for and enjoyment from sports and exercise participation, although highly related, are distinguishable. Motivation was defined as providing the impetus for participation in physical activities, while enjoyment was defined as the global positive affect resulting from the individual's outcome evaluation of that participation. Certainly what initially motivates someone to play sports or exercise can also provide a source of enjoyment from those activities, but additional sources of enjoyment can also be realized that were not considered prior to participation. For instance, an individual might be motivated to exercise in order to

lose weight. Losing weight will provide enjoyment for that individual, but meeting new people and making new friends at the exercise facility could also be sources of enjoyment. In turn, this affiliation could provide the motivation for continued exercise. Obviously the two constructs, motivation and enjoyment, are highly related to one another because of this cyclic connection. Motivation occurs before physical activity participation, while enjoyment occurs and after physical activity participation. Both motivation and enjoyment can be present during physical activity. Are the two really different?

In order to examine the relationship between motivation for and sources of enjoyment from physical activity participation, the final statistical analyses in this research used factor scores rather than summed scores for the PAMS and PAES sub-scales. Factor scores provide the most precise measure of the motivation and enjoyment constructs because "the factor scores have the additional advantage of being uncorrelated, thus giving maximum information for a space of given dimensionality" (Cooley & Williams, 1962, p.64). Further, because varimax rotations were used, the factor scores for the latent variables measured within the PAMS and PAES, respectively, will be independent. Thus, there will be no redundancy in tests that correlate PAMS sub-scales with PAES sub-scales. In other words, each correlation between motivation and enjoyment factor scores provides unique information about the redundancy or independence of motivation and enjoyment. Pearson product-moment correlations were calculated for the PAMS and PAES sub-scales using factor scores to determine their relative independence.

CHAPTER VI

STAGE TWO RESULTS

The purposes of stage two were to confirm the factor structures and determine the validity of the PAMS and PAES using a different sample of from 80-100 respondents in each of three age groups: 20-39 (early adulthood), 40-59 (middle adulthood), and 60 and older (late adulthood).

PAMS Factor Structure

The six factors extracted in stage one were extracted for the total sample in stage two. Four sub-scales contained the same items as those in stage one: Social Recognition and Rewards, Family, Health and Fitness, and Affiliation. One item, "overcoming personal weaknesses," changed from the Emotional Control sub-scale to the Mastery and Autonomy sub-scale. Because of its instability, this item was dropped from the PAMS.

Subsequent factor analyses extracted five factors and led to dropping the item, "disciplining your mind and body," because it loaded almost equally on two factors. The final version of the PAMS contained 22 items and five sub-scales: Mastery and Autonomy, Social Recognition and Rewards, Affiliation, Family, and Self-Control. The Social Recognition and Rewards, Family, and Affiliation sub-scales were unchanged. Although the items "maintaining/improving health and fitness" and "increasing energy and vitality" loaded somewhat equally on two factors, they were retained and added to the sub-scale on which they loaded the highest, Mastery and Autonomy, because of their importance as motives for participation in sports and exercise. The new three-item

factor was labelled Self-Control. These results confirmed the multi-factor social-psychological nature of physical activity participation motivation.

Stage one data were used to recalculate the revised PAMS sub-scale reliabilities. Using Cronbach's alpha as a measure of internal consistency for the total sample and test-retest correlations of paired scores, the reliabilities of the Mastery and Autonomy sub-scale were respectively .8249 and .6983 and the reliabilities of the Self-Control sub-scale were respectively .4847 and .7101. The intercorrelation of the Mastery and Autonomy and Self-Control Sub-scales was .4850. Although this was higher than the alpha reliability for Self-Control, it was considerably less than the Self-Control test-retest reliability. Intercorrelations among the remaining PAMS sub-scales ranged from .2271 to .3526 and indicated relative independence. Table 11 shows the stage two factor loadings for each item retained in the PAMS.

Table 11

Revised PAMS Factor Loadings

Sub-scale	Mastery and Autonomy	Social Recognition and Rewards	Affiliation	Family	Self-Control
<u>Mastery and Autonomy</u> Trying to reach personal goals	.68164	.16742	.05716	.08209	.19040

Sub-scale	Mastery and Autonomy	Social Recognition and Rewards	Affiliation	Family	Self-Control
Maintaining/ improving health and fitness	.57928	-.06638	-.02839	-.11670	.52663
Trying to be the best you can be	.70174	.18829	.28125	-.02547	.10311
Increasing energy and vitality	.61725	-.05927	.06281	-.08017	.52162
Improving your skills	.75891	.07301	.09161	.05221	.01650
Pushing yourself to your limits	.70410	.22229	.00777	.14537	.11669
<u>Social</u> <u>Recognition and</u> <u>Rewards</u> Others looking up to you	.15119	.78919	.09735	.12041	.19827
Being admired by others	.07195	.88332	.17330	.04424	.07253

Sub-scale	Mastery and Autonomy	Social Recognition and Rewards	Affiliation	Family	Self-Control
Being watched by others	.02948	.83189	.23469	.11946	.01333
Being recognized by others	.13499	.76462	.36792	.12447	.01457
Being better than others	.32080	.68019	.08293	.05720	-.23561
<u>Affiliation</u> Meeting new people	.08172	.22313	.77839	.08232	.14398
Participating with friends	.11000	.07433	.74873	.08297	-.08187
Being part of a group	.09110	.14296	.78560	.15505	.04855
Making new friends	.02076	.24541	.86969	.09663	.06712
Commitment or obligation to another	.14708	.29447	.45812	.39547	-.06358

Sub-scale	Mastery and Autonomy	Social Recognition and Rewards	Affiliation	Family	Self-Control
<u>Family</u> Participating with family	.00560	.03002	.06913	.86693	.02989
Your family is active	.02489	.04226	.09146	.84565	.08079
Being encouraged by your family	.06404	.30516	.32455	.64196	.06988
<u>Self-Control</u> Reducing stress or relieving tension	.07642	-.00805	.02569	.09660	.79212
Controlling your emotions	.14346	.23664	.25203	.31774	.35721
Delaying effects of aging	.27310	.07965	.01535	.07250	.56281

PAES Factor Structure

The three factors extracted for respondents in their forties and 60 or older in stage one were extracted for the total sample in stage two and contained the same items. These were: Self Rewards, Social

Recognition and Rewards, and Family/Responsibility. Although in stage one Family and Responsibility loaded on separate factors for respondents in their twenties, their intercorrelation was moderate (.3876) and statistically significant at the .001 level. For this reason, it was not surprising that items for the Family and Responsibility sub-scales loaded on one factor for the total sample in stage two. Varimax factor loadings for stage two are contained in Table 12. These results confirmed the multi-factor social-psychological nature of enjoyment from physical activity participation proposed in the first research hypothesis.

Table 12

Stage Two PAES Factor Loadings

<u>Sub-Scale and Item</u>	<u>Self Rewards</u>	<u>Social Recognition and Rewards</u>	<u>Responsibility/Family</u>
<u>Self Rewards</u>			
Feeling good about yourself	.82423	.19635	-.03072
Feeling more relaxed	.80859	-.03847	.19888
Feeling energized	.80503	.06209	-.03118
Feeling better about yourself	.81987	.07901	.07108

<u>Sub-Scale and Item</u>	<u>Self Rewards</u>	<u>Social Recognition and Rewards</u>	<u>Responsibility/Family</u>
Feeling satisfied with your amount of physical activity	.71354	.10915	-.07996
<u>Social Recognition and Rewards</u> Feeling admired by others	.17172	.87616	.16908
Feeling respected by others	.11726	.81043	.33529
Feeling liked by others	.05340	.81329	.28161
Feeling recognition from others	.08402	.92215	.17845
Feeling rewarded by others	.08415	.63524	.41591
<u>Responsibility/Family</u> Feeling responsible for another	-.00482	.28059	.72516
Feeling responsible for others	-.08245	.30805	.73231

<u>Sub-Scale and Item</u>	<u>Self Rewards</u>	<u>Social Recognition and Rewards</u>	<u>Responsibility/Family</u>
Feeling comfortable with your family	.08462	.23004	.76502
Feeling supported by your family	.05369	.15510	.77564

Concurrent Validity for the PAMS

Scores from the PAMS and PAMS sub-scales were correlated with scores from the short form of the LMS and LMS sub-scales to determine convergent validity and the CES-D and CES-D sub-scales to determine divergent validity. The strengths and directions of their relationships are contained in Table 13.

Table 13

PAMS and LMS Sub-Scale Correlations

LMS Sub-Scale

<u>PAMS Sub-Scale</u>	Intellectual	Social	Competency/Mastery	Stimulus Avoidance
Mastery and Autonomy	.3462***	.2083***	.5429***	.0947
Social Recognition and Rewards	.3042***	.5287***	.3856***	.1619**
Affiliation	.4323***	.5658***	.2907***	.1654**
Family	.1623**	.3128***	.1339*	.1913**

<u>PAMS Sub-Scale</u>	Intellectual	Social	Competency/Mastery	Stimulus Avoidance
Self-Control	.2712***	.2006***	.2274***	.2725***

*p=.05

**p=.01

***p=.001

The correlation between the total PAMS and LMS was positive and moderate (.5916) and thus provided support for convergent validity. In addition, all relationships between the PAMS and LMS sub-scales were positive. As predicted, there were low correlations between the LMS Stimulus Avoidance sub-scale and all PAMS sub-scales. However, the correlation between LMS Stimulus Avoidance and PAMS Self-Control (.2274) was significant at the .001 level. Additional low relationships were identified between the LMS Intellectual sub-scale and the PAMS Family and Self-Control sub-scales, the LMS Social sub-scale and PAMS Mastery and Autonomy and Self-Control sub-scales, and the LMS Competency/Mastery sub-scale and the PAMS Self-Control, Affiliation, and Family sub-scales. The remaining relationships were moderate and ranged from .3128 to .5658. As predicted, the strongest relationships were between the PAMS Social Recognition and Rewards and Affiliation sub-scales and the LMS Social sub-scale and the PAMS Mastery and Autonomy sub-scale and the LMS Competency/Mastery sub-scale. These results supported the sixth research hypothesis concerning the direction and strength of the relationships between the PAMS, the LMS, and their sub-scales.

Table 14

PAMS and CES-D Sub-Scale CorrelationsCES-D Sub-Scale

<u>PAMS Sub-Scale</u>	Depressed Affect	Positive Affect	Somatic and Retarded Activity	Interpersonal Affect
Mastery and Autonomy	-.1703**	-.2815***	-.1960**	-.1348*
Social Recognition and Rewards	.0350	.0219	-.0046	.0736
Affiliation	.1653**	.0645	.0638	.1000
Family	.0486	.0612	.0504	.0543
Self-Control	-.0628	-.1041	-.0520	-.0575

*p=.05 **p=.01 p=.001

The correlation between the total PAMS and CES-D was -.0327. PAMS and CES-D sub-scale correlations are contained in Table 14. As predicted, almost half of the correlations between the PAMS and CES-D sub-scales were negative indicating higher scores for motivation were associated with lower scores for depression. There was a significant negative correlation at the .001 level between the CES-D Positive Affect sub-scale (recoded to represent lack of positive affect associated with depression) and the PAMS Mastery and Autonomy sub-scale. The remaining correlations were extremely low, ranging from .0219 to .1000. This provided partial support for the divergent validity of the PAMS and its sub-scales and therefore supported the eighth research hypothesis.

Concurrent Validity for the PAES

Scores from the PAES and PAES sub-scales were correlated with the short form of the LSS and LSS sub-scales to determine convergent validity and with the CES-D and CES-D sub-scales to determine divergent validity. The strengths and directions of their relationships are contained in Tables 15 and 16.

Table 15

PAES and LSS Sub-Scale Correlations

<u>PAES Sub-Scale</u>	<u>LSS Sub-Scale</u>					
	Psychological	Educational	Social	Relaxation	Physical Activity	Aesthetic
Self Rewards	.4658***	.3516***	.2100***	.3926***	.4516***	.3421***
Social Recognition and Rewards	.3276***	.3831***	.4659***	.2142***	.1905**	.2005**
Family/Responsibility	.0737	.2764***	.3114***	.1575**	.0984	.2023***

*p=.05 **p=.01 ***p=.001

The PAES and LSS were positively and moderately related (.4911, $p=.001$). Further, all PAES and LSS sub-scale relationships were positive. These results partially supported the seventh research hypothesis concerning predicted significant and positive relationships between the PAES, the LSS, and their sub-scales. The PAES Self Rewards sub-scale was moderately related to all of the LSS sub-scales except the

Social sub-scale with which it had a low relationship. The PAES Social Recognition and Rewards sub-scale was moderately related to the LSS Psychological, Educational and Social sub-scales and had a low relationship to the LSS Relaxation, Physical Activity, and Aesthetic sub-scales. The PAES Responsibility and PAES Family sub-scales were related to all of the LSS sub-scales at a low level ranging from .0260 to .2707. These results were generally consistent with the predicted relationships between the PAES and LSS and provide preliminary support for the convergent validity of the PAES because exceptions to the hypothesized relationships were matters of strength, not direction. Of particular note was the finding that the PAES Self Rewards and LSS Aesthetic sub-scales shared 12% of their variance.

Table 16

PAES and CES-D Sub-Scale CorrelationsCES-D Sub-Scale

<u>PAES Sub-Scale</u>	Depressed Affect	Positive Affect	Somatic and Retarded Activity	Interpersonal Affect
Self Rewards	-.1934**	-.2578***	-.2414***	-.0906
Social Recognition and Rewards	.0261	-.0508	.0111	.0013
Responsibility/ Family	.0195	.0709	.0226	-.0217

**p=.01

***p=.001

As predicted, the PAES and CES-D were negatively related

indicating higher physical activity enjoyment scores were associated with lower depression scores. Although all correlations were low, negative and significant correlations at the .001 level were identified for the PAES Self Rewards sub-scale and the CES-D Depression, Positive Affect, and Somatic and Retarded Activity sub-scales. These results provided partial support for the divergent validity of the PAES and upheld the eighth research hypothesis.

Predictive and Discriminant Validity for the PAMS

A 2X3 MANCOVA was calculated using age group and sex as the independent variables, scores on the five PAMS sub-scales as dependent variables, and weekly number of hours of participation in sports and exercise as the covariate. Main effects and interactions of age group and sex were calculated as measures of the discriminant validity of the PAMS sub-scales. Regression on the covariate, number of hours spent each week participating in sports and exercise, was used as a measure of predictive validity for the PAMS sub-scale scores.

According to the multivariate test of significance, Pillais trace, the effect of age group on PAMS sub-scale scores was significant at the .001 level with $F(2,248) = 3.143$. Univariate tests of significance disclosed the following significant effects of age group on the PAMS sub-scale scores: Affiliation ($F=5.747$, $p=.004$) and Self-Control ($F=3.757$, $p=.025$). Although means on the both sub-scales increased with age (Appendix B), the differences between each age group were not always statistically significant. According to results from post hoc use of Tukey's test of significant differences, on both sub-scales late adults scored significantly higher than early adults. On the

Affiliation sub-scale, late adults also scored significantly higher than middle adults. These results supported the fourth research hypothesis that motivation for physical activity varies according to age. There was no significant main effect for sex or significant sex-age group interaction on the PAMS sub-scales. These findings did not support the fifth research hypothesis that physical activity motivation varies according to sex.

According to the multivariate test of significance, Pillais trace, the effect of the number of hours of weekly participation in physical activity on the PAMS sub-scales was significant at the .000 level with $F(1,248) = 7.31$. Univariate tests of significance disclosed the following effects of weekly hours of physical activity participation on the PAMS sub-scale scores: Mastery and Autonomy ($F=14.822$, $p=.000$), Social Recognition and Rewards ($F=7.538$, $p=.006$), and Affiliation ($F=8.948$, $p=.003$). These results supported the second research hypothesis concerning the positive and high relationship between the PAMS and a behavioral measure of motivation.

Predictive and Discriminant Validity for the PAES

A 2X3 MANCOVA was calculated using age group and sex as the independent variables, scores on the three PAES sub-scales as dependent variables, and desired weekly number of hours of participation in sports and exercise as the covariate. Main effects and interactions of age group and sex were calculated as measures of the discriminant validity of the PAES sub-scales. Regression on the covariate, desired number of hours spent each week participating in sports and exercise, was used as a measure of predictive validity for the PAES sub-scale scores.

According to the multivariate test of significance, Pillais trace, the effect of age group on PAES sub-scale scores was significant at the .000 level with $F(2,252) = 5.421$. Univariate tests of significance disclosed the following effects of age group on the PAES sub-scale scores: Social Recognition and Rewards ($F=8.346$, $p=.000$) and Responsibility/Family ($F=6.676$, $p=.001$). Mean scores increased linearly with age on both sub-scales (Appendix B). Tukey's test of significant differences applied post hoc disclosed a significant difference between scores for late and both early and middle adults on the Social Recognition and Rewards sub-scale and a significant difference between scores for late adults and early adults on the Responsibility/Family sub-scale. These findings supported the fourth research hypothesis that physical activity enjoyment varies according to age. There was no significant main effect for sex or significant sex-age group interaction on the PAES sub-scales at the .05 level. These findings did not support the fifth research hypothesis that physical activity enjoyment varies according to sex.

The multivariate effect of the desired number of hours spent participating in sports and exercise on the PAES sub-scale scores approached significance ($p=.069$), while the univariate tests of significance identified a significant effect of desired physical activity hours on the Self Rewards sub-scale ($F=3.927$, $p=.049$). These findings provided partial support for the third research hypothesis concerning the positive relationship between the PAES and a behavioral measure of physical activity enjoyment.

According to the multivariate test of significance, Pillais trace,

the effect of the number of hours of weekly participation in physical activity on both the PAMS and PAES sub-scales was significant at the .000 level with $F(1,248) = 5.063$. Univariate tests of significance disclosed the following effects of weekly hours of physical activity participation on the PAMS sub-scale scores - Mastery and Autonomy ($F=13.045$, $p=.000$), Social Recognition and Rewards ($F=7.356$, $p=.007$), and Affiliation ($F=8.978$, $p=.003$) - and the PAES Self Rewards sub-scale ($F=9.728$, $p=.002$).

Motivation for and Sources of Enjoyment from Physical Activity

Factor scores were calculated from responses on the PAMS and PAES in stage two in order to compare the constructs of motivation for and enjoyment from physical activity. Because factor scores are uncorrelated, they provide more precise information concerning the sub-scales than summed scores (Cooley & Lohnes, 1962). Table 17 contains the Pearson product-moment correlations for the PAMS and PAES sub-scale factor scores. These correlations provide preliminary support for the first research hypothesis that motivation for and sources of enjoyment from physical activity are positively and highly related, but distinguishable.

Table 17

PAMS and PAES Sub-Scale Factor Score Correlations

PAMS Sub-Scale

PAES Sub-Scale	Mastery and Autonomy	Social Recognition and Rewards	Affiliation	Family	Self-Control
Self Rewards	.4335***	-.0276	.0312	-.0682	.3453***
Social Recognition and Rewards	.1910**	.5542***	.3322***	-.1014	-.1329*
Responsibility/ Family	-.0492	.0767	.2040**	.5462***	.1767**

*p=.05

**p=.01

***p=.001

Factor score correlations for the PAMS and PAES sub-scales shown in Table 17 indicate positive moderate correlations in descending order between the PAMS and PAES Social Recognition and Rewards sub-scales, the PAMS Family and PAES Responsibility/Family sub-scales, the PAMS Mastery and Autonomy and PAES Self Rewards sub-scales, the PAMS Self-Control and PAES Self Rewards sub-scales, and the PAMS Affiliation and PAES Social Recognition and Rewards sub-scales. All other correlations are low.

Although nine of the 15 correlations among motivation and enjoyment reached statistical significance at the .05 level, no two sub-scales share more than 31% of the variance. This is well below the internal consistency of all of the sub-scales except the PAMS Self-

Control which has already been discussed. It is also well below test-retest reliabilities for all sub-scales except the PAES Self Rewards. Examination of Table 17 shows that sub-scales sharing more than 10% of their variance are merely those sharing common conceptual elements, as would be expected. The low to moderate correlations between motivation and enjoyment factor scores are indicative of the cyclic nature of motivation and enjoyment and do not discount their conceptual independence.

CHAPTER VII

SUMMARY AND DISCUSSION

This research describes the development and validation of measures designed to assess motivation for and sources of enjoyment from participation in sports and exercise across the adult lifespan. In addition, patterns of motivation and enjoyment for males and females across the adult lifespan participating in a variety of sport and exercise activities are described. Finally, the underlying assumption in this research that motivation for and enjoyment from participation in physical activity are highly related but distinguishable constructs is addressed.

The PAMS

Three factors containing the same items were extracted for the PAMS for both stage one and stage two: Social Recognition and Rewards, Affiliation, and Family. Their stage one alpha and test-retest reliabilities respectively are .8912 and .8370 (Social Recognition and Rewards), .8763 and .7564 (Affiliation), and .8141 and .7426 (Family). Further, the intercorrelations among these three sub-scales, although statistically significant at the .001 level, fall well below the above reliabilities. It is not surprising that motivation from social recognition and rewards, affiliation, and family are related as strongly as they are because each one addresses a dimension of social relationship. This finding supports the well-documented role of the social environment and relatedness in motivational theory (Bandura, 1986; Deci & Ryan, 1991). In addition, these findings support a

significant role for extrinsic motivation in sport and exercise participation. The importance of extrinsic motivation for sport participation is recognized (Briere et al., in press; Pelletier et al., 1995), but the importance of extrinsic motivation has been somewhat overlooked in exercise (Dishman, Ickes, Morgan; 1980).

In stage one, three other PAMS factors were extracted for respondents 60 or older (Mastery and Autonomy, Health and Fitness, and Emotional Control), and two other factors were extracted for respondents in their twenties and in their forties (Mastery and Autonomy and Health and Fitness). For the total stage two sample, only two other factors were extracted (Mastery and Autonomy and Self-Control). Based on stage one responses, the alpha and test-retest reliabilities respectively for the revised Mastery and Autonomy sub-scale are .8249 and .6983 and for the new Self-Control sub-scale are .4847 and .7101. The rather unstable nature of the above factors and their consequent item loadings, coupled with their reliabilities and intercorrelations, indicates that perhaps they represent rather unique dimensions of a higher order factor - competence. This finding supports the importance of achievement, competence, and self-efficacy in motivation for sports and exercise participation (Harter, 1978, 1980; Maehr & Nicholls, 1980; McAuley, 1992). Nonetheless, the alpha reliabilities or test-retest reliabilities of the PAMS Mastery and Autonomy and Self-Control sub-scales support their efficacy for measuring motivation for participation in sports and exercise.

In stage two, the number of hours spent each week participating in physical activity had a statistically significant positive relationship

with the PAMS sub-scales Mastery and Autonomy ($p=.000$), Affiliation ($p=.003$), and Social Recognition and Rewards ($p=.006$). These sub-scales represent respectively intrinsic motivation, social support, and extrinsic motivation. Although sport participation motivation scales assess all three of the above factors, exercise motivation inventories are often less inclusive. For instance, in their development of the Self-Motivation Inventory, Dishman, Ickes, and Morgan (1980) intentionally disregarded extrinsic motivation and social support. This is perhaps another reason why the SMI has been weak in predicting adherence to structured fitness programs (Wankel, 1984; Ward & Morgan, 1984).

One interesting finding from stage one in this research is that people actively involved in physical activities across the adult lifespan have difficulty distinguishing between sports and exercise. Their recurring question is whether training for a sport is considered sport or exercise. Where exactly is the line between the two drawn? This provides strong support for the need to have measurement tools that are appropriate for use in both sports and exercise settings. Additionally, because most of the individuals in this research were involved in both sports and exercise, research that is restricted to either sports or exercise may not be providing an accurate picture of the actual physical activity participation motivation and enjoyment phenomena.

In stage two, there was also a statistically significant main effect for age group on the PAMS ($p=.000$) and its sub-scales for Affiliation ($p=.004$) and Self-Control ($p=.025$). This finding is

consistent with the developmental tasks for early, middle, and late adulthood (Rapoport & Rapoport, 1980). Contrary to the popular belief that males are more achievement-oriented and females are more socially-oriented, there was no main effect for sex on the PAMS.

In stage two, the PAMS demonstrated convergent validity by its high positive relationship to the Leisure Motivation Scale (.5916). Nineteen of the 20 PAMS-LMS sub-scale intercorrelations were statistically significant at the .05 level or higher, and 14 of the sub-scales intercorrelations were statistically significant at the .001 level. This indicates that motivation for participation in sports and exercise is strongly related to the more general construct of leisure motivation and supports the convergent validity of the PAMS.

In stage two, the PAMS also demonstrated divergent validity by its negative correlation with the Center for Epidemiological Studies Depression Scale (-.0327). Further, all of the PAMS sub-scales had low or negative correlations with the CES-D sub-scales, and the negative correlations of PAMS Mastery and Autonomy sub-scale with each of the CES-D sub-scales were statistically significant. This appears to indicate that individuals who are more motivated to participate in sports and exercise in order to achieve competence, try to be the best they can be, and try to reach personal goals are less depressed than those who are motivated by social recognition and rewards, affiliation, family, or self-control.

The PAES

Two factors containing the same items were extracted for the PAES for both stage one and stage two: Self Rewards and Social Recognition

and Rewards. Their alpha and test-retest reliabilities respectively are .8372 and .5290 (Self Rewards) .8969 and .8282 (Social Recognition and Rewards). Further, the intercorrelation between these two sub-scales, although statistically significant at the .001 level, falls well below their reliabilities. In addition, enjoyment from self rewards such as feeling good or better about yourself, feeling energized, feeling satisfied with your amount of physical activity, and feeling relaxed is strongly related to enjoyment derived from social recognition and rewards. One explanation for this finding is that others often recognize, admire, respect, and reward precisely those aspects of sport and exercise participation that are individually rewarding. This, in turn, provides additional reasons for the individual to feel good or better about himself or herself. Therefore, self rewards can be even more enjoyable, especially when they are reinforced by others. This finding supports the role of extrinsic rewards as sources of enjoyment in sports and exercise participation.

In stage one, two other PAES factors were extracted for respondents in their twenties (Responsibility and Family), and one other factor was extracted for respondents in their forties and 60 or older (Responsibility/Family). For the total stage two sample, only one other factor was extracted (Responsibility/Family). Because of the consistency with which items loaded on this factor, its division into two factors for respondents in their twenties in stage one was probably a developmental artifact based on the lack of family responsibilities experienced by individuals at this age. According to stage one responses, alpha reliability for the Responsibility/Family sub-scale is

.8470, and test-retest reliability is .7495. The correlation between Self Rewards and Responsibility/Family was very low (.0811), but the correlation between Responsibility/Family and Social Recognitions and Rewards was .5830 and statistically significant at the .001 level. This is the highest PAES sub-scale intercorrelation. One explanation for this finding is that feelings of responsibility for one or more others, feeling supported by your family, and feeling comfortable with your family could precipitate feeling admired, respected, and rewarded particularly if these forms of recognition come from your family or those for whom you are responsible. Further, enjoyment from social recognition and rewards and responsibility/family are both extrinsic sources of enjoyment from sports and exercise participation so would be expected to be more highly related than an intrinsic and an extrinsic source of enjoyment such as self rewards and social recognition and rewards.

In stage two, the effect of the desired number of hours spent weekly participating in physical activity approached statistical significance for the PAES ($p=.069$) and was statistically significant for the Self Rewards sub-scale ($p=.049$). Perhaps this finding is not statistically significant because the desired number of hours spent weekly participating in sports and exercise is not a true behavioral index of enjoyment derived from physical activity participation. A more accurate behavioral index for enjoyment is actual weekly participation behavior. This is supported by the stage two statistically significant effect of the number of hours spent each week participating in sports and exercise for the combined PAMS and PAES sub-scales ($p=.000$), the

PAMS sub-scales Mastery and Autonomy ($p=.000$), Affiliation ($p=.003$), and Social Recognition and Rewards ($p=.007$), and the PAES Self Rewards sub-scale ($p=.002$). These findings emphasize the importance of intrinsic motivation, extrinsic motivation provided by the social environment, and enjoyment from feelings of competence for participation in sports and exercise.

In stage two, there was also a statistically significant main effect for age on the PAES ($p=.000$) and its sub-scales for Social Recognition and Rewards ($p=.000$) and Responsibility/Family ($p=.001$). These findings are again consistent with the developmental tasks for each age group. There was no statistically significant effect for sex on enjoyment from physical activity. Again this finding contradicts popular beliefs concerning inherent differences between males and females participating in physical activities.

In stage two, the PAES demonstrated convergent validity by its moderate positive correlation with the Leisure Satisfaction Scale ($r=.4911$). Further, 16 of the 18 PAES-LSS sub-scale intercorrelations were statistically significant at the .01 level or higher, and 13 of the sub-scales intercorrelations were statistically significant at the .001 level. This indicates that enjoyment from participation in sports and exercise is strongly related to the more general construct of leisure satisfaction and supports the convergent validity of the PAES. The LSS Aesthetic sub-scale, hypothesized to be unrelated to the PAES sub-scales, was actually significantly related to all three. This finding indirectly supports the importance of aesthetically pleasing sport and exercise environments for the enjoyment of participation in physical

activity.

In stage two, the correlation between the PAES and the Center for Epidemiological Studies Depression Scale ($r = -.1033$) demonstrated divergent validity. In addition, all of the PAES sub-scales had low or negative correlations with the CES-D sub-scales further supporting the divergent validity of the PAES. Additionally, the negative correlations of PAES Self Rewards sub-scale with each of the CES-D sub-scales except Interpersonal Affect were statistically significant. This finding was expected because two items in the Self Rewards sub-scale relate directly to positive feelings about oneself, while one item provides a measure of the individual's satisfaction with his or her amount of physical activity. However, it was interesting that the Responsibility/Family and Social Recognitions and Rewards sub-scales were unrelated to the Interpersonal Affect sub-scale since all three are social measures.

Motivational Patterns for Physical Activity Across the Adult Lifespan

Motivational patterns for physical activity participation are based on the results from stage two. In stage two, there were statistically significant main effects for age on the Affiliation and Self-Control sub-scales of the PAMS. Means on the both sub-scales increased linearly with age. On both sub-scales, late adults scored significantly higher than early adults. On the Affiliation sub-scale, late adults also scored significantly higher than middle adults. This finding supports Rudman's (1986) developmental perspective that views the role of sport participation during late adulthood as being more socially-oriented than at any other time in the lifespan. It also extends this perspective to the exercise setting. However, all three

age groups ranked the importance of the PAMS sub-scales in the same order from most to least important: Mastery and Autonomy, Self-Control, Affiliation, Family, and Social Recognition and Rewards (see Appendix B for sub-scale means). Further, the three items of most importance to all three age groups (although the second two differed in order according to age) were the same: "maintaining/improving health and fitness," "increasing energy and vitality," and "trying to reach personal goals." These findings clearly raise questions concerning the accuracy of defining the role of participation in sports and exercise according to age as Rudman (1986) has done. According to Rudman's developmental perspective for sport participation, early adulthood is a period in which sport participation is linked to competition, middle adulthood is a time when sport participation is linked to family, and late adulthood is a time when sport participation is primarily social. The results of this research do not support such a view. For all three age groups in stage two of this research, intrinsically motivated personal dimensions were more important than the social dimensions for physical activity participation motivation, and extrinsic motivation was least important.

These findings reflect a clear trend that is somewhat consistent with Rapoport and Rapoport's (1980) developmental perspective of leisure and the demands involved at each stage of adulthood. According to Rapoport and Rapoport, young adulthood is a period for the establishment of competence and intimacy and the development of a "dream." Therefore, leisure for young adults provides a social space in which intimate relationship can be explored and developed and occupational

entry and mobility can be facilitated. Middle adulthood is a time of revision in which goals, values, and work styles are critically reviewed. It is a time for change or the acceptance that life is "finished" which is reflected by a pattern of selective withdrawal or renewed and expanded interests in leisure activities. Late adulthood is a period for coming to terms with the loss of a work identity and schedule. Leisure at this stage can provide a major focus for daily life, a means for reconstructing routine, and a new social setting. The results from stage two of this research support that participation in sports and exercise provides individuals across the adult lifespan with means for meeting their developmental demands, particularly the development of individual and social identities that continues throughout each stage of adulthood.

Rudman (1986) suggested a developmental perspective for sport participation which views early adulthood as a period in which sport participation is linked to competition, middle adulthood as a time when sport participation is linked to family, and late adulthood as a time in which sport participation is primarily social. The findings from this research do not support such a narrow view.

Patterns of Enjoyment from Physical Activity Across the Adult Lifespan

In stage two, there was a statistically significant main effect for age on the total PAES with the highest scores recorded by respondents 60 or older followed by respondents in their twenties and then respondents in their forties. One explanation for why late adults enjoy participation in physical activity more than other age groups could be that since this age group is most likely to be limited by

health barriers, those late adults who can and do participate in sports and exercise appreciate and enjoy it more than individuals in other age groups who take such participation for granted.

In stage two, there was a statistically significant main effect for age on the Social Recognition and Rewards and Responsibility/Family sub-scales. For both sub-scales, mean scores increased as age increased. The mean score for late adults on the Social Recognition and Rewards sub-scale was significantly higher than the mean scores for both early and middle adults. This finding may be related to the increased admiration and respect given aging individuals who are physically active. Vigorous physical activity participation is expected of early adults, less expected of middle adults, and relatively unexpected of late adults. Therefore, as they age, individuals are accorded greater recognition and respect for the same physical activity participation. This, in turn, reinforces physical activity participation and adds to its enjoyment. The mean score for late adults on the Responsibility/Family sub-scale was significantly higher than the mean score for early adults. This is consistent with the early and late adulthood developmental tasks suggested by Rapoport and Rapoport (1980) discussed previously.

The PAES items of most importance in stage two were: "feeling better about yourself," feeling good about yourself," feeling more relaxed," and "feeling energized." Because each of these items reflects why individuals feel good after participation in physical activity, this finding provides additional support for the "feel good" phenomenon associated with exercise participation and suggests that the "feel good"

phenomenon is also associated with sport participation.

In stage two, the Self Rewards sub-scale had the highest mean for all three age groups. This reflects the overriding importance of individual concerns as sources of enjoyment from sport and exercise participation. For early adults, feelings of social recognition and rewards were more important for enjoyment of physical activity participation than feelings of responsibility for others, feelings of family support, or feeling comfortable with their family. Again, because early adulthood is a time during which leisure activity is used to establish intimacy and competence and develop a "dream" (Rapoport & Rapoport, 1980), this finding is not surprising. Early adulthood is a period for breaking away from the families of childhood and establishing independence prior to beginning one's own family. For this reason, family and the responsibility to others that accompanies having one's own family are least important to early adults.

Physical Activity Participation Motivation and Enjoyment Distinctions

The low to moderate correlations between the PAMS and PAES sub-scale factor scores are consistent with a cyclic, yet independent nature of motivation for and enjoyment from physical activity participation across the adult lifespan. Further, sub-scales sharing more than 10% of their variance also shared common conceptual elements (i.e. PAMS Social Recognition and Rewards and PAES Social Recognition and Rewards). In addition, motivation and enjoyment patterns across the adult lifespan did not replicate one another as would be expected if motivation and enjoyment are actually the same construct. Although these findings provide preliminary support for a distinction between the motivation and

enjoyment constructs in physical activity settings, further study is necessary using a much larger sample and confirmatory factor analysis to more strongly support their independence empirically.

Concluding Thoughts

Interestingly, when individuals are asked why they participate in sports and exercise, their most common response is because it is fun or they enjoy it. When asked what makes their physical activity fun or why they enjoy doing it, individuals often find it difficult to elaborate. For this reason, the PAES is a valuable instrument because it provides a starting point to begin a more meaningful dialogue.

This research was originated in an attempt to develop a means for assessing physical activity motivation while still capturing the complexity of the phenomenon. Ironically, the PAMS and PAES, driven by factor analytic procedures, also sacrifice complexity for instrumentality. However, represented in both scales is a dimension not measured by previous motivation or enjoyment scales - responsibility. This factor does not contain commitment/obligation to oneself or feeling responsible for oneself but refers only to commitment/obligation to others and feeling responsible for another and for others. This is consistent with the moral obligation contained in Triandis' (1977) model of interpersonal behavior, and provides preliminary support for its application in sports and exercise. However, because the PAMS and PAES are restricted to those factors that are consistent in sport and exercise across the adult lifespan, it is essential they be used as only one means for assessing the physical activity motivation and sources of enjoyment of adults. Additional information should be obtained using

qualitative approaches and open-ended questions.

The advantage of the PAMS and PAES is that they can be used across the adult lifespan in either sport or exercise settings to assess why individuals enter these settings and why they continue physical activity within them. For this reason, the PAMS and PAES would be valuable for managers and instructors or personal trainers as aids for identifying their client's motives and sources of enjoyment from physical activity and ultimately developing support systems to enhance both in order to maintain client interest and commitment. The PAMS and PAES could also be used to describe differences among and between participants in different physical activities, different types of settings (i.e. public or private), different organizations within the same setting offering the same activity, and before and after activity sessions. Additionally, the process used to develop the PAMS and PAES could be used to develop similar multicultural measures that are not limited as these are to a primarily white population. The PAMS and PAES could also be used in conjunction with other measures such as the Exercise-Induced Feeling Inventory to more fully describe the motivation and satisfaction or enjoyment phenomena in exercise settings. Finally, the question still remains, how are motivation and enjoyment different? Enjoyment unquestionably impacts upon sport and exercise participation and adherence. The PAMS and PAES can be used to provide stronger empirical support for the distinctions between motivation for and sources of enjoyment from physical activity.

APPENDIX A

INITIAL MOTIVATION AND ENJOYMENT SUB-SCALES AND ITEMS

STAGE ONE QUESTIONNAIRE

ITEM MEANS AND STANDARD DEVIATIONS FOR THE INITIAL MOTIVATION INVENTORY

ITEM MEANS AND STANDARD DEVIATIONS FOR THE INITIAL ENJOYMENT INVENTORY

INITIAL MOTIVATION AND ENJOYMENT SUB-SCALES AND ITEMS

Motivation**Enjoyment**Personal Competence

- | | |
|---|--|
| 1. Being good at what you're doing | 1. Feeling better about
about yourself |
| 2. Trying to be the best you can be | |
| 3. Improving your appearance | 2. Feeling good about
yourself |
| 4. Weight control | 3. Feeling attractive |
| | 4. Feeling a sense of
accomplishment |
| 5. Trying to reach personal goals | |
| 6. Achieving consistency in performance | |
| 7. Overcoming personal weaknesses | |
| 8. Improving your skills | |
| 9. Improving your health and fitness | 5. Feeling healthy and fit |
| 10. Delaying the effects of aging | 6. Feeling younger |
| 11. You know physical activity is good
for you | 7. Feeling satisfied with
your amount of physical
activity |

Social Recognition and Rewards

- | | |
|-------------------------------|---------------------------------------|
| 1. Being admired by others | 1. Feeling admired by
others |
| 2. Others looking up to you | |
| 3. Being respected by others | 2. Feeling respected by
others |
| | 3. Feeling recognition from
others |
| 4. Being recognized by others | |
| 5. Being watched by others | |

- | | |
|--|-------------------------------|
| 6. Receiving special treatment | 4. Feeling special |
| 7. Receiving "freebies" like T-shirts or discounts | 5. Feeling rewarded by others |

Social Competence and Affiliation

- | | |
|--|---|
| 1. Keeping up with others | 1. Feeling you're just as good as others |
| 2. Being better than others | |
| 3. Winning | 2. Feeling you are the best |
| 4. The competition it provides | 3. The thrill of competing |
| 5. Being part of a group | 4. Feeling of belonging |
| 6. Participating with friends | 5. Feeling liked by others |
| 7. Making new friends | 6. Feeling supported by friends |
| 8. Commitment or obligation to another | 7. Feeling responsible for another |
| 9. Commitment or obligation to others | |
| 10. Helping others | 8. Feeling responsible for others |
| 11. Participating with family members | 9. Feeling supported by family |
| 12. Being encouraged by family | |
| 13. Working alone | 10. Feeling free from others |
| 14. Your friends are active | 11. Feeling comfortable with your friends |
| 15. Your family is active | 12. Feeling comfortable with your family |

Variety and Change

- | | |
|---|---|
| 1. Trying new activities | 1. Feeling excitement |
| 2. Meeting new people | 2. Feeling more relaxed |
| 3. Taking part in thrilling activities | 3. Feeling of "time-out" from normal life |
| 4. Reducing stress and relieving tension | 4. Feeling energized |
| 5. Increasing energy and vitality | 5. Feeling challenged |
| 6. Pushing yourself to your limits | 6. Feeling discomfort |
| 7. Activity has always been part of your life | 7. Feeling driven to be active |

Perceived Freedom (Personal Choice and Control)

- | | |
|---|--|
| 1. Developing your own goals | 1. Feeling responsible for yourself |
| 2. Directing your own activity | 2. Feeling in control of your activities |
| 3. Someone else directing your activities | 3. Feeling controlled by someone else |
| 4. Meeting the goals of others | 4. Feeling in control of yourself |
| 5. Controlling your emotions | |
| 6. Disciplining your mind and body | |

Characteristics of Activity

- | | |
|---|---------------------------------------|
| 1. The physical sensations it provides | 1. How you feel during your activity |
| 2. The physical environment where you participate | 2. How you feel after you've finished |
| 3. The beauty and grace of your | 3. Feeling graceful and |

- | | |
|---|------------------------------------|
| activities | beautiful |
| 4. The coordination and flow of your activities | 4. Feeling coordinated and flowing |

Physical Activity Motivation and Enjoyment

Why do you play sports and/or exercise? What do you enjoy most about participating in sport and exercise activities? Your answers will provide important information that can be used by sport and exercise practitioners for program development and delivery as well as facility planning. In turn, your needs will be better met.

If you receive payment for your activity (instructors, scholarshipped athletes) or compete at an elite level, please do not fill out this questionnaire.

All information you provide is confidential and anonymous. It will be reported as group data, not individual responses. Thank you for your time and cooperation!

Please **circle** the number that describes you most accurately.

1. Sex (1)Male (2)Female
2. Race (1)White (2)African-American (3)Hispanic (4)Asian
(5)Other
3. Age _____
4. How many **hours** each **week**, on average, do you usually:
play sports? _____ (hours/week)
practice sports skills? _____ (hours/week)
exercise? _____ (hours/week)
5. How long have you been participating in sport and exercise activities on a regular basis?

or _____(months)
_____ (years)
6. Please list your **weekly** sport and exercise activities from most to least frequent and indicate **where** you do each one.

Please circle the number that corresponds to how often each item below is important for your participation in your weekly sport and exercise activities.

	Never	Occasionally	Sometimes	Usually	Always
1. Being good at what you're doing	1	2	3	4	5
2. Being admired by others	1	2	3	4	5
3. Keeping up with others	1	2	3	4	5
4. Trying new activities	1	2	3	4	5
5. Developing your own goals	1	2	3	4	5
6. The physical sensations it provides	1	2	3	4	5
7. You know physical activity is good for you	1	2	3	4	5
8. Trying to be the best you can be	1	2	3	4	5
9. Improving your appearance	1	2	3	4	5
10. Others looking up to you	1	2	3	4	5
11. Being better than others	1	2	3	4	5
12. Being part of a group	1	2	3	4	5
13. Meeting new people	1	2	3	4	5
14. Directing your own activity	1	2	3	4	5
15. The physical environment where you participate	1	2	3	4	5
16. Activity has always been part of life	1	2	3	4	5
17. Weight control	1	2	3	4	5
18. Being respected by others	1	2	3	4	5
19. Participating with friends	1	2	3	4	5
20. Winning	1	2	3	4	5
21. Taking part in thrilling activities	1	2	3	4	5
22. Someone else directing your activity	1	2	3	4	5
23. Beauty and grace of your activities	1	2	3	4	5
24. Your friends are active	1	2	3	4	5
25. Trying to reach personal goals	1	2	3	4	5
26. Being recognized by others	1	2	3	4	5
27. Making new friends	1	2	3	4	5
28. Commitment or obligation to another	1	2	3	4	5
29. Reducing stress or relieving tension	1	2	3	4	5
30. Meeting the goals of others	1	2	3	4	5
31. Competition	1	2	3	4	5
32. Your family is active	1	2	3	4	5
33. Achieving consistency in your performance	1	2	3	4	5
34. Being watched by others	1	2	3	4	5
35. Commitment or obligation to others	1	2	3	4	5

		Never	Ocassionally	Sometimes	Usually	Always
36.	Increasing energy and vitality	1	2	3	4	5
37.	Controlling your emotions	1	2	3	4	5
38.	Overcoming personal weaknesses	1	2	3	4	5
39.	Receiving special treatment	1	2	3	4	5
40.	Helping others	1	2	3	4	5
41.	Pushing yourself to your limits	1	2	3	4	5
42.	Disciplining your mind and body	1	2	3	4	5
43.	Improving your skills	1	2	3	4	5
44.	Receiving "freebies" like T-shirts and discounts	1	2	3	4	5
45.	Participating with family	1	2	3	4	5
46.	Maintaining/improving health and fitness	1	2	3	4	5
47.	Family encouragement	1	2	3	4	5
48.	Delaying effects of aging	1	2	3	4	5
49.	Working alone	1	2	3	4	5
50.	Coordination and flow of your activities	1	2	3	4	5

Please circle the number that corresponds to how often each item is a source of enjoyment from your **weekly** sport and exercise activities.

		Never	Ocassionally	Sometimes	Usually	Always
1.	Feeling better about yourself	1	2	3	4	5
2.	Feeling admired by others	1	2	3	4	5
3.	Feeling you're just as good as others	1	2	3	4	5
4.	Feeling excitement	1	2	3	4	5
5.	Feeling responsible for yourself	1	2	3	4	5
6.	How you feel during your activity	1	2	3	4	5
7.	Feeling satisfied with your amount of physical activity	1	2	3	4	5
8.	Feeling good about yourself	1	2	3	4	5
9.	Feeling respected by others	1	2	3	4	5
10.	Feeling of belonging	1	2	3	4	5
11.	Feeling more relaxed	1	2	3	4	5
12.	Feeling in control of your activities	1	2	3	4	5
13.	How you feel after you've finished	1	2	3	4	5
14.	Feeling driven to be active	1	2	3	4	5
15.	Feeling attractive	1	2	3	4	5
16.	Feeling recognition from others	1	2	3	4	5
17.	Feeling liked by others	1	2	3	4	5
18.	Feeling you are the best	1	2	3	4	5

19.	Feeling of "time-out" from normal life	1	2	3	4	5
20.	Feeling controlled by someone else	1	2	3	4	5

		Never	Occasionally	Sometimes	Usually	Always
21.	Feeling graceful and beautiful	1	2	3	4	5
22.	Feeling comfortable with your friends	1	2	3	4	5
23.	Feeling a sense of accomplishment	1	2	3	4	5
24.	Feeling special	1	2	3	4	5
25.	Feeling supported by friends	1	2	3	4	5
26.	Feeling energized	1	2	3	4	5
27.	Feeling in control of yourself	1	2	3	4	5
28.	The thrill of competing	1	2	3	4	5
29.	Feeling comfortable with your family	1	2	3	4	5
30.	Feeling healthy and fit	1	2	3	4	5
31.	Feeling rewarded by others	1	2	3	4	5
32.	Feeling responsible for another	1	2	3	4	5
33.	Feeling challenged	1	2	3	4	5
34.	Feeling younger	1	2	3	4	5
35.	Feeling responsible for others	1	2	3	4	5
36.	Feeling discomfort	1	2	3	4	5
37.	Feeling supported by family	1	2	3	4	5
38.	Feeling free from others	1	2	3	4	5
39.	Feeling coordinated and flowing	1	2	3	4	5

If you could do anything you wanted, how many hours a week would you like to:

play a sport? _____ (hours/week)

practice sports skills? _____ (hours/week)

exercise? _____ (hours/week)

PLEASE CHECK THAT YOU HAVE CIRCLED ONE ANSWER FOR EACH ITEM ON YOUR ANSWER SHEET. THANK YOU FOR YOUR TIME AND COOPERATION!!!!

ITEM MEANS AND STANDARD DEVIATIONS FOR THE INITIAL
MOTIVATION INVENTORY

<u>Item</u>	<u>Mean</u>			<u>Standard Deviation</u>		
	20s	40s	60+	20s	40s	60+
You know physical activity is good for you	4.495	4.585	4.704	.727	.684	.732
*Maintaining/improving health and fitness	4.284	4.366	4.420	.834	.746	.788
*Trying to be the best you can be	4.232	3.951	4.024	.856	1.029	1.065
Developing your own goals	4.168	3.988	3.704	.895	.778	1.042
*Trying to reach personal goals	4.126	3.939	3.683	.890	.934	1.087
Activity has always been part of your life	4.084	3.829	3.927	1.182	1.184	1.109
Improving your appearance	4.053	4.085	3.683	1.025	.878	1.143
*Increasing energy and vitality	4.032	4.195	4.207	.818	.838	.828
Being good at what you're doing	4.011	3.630	3.610	.869	1.167	1.225
The physical sensations it provides	4.000	4.146	3.902	.851	.931	1.213
*Improving your skills	3.905	3.841	3.634	.876	.936	1.012
*Pushing yourself to your limits	3.874	3.415	3.268	.981	1.077	1.166

<u>Item</u>	<u>Mean</u>			<u>Standard Deviation</u>		
	20s	40s	60+	20s	40s	60+
*Reducing stress or relieving tension	3.821	4.000	3.780	.956	1.030	1.144
*Disciplining your mind and body	3.789	3.732	3.646	.977	1.031	.935
*Participating with friends	3.726	3.390	3.671	.856	1.086	1.228
Achieving consistency in your performance	3.705	3.561	3.556	.988	1.055	1.129
Trying new activities	3.695	3.110	2.738	.990	.930	1.088
Taking part in thrilling activities	3.642	2.915	2.383	1.031	1.135	1.189
*Overcoming personal weaknesses	3.474	3.099	3.136	1.030	1.200	1.311
Coordination and flow of your activities	3.474	3.136	3.531	1.019	1.069	1.050
Helping others	3.421	2.427	3.259	1.190	1.155	1.282
Keeping up with others	3.421	2.778	2.654	1.154	1.255	1.088
Competition	3.337	2.451	2.366	1.243	1.219	1.347
Your friends are active	3.326	3.037	3.122	1.046	1.048	1.211
The physical environment where you participate	3.316	3.611	3.886	1.460	.951	1.025
Weight control	3.263	3.890	3.768	1.460	1.089	1.136

<u>Item</u>	<u>Mean</u>			<u>Standard Deviation</u>		
	20s	40s	60+	20s	40s	60+
Directing your own activity	3.223	3.732	3.963	.941	1.078	1.018
*Controlling your emotions	3.158	3.207	3.366	1.024	1.074	1.310
*Meeting new people	3.137	2.866	3.280	1.068	1.141	1.210
Winning	3.095	2.354	2.463	1.131	1.221	1.229
*Making new friends	3.084	3.024	3.402	.964	1.111	1.121
Being respected by others	3.074	2.642	3.134	1.187	1.186	1.438
*Being part of a group	3.011	2.878	3.280	1.144	1.159	1.345
*Commitment or obligation to another	3.011	2.476	3.074	1.153	1.219	1.349
*Being encouraged by your family	3.000	2.768	3.525	1.220	1.250	1.283
*Delaying the effects of aging	2.979	3.951	4.136	1.414	.980	1.058
*Your family is active	2.789	2.988	3.037	1.175	1.209	1.346
Beauty and grace of your activities	2.789	2.720	2.646	1.061	1.168	1.201
Commitment or obligation to others	2.737	2.049	2.695	1.122	1.065	1.488
*Others looking up to you	2.726	2.341	2.305	1.106	1.080	1.224
Working alone	2.723	2.939	2.901	1.041	1.211	1.158
*Participating with family	2.710	2.688	2.962	1.128	1.086	1.344

<u>Item</u>	<u>Mean</u>			<u>Standard Deviation</u>		
	20s	40s	60+	20s	40s	60+
*Being recognized by others	2.695	2.099	2.457	.979	1.008	1.235
Someone else directing your activity	2.684	1.951	2.375	.959	1.029	1.236
*Being better than others	2.674	2.183	2.073	1.224	1.101	1.131
*Being admired by others	2.463	2.244	2.263	.987	1.013	1.188
Meeting the goals of others	2.362	1.720	2.222	1.014	.893	1.285
*Being watched by others	2.358	1.780	2.012	1.020	.875	1.105
Receiving "freebies" like T-shirts	2.032	1.610	1.620	1.106	.913	.910
Receiving special treatment	1.947	1.671	1.927	.972	.771	1.075
Total	164.363	154.297	157.152	25.605	27.190	31.548
*Total	78.849	75.429	78.703	12.703	14.074	16.426

* Items retained in the stage one physical activity motivation scale

ITEM MEANS AND STANDARD DEVIATIONS FOR THE INITIAL
ENJOYMENT INVENTORY

<u>Item</u>	<u>Mean</u>			<u>Standard Deviation</u>		
	20s	40s	60+	20s	40s	60+
*Feeling better about yourself	4.189	4.286	4.195	.829	.771	.922
*Feeling good about yourself	4.149	4.122	4.171	.829	.807	.829
Feeling healthy and fit	4.126	4.305	4.195	.992	.765	.808
*Feeling energized	4.126	4.329	4.122	.802	.610	.935
Feeling in control of yourself	4.095	4.061	3.951	.957	.907	.993
Feeling a sense of accomplishment	4.063	4.012	3.939	.810	.793	.998
How you feel after you've finished	4.032	4.272	4.263	.905	.725	.882
Feeling responsible for yourself	3.979	4.012	4.293	.899	1.138	.824
Feeling challenged	3.916	3.732	3.232	.907	1.031	1.210
How you feel during your activity	3.895	3.841	4.295	.928	.962	.854
*Feeling more relaxed	3.842	3.976	4.110	.842	.889	.930
Feeling in control of your activities	3.830	3.829	4.037	.838	1.016	.949
Feeling excitement	3.811	3.524	3.317	.891	1.178	1.323
Feeling driven to be active	3.789	3.463	3.305	1.009	1.249	1.244

<u>Item</u>	<u>Mean</u>			<u>Standard Deviation</u>		
	20s	40s	60+	20s	40s	60+
*Feeling satisfied with your amount of physical activity	3.726	3.951	4.061	.950	.835	.829
Feeling of "time-out" from normal life	3.660	3.512	3.220	1.032	1.168	1.334
Feeling attractive	3.484	3.146	2.877	1.147	1.238	1.249
Feeling coordinated and flowing	3.411	3.451	3.638	1.198	1.102	1.070
Feeling comfortable with your friends	3.400	3.024	3.561	1.134	1.227	1.198
The thrill of competing	3.330	2.716	2.598	1.290	1.334	1.413
Feeling supported by friends	3.242	2.744	3.171	1.049	1.205	1.294
Feeling you're just as good as others	3.095	2.817	3.012	1.073	1.287	1.346
*Feeling respected by others	3.074	2.537	3.012	1.084	1.167	1.291
Feeling special	3.032	2.707	2.622	1.076	1.222	1.193
Feeling of belonging	3.000	2.683	3.354	1.101	1.185	1.337
*Feeling comfortable with your family	2.936	3.099	3.642	1.397	1.338	1.316
Feeling free from others	2.894	2.707	3.000	1.102	1.191	1.265

<u>Item</u>	<u>Mean</u>			<u>Standard Deviation</u>		
	20s	40s	60+	20s	40s	60+
*Feeling liked by others	2.874	2.390	2.890	1.074	1.119	1.333
*Feeling recognition from others	2.779	2.195	2.524	1.023	.949	1.259
*Feeling supported by your family	2.768	2.610	3.450	1.292	1.255	1.440
Feeling you are the best	2.758	2.341	1.988	1.261	1.288	1.212
Feeling younger	2.745	3.543	3.378	1.191	1.162	1.292
Feeling graceful and beautiful	2.674	2.329	2.280	1.056	1.248	1.147
*Feeling admired by others	2.600	2.195	2.427	1.004	1.116	1.176
*Feeling rewarded by others	2.500	2.049	2.476	1.013	1.110	1.279
*Feeling responsible for another	2.372	2.037	2.805	1.026	1.138	1.290
*Feeling responsible for others	2.287	2.061	2.793	1.064	1.093	1.274
Feeling discomfort	2.063	1.854	1.878	1.060	.772	1.059
Feeling controlled by someone else	1.737	1.537	1.476	.902	.892	.805
Total	127.640	121.649	126.833	21.570	23.854	25.239
*Total	44.033	41.638	46.513	8.750	8.685	10.196

* Items retained in the stage one physical activity enjoyment scale

APPENDIX B

PAMS AND PAES SUB-SCALES AND ITEMS

THE LEISURE MOTIVATION SCALE

SHORT FORM OF THE LEISURE SATISFACTION SCALE

CENTER FOR EPIDEMIOLOGICAL STUDIES DEPRESSION SCALE

STAGE TWO QUESTIONNAIRE

PAMS AND PAES SUB-SCALES AND ITEMS

MotivationMastery and Autonomy

1. Trying to be the best you can be
2. Trying to reach personal goals
3. Pushing yourself to your limits
4. Improving your skills
5. Disciplining your mind and body

EnjoymentSelf Rewards

1. Feeling good about yourself
2. Feeling more relaxed
3. Feeling energized
4. Feeling better about
yourself
5. Feeling satisfied with your
amount of physical activity

Social Recognition and Rewards

1. Being admired by others
2. Others looking up to you
3. Being better than others
4. Being recognized by others
others
5. Being watched by others

1. Feeling admired by others
2. Feeling respected by others
3. Feeling liked by others
4. Feeling recognition from
others
5. Feeling rewarded by others

Affiliation

1. Being part of a group
2. Participating with friends
3. Meeting new people
4. Making new friends
5. Commitment or obligation to another

Responsibility

1. Feeling responsible for
another
2. Feeling responsible for
others

Family

- | | |
|------------------------------|---|
| 1. Participating with family | 1. Feeling supported by family |
| 2. Family encouragement | 2. Feeling comfortable with your family |
| 3. Your family is active | |

Health and Fitness

1. Increasing energy and vitality
2. Maintaining/improving health and fitness
3. Delaying effects of aging

Emotional Control

1. Reducing stress or relieving tension
2. Controlling your emotions
3. Overcoming personal weaknesses

LEISURE MOTIVATION SCALE

Rating scale:

- 1 Never true
- 2 Seldom true
- 3 Somewhat true
- 4 Often true
- 5 Always true

Lead-in: One of my reasons for engaging in leisure activities is...

Sub-scales:

Intellectual

- *1. to expand my interests.
- *2. to seek stimulation.
- *3. to make things more meaningful to me.
- 4. to learn about things around me.
- 5. to satisfy my curiosity.
- 6. to explore new ideas.
- 7. to learn about myself.
- 8. to expand my knowledge.
- 9. to discover new things.
- 10. to be creative.
- *11. to be original.
- 12. to use my imagination.

Social

- *13. to be with others.
- 14. to build friendships with others.
- 15. to interact with others.
- 16. to develop close friendships.
- 17. to meet new and different people.
- *18. to help others
- *19. so others would think well of me for doing it.
- 20. to reveal my thoughts, feelings, or physical skills to others.
- *21. to influence others.
- 22. to be socially competent and skillful.
- 23. to gain a feeling of belonging.
- 24. to gain other's respect.

Competency/Mastery

- *25. to get a feeling of achievement.
- *26. to see what my abilities are.
- 27. to challenge my abilities.
- *28. because I enjoy mastering things.

- 29. to be good in doing them.
- 30. to improve my skill and ability in doing them.
- *31. to compete against others.
- 32. to be active.
- 33. to develop physical skills and abilities.
- 34. to keep in shape physically.
- 35. to use my physical abilities.
- 36. to develop physical fitness.

Stimulus Avoidance

- *37. to be in a calm atmosphere.
- *38. to avoid crowded areas.
- 39. to slow down.
- 40. because I sometimes like to be alone.
- 41. to relax physically.
- 42. to relax mentally.
- 43. to avoid the hustle and bustle of daily activities.
- 44. to rest.
- 45. to relieve stress and tension.
- *46. to do something simple and easy.
- 47. to unstructure my time.
- *48. to get away from the responsibilities of my everyday life.

*indicates items excluded from the short scale.

SHORT FORM OF THE SEISURE SATISFACTION SCALE

Rating scale:

- 1 Never true
- 2 Seldom true
- 3 Somewhat true
- 4 Often true
- 5 Always true

Sub-scales:

Psychological

- 1. My leisure activities are very interesting to me.
- 2. My leisure activities give me self-confidence.
- 3. My leisure activities give me a sense of accomplishment.
- 4. I use many different skills and abilities in my leisure activities.

Educational

- 5. My leisure activities increase my knowledge about things around me.
- 6. My leisure activities provide opportunities to try new things.
- 7. My leisure activities help me to learn about myself.
- 8. My leisure activities help me to learn about other people.

Social

- 9. I have social interaction with others through leisure activities.
- 10. My leisure activities have helped me to develop close relationships with others.
- 11. The people I meet in my leisure activities are friendly.
- 12. I associate with people in my free time who enjoy doing leisure activities a great deal.

Relaxation

- 13. My leisure activities help me relax.
- 14. My leisure activities help relieve stress.
- 15. My leisure activities contribute to my emotional well-being.
- 16. I engage in leisure activities simply because I like doing them.

Physical Activity

- 17. My leisure activities are physically challenging.
- 18. I do leisure activities that develop my physical fitness.
- 19. I do leisure activities that restore me physically.
- 20. My leisure activities help me to stay healthy.

Aesthetic

21. The areas or places I engage in my leisure activities are fresh and clean.
22. The areas or places where I engage in my leisure activities are interesting.
23. The areas or places where I engage in my leisure activities are beautiful.
24. The areas or places where I engage in my leisure activities are well designed.

CENTER FOR EPIDEMIOLOGICAL STUDIES DEPRESSION SCALE

Rating scale:

- 1 less than one day per week
- 2 1-2 days per week
- 3 3-4 days per week
- 4 5-7 days per week

Sub-scales:

Depressed Affect

- 3. I felt that I could not shake off the blues even with help from my family or friends.
- 6. I felt depressed.
- 9. I thought my life had been a failure.
- 10. I felt fearful.
- 14. I felt lonely.
- 17. I had crying spells.
- 18. I felt sad.

Positive Affect

- 4. I felt I was just as good as other people.
- 8. I felt hopeful about the future.
- 12. I was happy.
- 16. I enjoyed life.

Somatic and Retarded Activity

- 1. I was bothered by things that don't usually bother me.
- 2. I did not feel like eating; my appetite was poor.
- 5. I had trouble keeping my mind on what I was doing.
- 7. I felt that everything I did was an effort.
- 11. My sleep was restless.
- 13. I talked less than usual.
- 20. I could not get "going."

Interpersonal Affect

- 15. People were unfriendly.
- 19. I felt that people dislike me.

* A simple total score is recommended as an estimate of the degree of depressive symptomatology.

GENERAL INSTRUCTIONS

All information you provide in the following pages is anonymous and confidential. It will be reported as group data, not individual responses.

Leisure refers to anything you choose to do in your "free" time.

Sports refer to those physical activities in which you compete against an opponent or standard of achievement. Examples of sports include tennis, golf, racquetball, basketball, and volleyball.

Exercise refers to structured, repetitive physical activity with the primary objective of improving or maintaining physical fitness. Examples of exercise include walking, jogging, running, biking, swimming, aerobics, and weight training.

If you could do anything you wanted, how many hours a week would you like to participate in sports and exercise?

_____ hours/week

Please circle the number that corresponds to how often each item below is important for your participation in your weekly sport and exercise activities.

	Never	Occasionally	Sometimes	Usually	Always
1. Others looking up to you	1	2	3	4	5
2. Disciplining your mind and body	1	2	3	4	5
3. Reducing stress or relieving tension	1	2	3	4	5
4. Participating with family	1	2	3	4	5
5. Trying to reach personal goals	1	2	3	4	5
6. Meeting new people	1	2	3	4	5
7. Being admired by others	1	2	3	4	5
8. Maintaining/improving health and fitness	1	2	3	4	5
9. Participating with friends	1	2	3	4	5
10. Controlling your emotions	1	2	3	4	5
11. Your family is active	1	2	3	4	5
12. Being part of a group	1	2	3	4	5
13. Trying to be the best you can be	1	2	3	4	5
14. Increasing energy and vitality	1	2	3	4	5
15. Being watched by others	1	2	3	4	5
16. Improving your skills	1	2	3	4	5
17. Overcoming personal weaknesses	1	2	3	4	5
18. Making new friends	1	2	3	4	5
19. Being encouraged by your family	1	2	3	4	5
20. Being recognized by others	1	2	3	4	5
21. Commitment or obligation to another	1	2	3	4	5
22. Being better than others	1	2	3	4	5
23. Delaying effects of aging	1	2	3	4	5
24. Pushing yourself to your limits	1	2	3	4	5

Please circle the number that corresponds to how often each of the following items is **true** for you.

	Never True	Seldom True	Somewhat True	Often True	Always True
1. My leisure activities increase my knowledge about things around me.	1	2	3	4	5
2. My leisure activities are very interesting to me.	1	2	3	4	5
3. I have social interaction with others through leisure activities.	1	2	3	4	5
4. My leisure activities give me self-confidence.	1	2	3	4	5
5. My leisure activities give me a sense of accomplishment.	1	2	3	4	5
6. My leisure activities are physically challenging.	1	2	3	4	5
7. I do leisure activities that develop my physical fitness.	1	2	3	4	5
8. My leisure activities have helped me develop close relationships with others.	1	2	3	4	5
9. My leisure activities provide opportunities to try new things.	1	2	3	4	5
10. The people I meet in my leisure activities are friendly.	1	2	3	4	5
11. My leisure activities help me to relax.	1	2	3	4	5
12. I do leisure activities that restore me physically.	1	2	3	4	5
13. My leisure activities help me learn about myself.	1	2	3	4	5
14. The areas or places where I engage in my leisure activities are fresh and clean.	1	2	3	4	5
15. The areas or places where I engage in my leisure activities are interesting.	1	2	3	4	5
16. I use many different skills and abilities in my leisure activities.	1	2	3	4	5
17. My leisure activities help me to stay healthy.	1	2	3	4	5
18. The areas or places where I engage in my leisure activities are beautiful.	1	2	3	4	5
19. I associate with people in my free time who enjoy doing leisure activities a great deal.	1	2	3	4	5
20. My leisure activities help me to learn about other people.	1	2	3	4	5
21. My leisure activities help relieve stress.	1	2	3	4	5
22. My leisure activities contribute to my emotional well-being.	1	2	3	4	5
23. The areas or places where I engage in my leisure activities are well designed.	1	2	3	4	5
24. I engage in my leisure activities simply because I like doing them.	1	2	3	4	5

INSTRUCTIONS FOR QUESTIONS: Below is a list of ways you might have felt or behaved. Please tell me how often you have felt this way during the past week by circling the number that corresponds to your response.

	Less than 1 day	1-2 days	3-4 days	5-7 days
1. I was bothered by things that don't usually bother me	1	2	3	4
2. I did not feel like eating; my appetite was poor	1	2	3	4
3. I felt like I could not shake off the blues even with help from my family and friends	1	2	3	4
4. I felt that I was just as good as other people	1	2	3	4
5. I had trouble keeping my mind on what I was doing.	1	2	3	4
6. I felt depressed.	1	2	3	4
7. I felt that everything I did was an effort.	1	2	3	4
8. I felt hopeful about the future.	1	2	3	4
9. I thought my life had been a failure.	1	2	3	4
10. I felt fearful.	1	2	3	4
11. My sleep was restless.	1	2	3	4
12. I was happy.	1	2	3	4
13. I talked less than usual.	1	2	3	4
14. I felt lonely.	1	2	3	4
15. People were unfriendly.	1	2	3	4
16. I enjoyed life.	1	2	3	4
17. I had crying spells.	1	2	3	4
18. I felt sad.	1	2	3	4
19. I felt that people dislike me.	1	2	3	4
20. I could not get "going."	1	2	3	4

Please circle the number that corresponds to how often each item is a source of enjoyment from your **weekly** sport and exercise activities.

		Never	Occasionally	Sometimes	Usually	Always
1.	Feeling supported by your family	1	2	3	4	5
2.	Feeling rewarded by others	1	2	3	4	5
3.	Feeling better about yourself	1	2	3	4	5
4.	Feeling more relaxed	1	2	3	4	5
5.	Feeling satisfied with your amount of physical activity	1	2	3	4	5
6.	Feeling responsible for others	1	2	3	4	5
7.	Feeling respected by others	1	2	3	4	5
8.	Feeling admired by others	1	2	3	4	5
9.	Feeling recognition from others	1	2	3	4	5
10.	Feeling liked by others	1	2	3	4	5
11.	Feeling good about yourself	1	2	3	4	5
12.	Feeling energized	1	2	3	4	5
13.	Feeling responsible for another	1	2	3	4	5
14.	Feeling comfortable with your family	1	2	3	4	5

Please circle the number that corresponds to how often each statement is **true** for you.

One of my reasons for engaging in leisure activities is . . .

	Never	Seldom True	Somewhat True	Often True	Always True	True
1. to influence others.		1	2	3	4	5
2. to avoid crowded areas.		1	2	3	4	5
3. to compete against others.		1	2	3	4	5
4. to get a feeling of achievement.		1	2	3	4	5
5. to make things more meaningful to me.		1	2	3	4	5
6. to be in a calm atmosphere.		1	2	3	4	5
7. to get away from the responsibilities of my everyday life.		1	2	3	4	5
8. to see what my abilities are.		1	2	3	4	5
9. to be with others.		1	2	3	4	5
10. to expand my interests.		1	2	3	4	5
11. to be original.		1	2	3	4	5
12. to seek stimulation.		1	2	3	4	5
13. so others would think well of me for doing it.		1	2	3	4	5
14. to do something simple and easy.		1	2	3	4	5
15. to help others.		1	2	3	4	5
16. because I enjoy mastering things.		1	2	3	4	5

Please circle the number of your response or fill in the blank.

1. Sex (1)Male (2)Female
2. Age_____
3. Race_____
4. How many hours each week, on average, do you usually participate in sports and exercise?
_____ hours/week
5. Since the age of 10, how long have you been participating in sport and exercise activities on a regular basis?
_____ (months)
or
_____ (years)
6. Please list your weekly sport and exercise activities from most to least frequent and indicate where you do each one.

APPENDIX C

FINAL PAMS AND PAES SUB-SCALES AND ITEMS

STAGE TWO PAMS, PAES, LMS, LSS, AND CES-D SCALE AND SUB-SCALE MEANS

FINAL PAMS AND PAES SUB-SCALES AND ITEMS

PAMS

Mastery and Autonomy

1. Trying to reach personal goals
2. Maintaining/improving health and fitness
3. Trying to be the best you can be
4. Increasing energy and vitality
5. Pushing yourself to your limits
6. Improving your skills

PAES

Self Rewards

1. Feeling good about yourself
2. Feeling more relaxed
3. Feeling better about yourself
4. Feeling energized
5. Feeling satisfied with your amount of physical activity

Social Recognition and Rewards

- | | |
|-------------------------------|------------------------------------|
| 1. Others looking up to you | 1. Feeling liked by others |
| 2. Being admired by others | 2. Feeling admired by others |
| 3. Being recognized by others | 3. Feeling recognition from others |
| 4. Being better than others | 4. Feeling respected by others |
| 5. Being watched by others | 5. Feeling rewarded by others |

Affiliation

1. Meeting new people
2. Participating with friends

Responsibility/Family

1. Feeling responsible for another
2. Feeling responsible for others

3. Being part of a group
4. Making new friends
5. Commitment or obligation to another

Family

1. Participating with family
2. Your family is active
3. Being encouraged by your family

Self-Control

1. Reducing stress or relieving tension
2. Controlling your emotions
3. Delaying the effects of aging

3. Feeling comfortable with
your family
4. Feeling supported by your
family

STAGE TWO PAMS, PAES, LMS, LSS, AND CES-D
SCALE AND SUB-SCALE MEANS

<u>Scale and Sub-Scale</u>	<u>Early Adulthood</u>		<u>Middle Adulthood</u>		<u>Late Adulthood</u>	
	Males	Females	Males	Females	Males	Females
<u>PAMS</u>	<u>67.769</u>		<u>66.686</u>		<u>70.985</u>	
	<u>68.000</u>	<u>67.547</u>	<u>65.381</u>	<u>67.932</u>	<u>70.861</u>	<u>71.138</u>
Mastery and Autonomy	23.885		23.333		23.581	
	23.882	23.887	22.762	23.867	24.417	22.789
Social Recognition and Rewards	11.848		10.299		11.590	
	12.519	11.189	10.548	10.067	11.421	11.750
Affiliation	14.343		14.046		16.074	
	14.327	14.358	13.619	14.444	15.132	16.907
Family	7.779		8.690		8.792	
	7.608	7.943	8.409	8.956	8.812	8.775
Self-Control	9.800		10.442		10.810	
	9.423	10.170	10.048	10.818	11.026	10.610
<u>PAES</u>	<u>45.291</u>		<u>45.459</u>		<u>49.974</u>	
	<u>46.365</u>	<u>44.196</u>	<u>44.071</u>	<u>46.814</u>	<u>49.056</u>	<u>50.780</u>
Self Rewards	19.827		20.023		20.367	
	19.750	19.904	19.643	20.395	20.639	20.139

<u>Scale and Sub-Scale</u>	<u>Early Adulthood</u>		<u>Middle Adulthood</u>		<u>Late Adulthood</u>	
	Males	Females	Males	Females	Males	Females
Social Recognition and Rewards	14.286		13.207		16.000	
	15.192	13.396	12.762	13.622	14.842	17.073
Responsibility/Family	11.096		12.230		13.402	
	11.423	10.769	11.667	12.756	13.105	13.659
<u>LMS</u> Intellectual	<u>48.932</u>		<u>46.322</u>		<u>47.362</u>	
	<u>49.280</u>	<u>48.604</u>	<u>44.714</u>	<u>47.822</u>	<u>46.526</u>	<u>48.119</u>
	13.650		13.000		13.407	
	13.440	13.849	12.286	13.667	12.947	13.814
Social	10.000		9.218		10.605	
	10.077	9.924	9.071	9.356	10.026	11.116
Competency/Mastery	14.057		13.126		13.111	
	14.231	13.887	13.167	13.089	13.526	12.744
Stimulus Avoidance	11.229		10.977		10.146	
	11.519	10.943	10.190	11.711	10.026	10.250
<u>LSS</u> Psychological	<u>88.782</u>		<u>88.265</u>		<u>90.627</u>	
	<u>88.440</u>	<u>89.118</u>	<u>86.024</u>	<u>90.452</u>	<u>89.545</u>	<u>91.676</u>
	15.562		15.235		15.167	
	15.404	15.717	14.854	15.591	15.108	15.219
Educational	14.000		13.267		14.146	
	13.827	14.170	12.476	14.023	13.921	14.341

Scale and Sub-Scale	<u>Early Adulthood</u>		<u>Middle Adulthood</u>		<u>Late Adulthood</u>	
	Males	Females	Males	Females	Males	Females
Social	14.118	14.250 14.377	13.381	13.929 14.165	13.944	14.886 15.674
Relaxation	15.808	16.114 16.415	16.190	16.477 16.750	16.158	16.286 16.410
Physical Activity	15.392	15.107 14.827	14.809	14.835 14.860	16.297	15.895 15.513
Aesthetic	13.654	13.606 13.558	14.071	14.430 14.773	13.886	14.557 15.091
<u>CES-D</u>		<u>3.950</u>		<u>1.965</u>		<u>2.973</u>
Depressed Affect	<u>3.580</u> 1.060 .820	<u>4.320</u> 1.300	<u>1.146</u> .353 .171	<u>2.727</u> .528	<u>2.823</u> .595	<u>3.098</u> .506 .432
Positive Affect (recoded low = high)	.981	1.029 1.745	.537	.686 .822	1.297	1.630 1.909
Somatic and Retarded Activity	1.538	1.641 1.745	.390	.849 1.267	.765	.763 .762
Interpersonal Affect	.192	.154 .115	.049	.058 .067	.108	.111 .114

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