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UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

INTRINSIC MOTIVATION AND AFFECTIVE DIFFERENCES
BETWEEN HIGH-FREQUENCY AND LOW-FREQUENCY
LEVELS OF EXERCISE IN COLLEGE STUDENTS

A Dissertation

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

Doctor of Philosophy

in Counseling Psychology

By

DEBORAH L. BURCHFIELD

Norman, Oklahoma

1997

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A Dissertation APPROVED FOR THE
DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

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Abstract

One hundred undergraduate students from a small private college in the Midwest completed a package of assessments measuring several components of intrinsic motivation in physical fitness activity/athletics and academics, an instrument measuring general affect, and a demographic questionnaire, to study the question of the relationship between motivation and participation in physical activity to motivation for academics. Two variations of the Intrinsic Motivation Inventory, a sports version and an academic version, were utilized to assess the various components of intrinsic motivation. The Positive Affect Negative Affect Scales were administered to assess general affect. The demographic questionnaire included questions about type and frequency of physical activity, and a "Reasons for Participation" section to ascertain the manifest differences in motivation for participation in physical activity.

Comparisons were made between high-frequency and low-frequency physical activity participants according to gender. Analysis of covariance indicated significant differences between the groups for sports-related Competence, Effort/Importance, and Pressure/Tension, although the differences were not in the predicted direction. There were some gender differences and non-significant trends in the predicted direction for academics-related Interest/Enjoyment. Correlations provided further support for a relationship between involvement in physical activity and motivation for academics, such as sports-related Competence

and Effort/Importance.

Research indicates that individuals tend to persist in activities in which they are able to demonstrate competence. Clinical/practical significance of the findings lie in the suggestion that students, for whom sports and academics provide opportunities for the demonstration of competence, and who are involved in physical activity which provides in addition some enjoyment and stress relief, may be able to sustain a higher level of motivation for academics, and thus persist in these areas. Further research is needed to clarify these relationships, and the potential role of physical activity for students experiencing academic motivation difficulties and/or significant amounts of academic-related stress.

The sample of students in this study represent a fairly homogeneous population. Additional studies should include a wider variety of students to improve generalizability of results, along with improved research design and more sophisticated statistical analyses.

Introduction

Purpose of the Study

The purpose of this study is to explore the relationship of affective and motivational factors to participation in athletics/physical fitness activity of college students. An additional focus is the comparison of sports/physical activity participation to academic interest and motivation. Comparisons will be made to ascertain if amount of exercise/activity is related to intrinsic motivation for sports/physical activity and for academic activities.

Variables

Six factors are of primary interest: participant status; gender; intrinsic motivation for physical activity; intrinsic motivation for academic activity; general affect; and manifest reasons for engaging in sports/physical fitness activity. Intrinsic motivation will be examined in terms of its several components, including interest-enjoyment, perception of competence, effort-importance, and pressure-tension experienced when engaged in the activity. Related variables of interest and which may mediate these factors include:

- a) Demographic variables such as age and health
- b) College major
- c) Time spent studying and grade point average
- d) Participation in other, extracurricular activities
- e) Sports participation--level, type, hours per week, compared to pre-college level.

Background

The importance of regular physical activity to a healthy lifestyle is a widely accepted presumption, and a plethora of research exists to support the notion.

The transition from high school to college, from adolescence to adulthood, is a period of significant change; individuals at this phase of life are compelled to reassess their values, and make decisions about lifestyle and how they relate to others. This process often results in a significant increase in feelings of stress (Anderson, 1970; and Greenburg, 1981).

Research has indicated that certain activities function as a buffer between an individual and a stress-producing situation. Of significance to this study, Reifman and Dunkel-Schetter (1990) found that college students who participate in positive, frequent activities, i.e., have a high level of social support, suffer fewer effects of stress (e.g., depression) when in a high-stress situation such as a college environment may engender. They also found academic stress to be positively associated with depression and negatively associated with satisfaction and physical health. Furthermore, physical fitness in college students provides some measure of protection from the deleterious effects of stress, particularly physical illness (Brown, 1991), and appears to buffer stress effects not impacted by cognitive means of coping with stress (Senkfor & Williams, 1995).

Although the opportunities for participation in extracurricular activities are abundant in most colleges and universities, activities which would enhance satisfaction by providing positive associations with peers, stress relief, etc., some evidence exists for the tendency of college students to withdraw from such

activities once they begin college. For example, Astin (1991) found that volunteer service drops during the college years. Giles and Eyer (1994) studied 72 undergraduate students enrolled in "Community Service Laboratory", a requirement for a major in Human and Organizational Development at their university, and found that although 81% of their sample reported having been active in community service projects during high school, only 39% were involved in such activity just prior to enrolling in the course. This trend may be set by students who leave their home communities to attend college, with all its ensuing lifestyle changes.

Along with social and lifestyle adjustments for college students are academic pressures, e.g., satisfactory levels of performance, maintenance of good academic standing, retaining financial assistance, etc. During my year of residency, it became apparent to me that these stressors were particularly salient for students with a history of high academic achievement. Those students who sought services at the University Counseling Center typically were anxious about grades, financial matters (e.g., keeping their scholarships), had few tension outlets, and few social outlets. Although a number had previously been involved in a sport prior to coming to college, a remarkable portion had dropped out of these previously enjoyed and valued activities. A common reason for dropping out was to be able to devote more time to studies. For many of these students, this strategy of dropping out of sports in order to have more time to study had not seemed to be particularly helpful or effective. Although they articulated that they missed engaging in their favorite physical activity or sport, most had little or no motivation to change their current behavior.

Significance of the Study

Results from this study will help to clarify the nature and role of affective and cognitive elements of motivation. Findings may also provide information valuable in understanding and maintaining positive lifestyle habits during the young adult years, and enhancing physical as well as intellectual performance and emotional well-being. Applications of such information may provide counselors, psychologists, and other university personnel with additional means for helping students in distress and promoting student well-being and student achievement.

Research Hypotheses:

The literature on motivation has illustrated that individuals tend to persist at things in which they can demonstrate competence, and that demonstration of competence is an element of intrinsic motivation. Furthermore, the perception of competence seems to be as important as actual competence in maintaining motivation (Brustad, 1992); and other studies have indicated that the perception of competence also impacts eventual outcome (Vealey, 1986). For college/university students, both academics and sports/physical fitness activity offer opportunities to demonstrate competence. Physical activity also provides the opportunity to have fun, engage in social interaction, and relieve stress.

Research has also demonstrated that affective responses to physical activity play a significant role in the decision to participate or withdraw from participation (Harter, 1981), and are often a result of causal attributions of outcomes (McAuley, Russell, & Gross, 1983). What the link is between affective responses, perceptions of competence, and motivation orientation is not totally clear, and findings are in

need of replication and expansion. One might hypothesize a link to be that individuals enjoy demonstrating competence because of the pleasant affect that it elicits, i.e., that positive affect fuels intrinsic motivation. Extending this notion to college/university students, it may be that participants in physical activity are more likely to enjoy their physical as well as academic activities, and hence persist in them. A related question is whether enjoyment (positive affect) and perception of competence in physical activity help maintain adherence to physical activity when academic demands are considered.

The current study will compare college students who practice relatively high levels (hours per week) of physical activity to participants who practice some, but relatively low, levels of physical activity on measures of motivation, including interest in, perceptions of competence in, effort, and felt pressure/tension during sports/physical activity and academics, and on a measure of general affect. The research hypotheses are:

- 1) Individuals who are highly active in sports/physical fitness activity will have significantly greater interest-enjoyment for physical activity than low-level participants;
- 2) High-level participants will report significantly greater perceptions of competence for physical activity than low-level participants;
- 3) High-level participants will report significantly greater effort-importance of physical activity than low-level participants;
- 4) High-level participants will report significantly less pressure-tension when engaging in physical activity than will low-level participants.
- 5) High-level participants will report significantly greater interest-enjoyment for

- academic activities than low-level participants;
- 6) High-level participants will reports significantly greater perceptions of competence for academic activities than low-level participants;
 - 7) Low-level participants will report significantly greater effort-importance for academic activities than high-level participants;
 - 8) Low-level participants will report significantly greater pressure-tension when engaging in academic tasks than high-level participants;
 - 9) High-level participants will report significantly more positive affective descriptors than low-level participants;
 - 10) High-level participants will report significantly fewer negative affective descriptors than low-level participants.

Literature Review

Questions about the relationship of motivation to personal goals, feelings, and choices of behavior are addressed in a rather large body of sports-related research: motivation in relation to psychological variables such as locus of control (Adame, Johnson, & Cole, 1989; Adame, Johnson, Cole, Matthiasson, & Abbas, 1990; Adame, Radell, Johnson, & Cole, 1991; Carter, Lee, & Greenockle, 1987), cognitive functioning (Tomperowski & Ellis, 1986; Tomperowski, Ellis, & Stephens, 1985); self-efficacy (Duncan & McCauley, 1987; Shaw, Dzewaltowski, & McElroy, 1992; Kavanagh & Hausfeld, 1986; LaGuardia & Labbe, 1993; Wittig, Duncan, & Schurr, 1987), attribution (Crocker & Bouffard, 1992; McAuley, 1990; McAuley & Gross, 1983; McAuley, Poag, Gleason, & Wraith, 1990; Robinson & Howe, 1989; Schoeneman & Curry, 1990; Vallerand, 1987),

goal orientation (Duda, 1985, 1986, 1987, 1992; Duda & Chi, 1989; Duda, Fox, Biddle, & Armstrong, 1992; Gill, Dzewaltowski, & Deeter, 1988; Hall, 1990; Jackson & Roberts, 1992; Roberts; 1984, 1993; Roberts & Pascuzzi, 1979), and affect (Ommundsen & Vaglum, 1991; Scanlan & Lewthwaite, 1984).

Numerous claims have been made about the positive effects of exercise and the benefits to various physical and psychological processes. Some of these claims have been supported by empirical research (Adame, Johnson, & Cole, 1989; Adame, Radell, Johnson, & Cole, 1991; Brandon & Loftin, 1991; Munson, Baker, & Lundegren, 1985; William & Getty, 1986); others have yet to be substantiated. One of the more salient areas to the current study is the impact of physical exercise on cognitive functioning. In their review of the literature, Tomperowski and Ellis (1986) indicated that relatively little evidence exists to support the notion that physical exercise influences cognition. They found conflicting results among the studies reviewed, some of which have suggested that physical exercise enhances cognitive functioning. For example, Spencer (1983) demonstrated that a significant increase in cardiorespiratory fitness following a training program was accompanied by a significant increase in basic arithmetic skills in fifth-grade students, but only in the lower- and average-performance ranges. Other studies have suggested that physical arousal from exercise impairs cognitive functioning, especially in low-fitness individuals (Weingarten & Alexander, 1970); still others have found no significant effect either way (Tomperowski, Ellis, & Stephens, 1985).

Two explanations for these discrepancies in research findings were offered by

Tomperowski and Ellis (1986). The first explanation is based on the assumption that exercise does alter cognitive functioning, and the disparate results are due to the effects of two opposing physiological states: central nervous system arousal, and skeletal-muscular fatigue. In other words, it may be that excessive fatigue cancels out central nervous system effects, and the dominant state, arousal or fatigue, determines ability to perform cognitive tasks. This explanation may partially explain why common reasons given by college/university students for not exercising are "being too tired" and "lack of time" (Vitulli & DePace, 1992).

The second explanation assumes that exercise does not impact cognitive functioning per se, but motivational variables affect performance (and most research in this area does not control for motivational factors). Several studies (e.g., Battista, 1990; Martindale, Devlin, & Vyse, 1990; Simmon & Dickinson, 1986) indicate that attitudinal differences exist between exercisers and non-exercisers, and the two groups would therefore have differing assumptions about the enhancing or debilitating effects of exercise on cognitive functioning.

In contrast to the claims that physical exercise can enhance cognitive functioning, myths and stereotypes about the negative relationship between cognitive ability and athleticism persist. Kohl, Leonard, Rau, and Taylor (1991) tested the vocabulary comprehension and academic interest (orientation) differences of college athletes and non-athletes, and compared athletes in various sports to each other on these measures. Their findings indicated that non-athletes scored significantly higher on vocabulary measures, but attitudes toward reading and writing were essentially the same in both groups. Among groups of athletes,

the sports groups with the highest vocabulary scores were those for women; sports groups with the lowest vocabulary scores were those for men. This is not surprising, given the body of research which demonstrates that from about age 11 on, females tend to have verbal abilities superior to those of males (Hyde, 1981; Maccoby & Jacklin, 1974; Peterson, Crockett, & Tobin-Richards, 1982).

Another interesting finding of this study was the fact that after the freshman year, there were no significant increases in any area in either the athletes or non-athletes, and no other significant differences between them. Attrition may have accounted for observed significant improvements from the freshman to sophomore year, but the results indicated that college graduates leave school with approximately the same level of vocabulary comprehension and interest in reading and writing as when they entered. These findings tend to suggest that there is no consistent effect of physical activity on cognitive functioning, either positive or negative.

Motivation

Two theoretical approaches predominate in the study of motivation in sport: (1) cognitive evaluation theory (Deci & Ryan, 1985); and (2) mastery and competence in relation to specific achievement domains (Harter, 1981) and other self-efficacy theories (Bandura, 1986). Commonalities between the two theories are the emphasis on perceived competence, self-determination, mastery at optimal challenge, and the role of the social environment in the development of intrinsic and/or extrinsic motivation. Whether motivation is intrinsic or extrinsic affects perceived competence, perceived control, and tendencies to approach or avoid

similar achievement situations (Vealey, 1986).

Cognitive Evaluation Theory: A major tenet of cognitive evaluation theory (Deci & Ryan, 1985) is that motivation is optimal when individuals perceive themselves as competent and in control of their own environment. Sports and academics provide many opportunities for individuals to compare themselves against a standard. Informational feedback that a person is competent and in control enhances motivation (intrinsic), whereas feedback that a person is incompetent and/or not in control tends to diminish intrinsic motivation. In this way, motivation is related to self-efficacy (Bandura, 1986) and to attribution theory (Weiner, 1985) in that feelings of competence increase self-efficacy expectancies, and control over the environment is analogous to locus of causality. If an event or situation is seen as controlling one's behavior, an external locus of causality and low level of self-determination serve to decrease motivation (Ryan, 1982).

Controlling aspects, which relate to an individual's experience of self-determination, informational aspects, which provide effectance information, and the functional significance of events are all pertinent to intrinsic motivation. Functional significance is determined by which aspects of the control dimension (e.g., rewards, deadlines) and the information dimension (e.g., choice, positive feedback) are most salient (McAuley, 1990). For example, for an athlete who feels pressured by parents/peers/coaches to perform, the control aspects are most salient. S/he develops an external locus of causality, and intrinsic motivation is decreased.

Two studies demonstrated the positive effects of feedback on intrinsic motivation. In the first (Vallerand, 1983), adolescent hockey players received varying amounts of positive feedback or no feedback in response to their decisions regarding simulated hockey situations. Participants receiving feedback, regardless of the amount, scored significantly higher on measures of perceived competence and intrinsic motivation. Vallerand and Reid (1984) followed up by examining the effects of negative feedback, positive feedback, and no feedback, and found that participants receiving positive feedback scored significantly higher on a measure of intrinsic motivation than participants receiving negative feedback. This established a mediating effect of feedback on intrinsic motivation. Although this study suggested that quantity of feedback seems irrelevant, quality is important, especially in terms of contingency and appropriateness to performance (Weiss & Chaumeton, 1992).

The sources of information regarding competence and other aspects of performance within the sport setting are varied and include internal criteria, social comparison, event outcome, and affect (Horn & Hasbrook, 1987; Horn & Weiss, 1991). Further research is needed to examine the relationship of these sources to intrinsic motivation. For example, one might hypothesize that individuals high in intrinsic motivation utilize internal criteria and affect more often as sources of information than do extrinsically motivated individuals.

As competition is prevalent in sports (and academics), its effects on motivation are important to examine. In general, studies have indicated that competition negatively impacts intrinsic motivation, especially in females (Weinberg & Regan,

1979), and particularly if the competition is with another group of individuals rather than against a standard (Deci, Betley, Kahle, Abrams, & Porac, 1981).

One additional factor to note is the impact of extrinsic rewards on intrinsic motivation. Orlich and Mosher (1978) found that when children were rewarded for engaging in a previously intrinsically interesting motor activity, motivation for the activity diminished when they were offered the opportunity again to engage in the activity. These findings have been replicated by others (e.g., Halliwell, 1978; Thomas & Tennant, 1978).

In summary, the meaning of an external event and its effect on intrinsic motivation and other psychological variables can be influenced either by characteristics of the person or of the event, as well as their interaction (Ryan, Vallerand, & Deci, 1984).

Competence Motivation Theory: An alternative to cognitive evaluation theory in understanding motivation is effectance, or competence motivation theory, first conceptualized by White (1959) and later developed by Harter (1981). White's perspective was that humans are intrinsically motivated to master their environment. Mastery fosters feelings of efficacy and pleasant affect, as described in Bandura's (1986) self-efficacy theory, and hence maintains motivation. What White's model was lacking and what Harter extended and refined were clear definitions of the constructs of competence motivation, feelings of efficacy, and intrinsic pleasure.

Harter's multi-dimensional model incorporated six components of competence motivation: (1) domain-specific mastery attempts (cognitive, social, physical); (2)

influence by significant others in the form of modeling and reinforcement; (3) performance outcome in relation to task difficulty; (4) sources of information for judging and reinforcing personal competence and the adoption of certain performance goals; (5) perceived competence and perceptions of performance; and (6) affective outcomes.

According to Harter, individuals who are intrinsically motivated strive to demonstrate ability in areas in which they see themselves as most competent. A study by Klint and Weiss (1987) supported this notion and clarified it by demonstrating that the areas of perceived competence could vary, i.e., some individuals were motivated to engage in the activity in order to demonstrate their physical skills, while others were motivated to demonstrate affiliation and social competence. Some studies, e.g., those comparing participants and non-participants (Roberts, Kleiban, & Duda, 1981) or participants and dropouts (e.g., Klint, 1985) may have made an interpretive error by assuming that non-participants/dropouts are so classified because their perceptions of physical competence are lower than those who have continued participation, when, in fact, it may be that affiliation and/or social competence needs were not being met.

There is a need for further research which focuses on the relationship of other constructs within Harter's (1981) model in combination with participation motives, such as the influence of parental expectations and beliefs about their children's abilities, the relationship between coaching behaviors and styles and changes in participation motives over a season, or sources of information used to judge personal competence and its relation to persistence in sports or other physical

activity. For example, one might hypothesize that college students who depend primarily on social comparison information and who have low perceived ability are more susceptible to dropping out.

The most critical of Harter's (1981) additions to White's (1959) model is the influence of socialization. More specifically, the influence on motivational orientation (intrinsic or extrinsic) by way of judgments of personal competence and performance control by significant others is particularly critical during childhood and adolescence. However, as suggested in Brustad's (1992) review of the literature, socialization history has been virtually neglected in research studies attempting to understand motivational orientation. Only two studies have examined the influence of significant others' behavior on self-perceptions of ability within Harter's model. Horn (1985), who investigated how coaches' reinforcement patterns influence adolescent female softball players' perceptions of competence and performance control, and Black and Weiss (1991), who observed coaches' behavior and recorded perceptions of coaches' behavior in relation to perceptions of ability and motivation. Both studies found that successful performance followed by praise and positive feedback and unsuccessful performance followed by encouragement and corrective information were associated with athletes who were higher in perceived success and competence, as well as in enjoyment of sport and preference for optimal challenge.

A fourth component of Harter's model is the preference for sources of information which reinforce one's mastery attempts and successes. Three studies (Horn & Hasbrook, 1986, 1987; Horn & Weiss, 1991) have found a consistent

relationship between age and source of information used to judge physical competence. In intrinsically motivated children, the need for and dependency on external social reinforcement decreased with age. Younger children tended to depend on feedback and evaluation from powerful authority figures, such as parents and teachers, whereas older children primarily relied on peer comparison and evaluation (i.e., competitiveness) for information about competence, suggesting a developmental pattern regarding the sources of information used to judge physical ability.

Leary (1992) discussed the effects of self-presentational processes on four aspects of sports and exercise: (1) motivation to engage; (2) choices and context of physical activities; (3) quality of performance; and (4) emotional reactions to engaging in exercise. Self-presentation refers to the processes by which people monitor and control how they are perceived by others. Not all motives are self-presentational, but two reasons for exercising reflect self-presentational motives:

1. Motivation to Participate:

The first self-presentational motive to engage in exercise is that of physical appearance, or the motive to be attractive. Second, there is the motive of social identity, which is the motive to gain attention, praise, and other social rewards of being an athlete.

Leary, Wheeler, and Jenkins (1986) found that individuals' motives for engaging in physical activity were related to aspects of their identities which they valued most.

Deterrents to participation which reflect self-presentational motives are concerns about others' impressions of oneself and one's body, and activities in which people perceive that they have little skill.

2. Choices of Activities/ Contexts

Stereotypes exist about persons who play particular kinds of sports. In two studies, one by Sadalla, Linder, and Jenkins (1988) and a follow-up by Linder, Farrar, Sadella, Sheets, and Bartholomew (1992), participants were perceived to differ in terms of athleticism and physical attractiveness, depending on the sport played.

Three significant points can be made from these findings. First, people draw inferences from others' involvement in sports, some of which are more favorable than others. Second, stereotypes of athletes differ across societal subgroups. Third, given those societal stereotypes, people's choices about activities are likely influenced by the self-presentational implications of participating in these activities. In other words, people are unlikely to devote themselves to activities that may convey impressions of them which are inconsistent with their roles, others' values, or social norms (Leary & Kowalski, 1990).

In relation to context, these concerns influence where and with whom individuals participate in physical activities. Exercising or playing with others provides an incentive for physical activity. The social contacts, along with fulfilling others' expectations, are powerful reinforcers of the activity.

3. Quality of Athletic Performance

Self-presentational motives also affect the amount of effort others put into

physical activity. For example, people tend to exercise harder, push themselves more, when others are watching (Worringham & Messick, 1983). On the other hand, people tend to work less hard when they are working as part of a group (or team) than when working alone. One explanation for this is that people naturally reduce their effort on boring or tiring tasks unless performance is being monitored by others (Geen, 1991).

There seems to be another relationship between self-presentational concerns and performance. That is, anxiety arising from self-presentational concerns can have a detrimental effect on performance, such as when people pay excessive attention to behaviors which they normally do automatically, and "choke" under the pressure (Baumeister, 1984). A coping strategy which some athletes appear to adopt to deal with possible failure is that of self-handicapping, which offers a plausible, acceptable reason for their failure, in part to preserve self-esteem, and in part to protect their social images in the face of failure (Kolditz & Arkin, 1982).

4. Affective Responses to Exercise and Sport

When the motivation is to impress others, but individuals doubt whether they will be able to perform successfully, anxiety generally results (Leary, 1983). Apparently, social anxiety is experienced in sports situations as well, and can interfere with the emotional rewards of exercising, playing, and competing. Generally, anxiety takes the form of competition anxiety, which involves comparing one's own skills against another's, or social physique anxiety, which involves concern over others' impressions of one's physique. A general conclusion of Leary's research is that individuals' beliefs about others' perceptions of them are

as important in motivation as their perceptions of themselves.

Along with self-presentational motives, one of the assumed benefits of regular physical exercise is improved cardiovascular health. Furin, Pratt, and Owen (1991) examined adolescents' beliefs about how effective exercise is in preventing cardiovascular disease, and the coping strategies of adolescents. Results indicated that response efficacy, response costs, and self-efficacy manipulations successfully influenced participants' beliefs in the efficacy of exercise. High self-efficacy information resulted in stronger measured intention to exercise; low expectancies of response efficacy led to greater endorsement of maladaptive (passive) strategies for coping with health problems. The likelihood that one will initiate and persist in exercise in the face of low efficacy expectancies is minimal.

The Conoco Company, in attempting to encourage exercise participation for improved cardiovascular fitness among its employees by offering a supervised exercise program, tested the predictive validity of psychobiological factors for exercise adherence (Young & Steinhardt, 1991). The psychobiologic model failed to predict exercise adherence based on percent body fat or on self-motivation (no salient self-presentational motives). The findings supported the notion that health behaviors are rarely amenable to prediction when only a few variables are measured.

Other studies which have scoped the motivation to exercise include those of Kendzierski and Johnson (1993). The purpose of their research was to evaluate the validity and reliability of the Exercise Thoughts Questionnaire, which was developed in order to assess the frequency of thoughts involving reasons or

excuses for not exercising at the time. The more frequently participants had thoughts assessed by the Exercise Thoughts Questionnaire, the less they tended to exercise, and the less exercise experience they had. A second study revealed that women had significantly higher ETQ scores than men; sports participants with required practices had significantly lower ETQ scores than others; women in sports were similar to their male counterparts. The third study indicated that there was a significant correlation between ETQ scores and the number of days participants considered exercising but did not. Women reported significantly more exercise-avoidant thoughts than did men.

Biddle and Brooke (1992) investigated the psychometric properties of the Motivational Orientation in Sport Scale (MOSS), and investigated its use in the context of specific physical education activity in a sample of middle school children. Their research was also conducted via two related studies. In the first, they found a significant relationship between intrinsic motivation orientation toward physical education and sport and cognitive information components, and that classroom motivation was more extrinsic when compared to sport, where the goals were "play" and "fun". The follow-up study supported the finding that intrinsically motivated children performed better than those who were extrinsically motivated in sport.

Studies with young adults include those of Rutherford, Corbin, and Chase (1992). Their intent was to examine the factors influencing intrinsic motivation toward physical activity in adult males. Results revealed that people with little sports experience felt more competent when given information about their

performance (feedback vs. no feedback). This relationship was not true of individuals with moderate or high levels of experience. Motivation was also associated with effort and the importance given to the task. This study suggested that feelings of competence tend to enhance intrinsic motivation, along with interest, enjoyment, effort, importance, and pressure-tension release. A recent investigation by Ryan, Frederick, Lepes, Rubio, and Sheldon (1996) has further suggested that competence and enjoyment motives predict greater adherence to one's preferred or chosen activity, whereas body-related motivations (e.g., fitness, improved appearance) were unrelated to adherence. An implication for improving exercise adherence, particularly among beginners and potential dropouts, is the need to enhance feelings of competence and enjoyment.

Fung (1992) examined the participation motives of elite wheelchair athletes and assessed the relative ranking of each motive. Results indicated that males and females differed in their motives for participation, with males being more oriented toward achievement and winning, and females participating for the opportunities for socializing. These motives are similar to those of non-disabled athletes (Gould, Feltz, & Weiss, 1985), although further research is needed to confirm this.

Harter's (1985) notion that perceptions of competence are tied to participation motives was tested by Klint and Weiss (1987). Sixty-seven gymnastics students were administered a motive for participating questionnaire, along with Harter's (1982) Perceived Competence Scale for Children. Competence motivation theory was supported, although the role of team affiliation as an important motive could not be determined. From these results, one could reasonably hypothesize that a

motive for dropping out is a diminished sense of competence.

The role of personal values in sports participation is related to motivation and was examined by Simmon and Dickinson (1986). Among general psychology students, values expressed through participation in favorite sports were Expressing Feelings (women) and Competition (men). In a follow-up study of 21 female intercollegiate athletes, the researchers found a significantly greater similarity of values expressed in the responses of gymnasts than in those of the volleyball team, suggesting differences in values in sports which are primarily individual-oriented and in which participants are perceived as performers, and those which are team-oriented and in which participants are viewed as competitors. Other general findings of the study were that Achievement, Exercise, Sociability, Health, and Fulfillment were also significant values. Also, the standing of the team relative to other teams may affect the values expressed in participation.

In a similar study, Battista (1990) explored the role of personal meaning in attraction to sports. Values were ranked in the order of Enjoyment, including Social Reasons, Competition, Challenge, Health and Fitness, and Self-Satisfaction. Endorsement of these values indicates that participation has intrinsic value and provides pleasurable experience. Men ranked competition significantly higher than did women, who were more attracted to sports for the positive effects on one's inner self. Again, participation seemed related to ability, lending further support to Harter's competence motivation theory.

Martindale, Devlin, and Vyse (1990) assessed the relative ratings of the

importance of the competition motive among levels of athletic participation and gender of undergraduate varsity- and non-athletes. For recreational sports participants, competition was rated significantly lower as a motive. Somewhat surprisingly, social goals were rated significantly higher in the varsity group. This social motivation may be related to the team emphasis in varsity athletics. Other important motives were Improvement, Health and Fitness, and Achievement.

From the perspective of pre-service and experienced coaches, students are motivated to involve themselves in athletics by competitiveness, skill improvement, team playing, staying in shape, and for social reasons (to have fun and be with friends), respectively (DeVoe & Carroll, 1994). These findings have important implications for developing optimal enjoyment and interest in sport.

Kerr (1987) studied the differences in the motivational characteristics of "professional", "serious amateur", and "recreational" sports performers. Results suggested that sports performers show less preference for avoiding arousal than people not involved in sports.

Frederick and Ryan (1993) examined the relationships among physical activity, level of participation, and psychological outcomes in adults and how they varied by gender and type of activity, using their Motivation for Physical Activities Measure. Interest/enjoyment and competence motives were shown to be higher for sports participants. Body-related motives were higher for females. Interest/enjoyment was associated with time and energy expenditures. These results provide support for a focus on the development of feelings of competence in maintaining participation.

As previously mentioned, perceptions of competence or incompetence are the critical mediators of performance and persistence. People behave in ways which are likely to demonstrate ability in a situation and minimize the probability of demonstrating low ability.

Compared to Harter's (1981) theory, which emphasizes "how much" competence one has, Nicholls (1984) stresses the meaning of ability in the achievement setting. Critical to his work is the notion that ability has different meaning to different individuals at different stages of development, e.g., ability becomes distinguished from task difficulty and effort at later developmental stages.

At early ages (~ 2-4 years), the concept of ability is egocentric in that task difficulty is judged in terms of whether the child perceives that s/he can do a task. By age 5-6, task difficulty is perceived based on the objective features of the task, and success is a reflection of both ability and effort, i.e., success is contingent upon maximal effort. By about age 6-9, a normative conception of task difficulty emerges in which a task is perceived as more difficult if fewer people are able to successfully perform it. By ages 7-9, outcomes on tasks of varying difficulty are based primarily on effort. Around 9-10 years of age, children can attribute outcome to both ability and effort, although the distinction is not yet complete and not yet generalized. Not until about 11-12 years of age are ability and effort completely differentiated, wherein a child is able to recognize that when two athletes who perform similarly in a situation (have similar outcomes), the one who expends the greater effort has less ability (Nicholls & Miller, 1984).

Along with this more mature conception of ability, in most 12-year-olds perceiving oneself as capable also entails comparing one's efforts and outcomes to those of relevant others (peers) (Nicholls, 1984).

A second critical component of Nicholls' theory (Nicholls, 1984; Nicholls & Miller, 1984) is the supposition that achievement goals are linked to different conceptions of ability. There are two major achievement goals that involve differing conceptions of competence, or ability: task-involved, and ego-involved. Task-involved goals are concerned with the perceptions of improvement in one's own performance, or performing better than expected, which leads to feelings of competence and success. Ego-involved goals, on the other hand, are concerned with comparison of one's own performance to that of others, and perceiving competence or success as performing in a manner superior to others (a more differentiated concept of ability). According to Nicholls (1984; Nicholls & Miller, 1984), the goals that individuals tend to prefer are a function of cognitive maturity, personal disposition, and situational factors. After age 12 and into adulthood, goal orientation is more typically based on situational factors.

A third tenet of Nicholls' (Nicholls, 1984) theory is the relationship between goal perspective and achievement behaviors of task choice, performance, and persistence. In general, the theory contends that behavior will be economically directed toward the goal of demonstration of high ability, that a mastery perspective more often leads to greater effort, enhanced perceived ability, and positive achievement behavior.

The greatest possibility for maladaptive choices and behaviors is found in the

ego-involved orientation, particularly among individuals who perceive their ability as low, who will tend to choose either unrealistically easy or difficult tasks which will provide little opportunity for the development of competence—and little risk for the demonstration of incompetence. An arguable conclusion is that the adoption of a task orientation, in which exercise and demonstration of competence is the end itself, in physical activity, would tend to sustain participation.

Roberts (1984) addressed the extent to which Nicholls' theory (Nicholls, 1984; Nicholls & Miller, 1984) could be generalized from the academic domain to the children's sports setting. Some distinctions between cognitive and physical tasks tend to imply that the concept of ability in sports develops along a different dimension than cognitive ability. First, in the sports arena, participants make a distinction between global (athletic) ability and skill in sport (Roberts, 1984; Roberts & Pascuzzi, 1979). Second, Roberts and Pascuzzi (1979) also contend that when considering sports, the nature of ability, effort, and task difficulty are more obvious than with cognitive tasks. Third, the nature of performance is different in academic and sports activities, with competition and social comparison being a significantly greater component of the sports dimension, and sports competition could be said to be especially ego-involved (Roberts, 1984). These points suggest using caution in applying Nicholl's theory (Nicholls, 1984; Nicholls & Miller, 1984) to sports, although generally, sports research has suggested that (1) conceptions of ability vary with age (Horn & Hasbrook, 1986; Horn & Weiss, 1986); (2) demonstration of competence lays the base for perceptions that the individual has accomplished his/her goal (Roberts & Duda, 1984); (3) athletes can

have both task- and ego-involved goals (Duda, 1986); (4) there is a link between goal orientation and behavior in sports (Vealey, 1986); and (5) goal preferences seem to be a function of individual difference, which supports Nicholls' theory. In her studies of university students, Duda (1986) investigated goal perspectives of intramural and intercollegiate athletes and found that participants were oriented to distinct goals reflecting mastery or social comparison.

The body of research makes evident that one cognitive factor appears to assume overall importance in understanding the physical activity experience: the perception of competence, which is important in peer relationships, anxiety, and self-esteem. How this importance is carried through to adolescence and early adulthood is important to understand in relation to continued involvement in healthful physical activity.

The perception of competence is a significant element in participation motivation and withdrawal from sport. Research has attempted to identify reasons why individuals engage in sport (Gill, Gross, & Huddleston, 1985; Gould, Feltz, & Weiss, 1985; Longhirst & Spink, 1987). Weiss and Petlichkoff (1989) classified these research findings into four major categories of motivation: competence, affiliation, fitness, and fun. However, this research is primarily descriptive and atheoretical and has not significantly advanced understanding of participation motivation.

Harter's competence motivation model (1985) is one of the most widely used conceptual models for understanding participation in sport and much research supports this model (Feltz & Petlichkoff, 1983; Klint & Weiss, 1987; Roberts,

Kleiban, & Duda, 1981), that perception of competence is a reason for participation, as well as accomplishment of a goal (Weiss, Bredemeier, & Shewchuck, 1986).

Other studies have shown that the desire for fun and enjoyment are major reasons for participation, while lack of enjoyment is a major reason for dropping out (Scanlan & Leiothwaite, 1986; Scanlan, Stein, & Ravizza, 1989). Scanlan et al. (1989) contend that understanding what makes sports/physical activity enjoyable is key to understanding and enhancing motivation.

The paradox of sports participation by children, and one which may significantly impact future participation, is the fact that, despite the demonstrated truth that children are attracted to activities in which they can demonstrate competence, experience enjoyment, and determine their relative standing among peers, and the fact that sport experience provides an arena for these processes to occur (Roberts, 1984), children and adolescents drop out of sports at exceedingly high rates: about 80% between the ages of 12 and 17 (Seefeldt, Blievernicht, Bruce, & Gilliam, 1978). Apparently, the most important reason for dropping out has been the reception of unfavorable information/feedback regarding ability that participants get when comparing themselves to their peers.

One important point worth mentioning here is that dropping out is not necessarily a negative event, and a distinction needs to be made between sports dropouts and sports burnout victims (Smith, 1986). Some decisions to withdraw are based on rational reasons (Klint & Weiss, 1989). Future research needs to focus on identifying contextual circumstances that contribute to the choice to

withdraw or participate (Nicholls, 1992; Weiss & Petlichkoff, 1989).

Finally, recent work in both academic and sports contexts have indicated that competence is better understood as a multi-dimensional construct (Nicholls, 1989; Roberts, 1992). The achievement goal approach has provided the framework for much of this research.

The achievement goal approach assumes that two goals function in achievement contexts, variously labeled task and ego (Duda, 1992; Nicholls, 1989, 1992), learning and performance (Dweck, 1987), or mastery and ability focused (Ames, 1992). These analogous terms are largely synonymous, and within the sports context have generally been termed mastery and competitiveness (Roberts & Balague, 1991).

Evidence suggests that if one has the goal of mastery, s/he is likely to engage in adaptive behaviors such as choosing moderately challenging tasks, focusing on effort within the situational context, being interested in the task, and persisting in the face of difficulty and over time (Ames, 1992; Duda, 1992; Dweck, 1986; Nicholls, 1989; Roberts, 1992). This same pattern is also assumed to hold for individuals with a competitive goal orientation when their perception of ability is high (Duda, 1989; Dweck, 1986). Dweck argues, however, that these adaptive behaviors of competitive goal-oriented people begin to collapse in the face of failure or difficulty. When perception of ability weakens, maladaptive behaviors (generally assumed to protect ego- or self-esteem needs) manifest themselves. For example, individuals would choose very easy or very hard tasks in order to avoid challenge, not exert effort, deteriorate in performance, and lack persistence (Ames,

1992; Duda, 1992; Dweck, 1986; Nicholls, 1989; Roberts, 1992). Research has also demonstrated these same behavioral manifestations within the academic context (Ames, 1992; Dweck, 1986; Dweck & Leggett, 1988; Nicholls, 1992).

Affect

The literature related to affect and sports participation addresses five primary areas: (1) the effect of participation on mood and other psychological variables; (2) the relationship between affect and achievement goals; (3) stress and competition anxiety; (4) the relationship of affect and motivation; and (5) the relationship of affect and perceptions of competence.

The role of affect in motivation to participate in sports was investigated in Ommundsen and Vaglum's (1991) study of adolescent male soccer players. Their results indicated that soccer enjoyment and soccer competition anxiety were not related. Soccer-related self-esteem was the only significant predictor of competition anxiety. The four predictors which accounted for the greatest variance in soccer enjoyment were perceived competence, perception of coaching behaviors, perception of parental behaviors, and soccer-related self-esteem.

Matsumoto and Sanders (1988) conducted two studies to examine individuals' subjective experiences during engagement in intrinsic and extrinsic tasks. For intrinsic tasks, they found that happiness and surprise increased during the task, then decreased immediately after it. For extrinsic tasks, happiness did not change during task engagement, but increased right before task completion. Anxiety and other negative emotions increased slightly during task engagement for intrinsic tasks, then decreased right after completion of the task, then decreased even more

over time. For extrinsic tasks, negative emotion did not change during engagement in the task, but decreased before task completion.

When the motivation is to make an impression on others, but individuals doubt whether they will be able to perform successfully, anxiety generally results (Leary, 1983). Apparently, social anxiety is experienced in sports situations as well, and can interfere with the emotional rewards of exercising, playing, and competing. Generally, anxiety takes the form of competition anxiety, which involves the comparing of one's own skills against another's, or social physique anxiety, which is concern with others' impressions of one's physique.

Relationship of affect to achievement goals: Robinson and Howe (1989) attempted to determine the nature and extent of appraisal variable/affect relationships in a youth sport achievement setting, to assess gender differences in these relationships, and to evaluate the applicability of Weiner's (1985) model to youth sport. Their results revealed that males perceived themselves as having performed more successfully and to be higher on the self-related affects of pride and competence, and on general affect. Perceived performance, attributional appraisals, and affect are related in both success and failure conditions.

Crocker and Bouffard (1992) examined the relationship between cognitive appraisal and self-reported affect in a sample of physically disabled adults. Appraisals were related to the initial reasons for engaging in physical activity (health and fitness, skill learning, demonstrating competence, seeking social approval), and were related to pleasurable engagement in challenging situations. Task importance and the amount of effort required were also related. A somewhat

surprising finding of the study was that perceived external control in the form of dependence on others for assistance in some situations was related to positive affect.

Relationship of affect and perception of competence: One of the sources of competence information is emotional/physiological arousal, and arises when an individual associates an emotional and/or physiological state with performance. For example, when a person becomes aware of unpleasant physiological arousal, s/he is more likely to doubt her/his competence than if the negative physiological state were not present, conversely, feelings of relaxation are more likely to lead one to feel confident in one's ability in the situation at hand. Translating this concept into the physical arena, physiological states such as pain or fatigue are apt to lead one to doubt his/her ability to competently perform a physical task.

Kavanagh and Hausfeld (1986) examined the effect of mood on self-efficacy (aka perception of competence) and physical performance in two related studies of undergraduates. Their specific purpose was to examine whether mood altered self-efficacy and effort on a physical performance test (*handgrip strength*). In the first study, mood was manipulated along a continuum of Happy to Neutral; study 2 extended the range to include Sad mood. Results provided little evidence that positive emotions could boost performance on a physical task, particularly within the narrower range of affect. In effect, no relationship between mood and efficacy was found. A modest relationship of mood to performance was obtained in the second study. These results suggest that although positive affect appears to have little impact on self-efficacy or physical performance, more extreme negative affect

does tend to negatively impact performance.

Stress and competition anxiety: There has been a surge of interest in researching competitive stress and helping children cope with the stress (Martens, Vealey, & Burton, 1990). It is important to make a distinction between stress and other negative emotional states, such as anxiety and arousal. Stress is defined as a process in which the individual perceives the demands of the situation, assesses his/her own resources for meeting the demands, then makes a decision as to how to respond to the situation, e.g., to engage or disengage from the activity.

Pressure to demonstrate competence, along with excessive amounts of interpersonal competition and social demands to interact with others may place excessive stress on the individual, particularly the less able individual (Roberts & Treasure, 1992).

Measures of competition anxiety have been the most thoroughly researched indicators of stress in sport (e.g., the State Anxiety Inventory for Children, Spielberger, 1973); and the Competitive State Anxiety Inventory, Martens, Burton, Rivkin, & Simon, 1980). Recently, multi-dimensional sports-specific measures of state anxiety as well as trait anxiety have been developed for use in the adult population. The Sport Anxiety Scale (Smith, Small, & Shutz, 1990) measures somatic anxiety, worry and concentration; the Competitive State Anxiety Inventory-2 (Martens, Burton, Vealey, Smith, & Bump, 1990) assesses cognitive and somatic components of state anxiety. The assumption is that an individual's perceptions of the uncertainty and importance of the outcome combine with competitive trait anxiety to determine perception of threat, which in turn

determines the anxiety response.

Stress and anxiety are clearly important in the experience of children and adolescents in competitive sport. Anxiety scores have been demonstrated to rise with age and peak during adolescence (Brustad, 1993; Martens, 1977). Horn and Hasbrook (1987) have indicated that this rise in anxiety occurs as children increase their focus on social comparison and relative ability. The extent to which this anxiety is maintained in university students transitioning from adolescence to young adulthood, and whether it is present in physical as well as academic pursuits, is open to further study.

Harter (1981) proposed that affect should be a focal point in the study of intrinsic motivation, but further research is needed to understand affective outcomes in sport. Four studies have examined the relationship between competitive trait anxiety and perceptions of competence and control, motivational orientation, and characteristic worries in youth sports. Gender differences were found in that girls did not differ on self-perception characteristics, regardless of anxiety level, but boys with high competitive trait anxiety were significantly lower than low-CTA boys on measures of general self-worth and performance-related worries. The study by Weiss et al. (1987) found a stronger relationship to Harter's theory in that anxiety was found to be related to several achievement-related characteristics.

Klint's (1985) study was more interested in examining which antecedent variables best predicted affect (both positive and negative). Results indicated a significant relationship between psychological characteristics and affect, with an

intrinsic motivational orientation being the strongest contributor to enjoyment, excitement, pride, and anxiety. A subsequent analysis was conducted to determine the effects of self-perception and affect variables on choice, effort, and persistence as measures of motivation, with high levels of enjoyment, excitement, and perceived competence emerging as the strongest contributors to these motivational measures.

Research Purpose

Much of what is believed about exercise and physical fitness activity and its role in overall health and well-being requires further examination and verification through replicative research. Further research is particularly needed in regard to factors and mediating variables of motivation, such as perceptions of competence and affect. Harter's (1985) model asserts that people are motivated to be involved in activities in which they perceive themselves as competent, and this notion has been the subject of significant research. Perception of competence is defined as an individual's belief in his/her ability to perform a behavior according to a standard, and is similar in meaning to Bandura's (1986) concept of self-efficacy. Research has also demonstrated that, in general, perceptions of competence are situation-specific.

Affect has been suggested by Harter to play a significant role in motivating behavior, and empirical support for this claim is merited. The hypothesized relationship between affect, perceptions of competence, and motivation is that individuals enjoy engaging in activities in which they feel competent, and the positive affect associated with the experience is a motivator for repeating or

continuing the activity.

Other research has demonstrated that for many, sports or physical activity is intrinsically motivating; that is, the activity is enjoyable for its own sake. Other important variables contribute to the decision to engage in athletic activity, e.g., health benefits, competition, social factors, but research has supported the hypothesis that most people persist in an activity when there is intrinsic reward in it, in situations where competition is of minimal or no importance, and the goal is self-improvement.

Academic endeavors, on the other hand, traditionally are perceived as a means to an end, rather than an end in themselves. Although there may be an element of intrinsic motivation in the "joy of learning", there is an almost universal expectation to perform according to a particular standard, that is, at a high level.

One study (Wigfield, Eccles, MacIver, Reuman, & Midgley, 1991) has examined the changes in interest, participation, and performance in sports and academics among school-age children transitioning from elementary to secondary school. The results indicated gender differences in interests and enjoyment in athletics and various academic subjects, as well as an overall tendency to withdraw from sports as competitiveness and demands to meet performance criteria increase with age. To our knowledge, no similar research has been conducted with students who have transitioned from high school to the college/university level.

The current project focused on the role of perceptions of competence and affect in motivation for academic and athletic/physical fitness activity. A comparison of high-frequency (in terms of hours per week) athletics/physical

fitness activity participants and low-frequency participants was made utilizing demographic variables, perceptions of competence in academic and physical fitness activity, and affective descriptors.

Methods

Research Design

As several factors undoubtedly contribute to an individual's decisions to engage in a designated activity, independent examination of specific variables is desirable in order to understand their unique contributions. To partially accomplish this, a measure of intrinsic motivation, including several of its components, and measures of affective self-descriptors were obtained from research participants.

Demographic variables and additional information regarding participation in physical activity were obtained through a questionnaire.

Sample Selection and Procedures

Participants were 154 students (68 males, 86 females) recruited from undergraduate psychology and physical education classes, and representing a broad spectrum of major fields, at Hastings College, a small private college in Hastings, Nebraska. All students approached about participating in the study agreed, except for one male, who declined due to his non-involvement in any form of physical activity or exercise. Following a brief presentation of the study, students were asked to complete a form consenting to participate in the study. After providing this consent, students completed a packet of research instruments, compiled in differing order, which included a demographic questionnaire and a brief questionnaire modeled after Vitulli and DePace's (1992) survey eliciting

manifest reasons for participating in sports or physical fitness activity, and three additional instruments, two assessing intrinsic motivation and its various components for physical activity and for academics, and the third instrument assessing general affect.

Instruments

Three instruments were used in the study. The first is the Intrinsic Motivation Inventory (IMI) developed by Ryan (1982) and intended to assess subjects' subjective experience related to experimental tasks. The IMI was selected as it has items specifically written for adaptability to various tasks while maintaining adequate validity and reliability. Modifications of it (e.g., Rutherford, Corbin, & Chase, 1982) have also been demonstrated to be valid and useful.

The IMI is a self-report questionnaire which taps six principal aspects of intrinsic motivation: interest-enjoyment, perceived competence, effort-importance, pressure-tension, choice, and value-usefulness. A seventh scale has recently been added; however, the validity has not yet been established. For this study, the first four subscales were utilized. The interest-enjoyment subscale refers to the amount of interest and enjoyment experienced by research participants when engaging in a particular behavior. Prior research has shown significant correlations between items from this scale and behavioral "free choice" measures (Ryan, 1982; Ryan et al., 1990). Perceived competence relates to feelings of efficacy associated with one's ability for the task. The effort-importance subscale refers to how much effort the individual feels s/he expends in the activity and the amount of importance personally given to it. The pressure-tension subscale measures the extent to which

the person experiences pressure or tension during the activity. Ratings from this subscale have been shown to be positively related to externally controlling environments (Ryan et al., 1983).

Factor analysis has indicated that the items of the IMI subscales are stable across a variety of tasks, conditions, and settings. The general inclusion of an item was a .6 loading on the appropriate subscale (Ryan, 1982; McAuley, Duncan, & Tammen, 1989). Because of the strong face validity of the items, they have often been modified to fit specific activities.

The first four subscales of the IMI contain from 5 to 7 statements. Respondents select from a 7-point Likert-type scale ranging from "strongly disagree" to "strongly agree". In the current study, the instructions were for participants to respond in relation to their favorite sport/physical activity.

The second instrument is the Positive Affect Negative Affect Scales (PANAS) developed by Watson, Clark, and Tellegen (1988). Positive and negative affect have been shown to be distinctive factors that can be meaningfully represented as orthogonal dimensions in factor analytic studies of affect, rather than opposite constructs, as the terms might suggest. Several mood scales have been created to measure these factors, but many are inadequate, show low reliability, or poor convergent or discriminate validity. The PANAS scales were designed to be easily administered while at the same time being highly internally consistent, largely uncorrelated, and stable over time.

The basic psychometric data were obtained on a large sample of college students, and no consistent gender differences were found. The alpha reliabilities

ranged from .86 to .90 for the Positive Affect (PA) scale, and from .84 to .87 for the Negative Affect (NA) scale.

The correlation between the NA and PA scales is remarkably low, ranging from -.12 to -.23, indicating a degree of independence between the two.

Test-retest reliability was determined by having subjects fill out the rating scales according to different time instructions (feelings right now, today, over the past five days, in the past few weeks, over the past year, and in general) on two different occasions. Results indicated that reliability tended to increase as rated time frame lengthened, ranging from .47 to .68 for the PA scales, and from .39 to .71 for the NA scales.

The PANAS scales are very highly correlated with their regression-based factor scores, with convergent correlations ranging from .89 to .95, and discriminant correlations from -.02 to -.18.

Factor analysis indicated that two dimensions (positive affect and negative affect) accounted for 87.4% to 96.1% of the variance. All the descriptors have strong primary loading, and secondary loadings are all acceptably low. This indicates that all of the PANAS items are good markers of their corresponding factors.

The PANAS scales, particularly with extended time frames have also been shown to correlate well with other well-known measures of affect, the Hopkins Symptom Checklist (HSCL; Derogatis, Lipman, Rickels, Ulenhugh, & Covi, 1974); the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961); and the State-Trait Anxiety Inventory State Anxiety Scale (A-

State; Spielberger, Gorusch, & Lushens, 1970).

In summary, the PANAS scales have demonstrated usefulness in studying qualitatively distinctive intraindividual mood fluctuations, to be internally consistent, to have excellent convergent and discriminative correlation with longer measures of underlying mood, and to exhibit trait-like stability when longer time-frame instructions are used.

The 20-item scale of PANAS contains 10 positive affect and 10 negative affect descriptors. Respondents select from a 5-point Likert-type scale ranging from "very slightly or not at all" to "extremely". In the current study, the time frame instructions were "in general".

The demographic questionnaire, for which there are no psychometric data, was utilized to identify characteristics of the research participants and compare high-frequency sports/physical activity participants' and low-frequency participants' responses based on these selected demographic variables. The questionnaire also requested participants to respond to a set of 5-point Likert-scale statements aimed at eliciting reasons for participating in physical activity, similar to that used by Vitulli and DePace (1992) and Ryan, Frederick, Leps, Rubio, and Sheldon (1996), and which supported the findings of Martindale, Devlin, and Vyse (1990). Vitulli and DePace (1992) solicited manifest reasons for jogging or not jogging among university students. High among the reasons for jogging included health, psychological well-being, convenience and economy. Reasons for not jogging included preference for some other exercise activities, boredom, discomfort, loneliness of jogging alone, and past injury. Ryan et al. (1996) tested the

hypothesis that intrinsic motives for physical activity facilitates long-term adherence, using their Motives for Physical Activity Measure. Based on prior findings (Frederick & Ryan, 1993), this scale assessed motivation in five dimensions: Attractiveness, Fitness; Competence; Enjoyment; and Social. Their results revealed that adherence was associated with motives focused on enjoyment, competence, and social interaction, but not with motives focused on fitness or appearance. Their results highlight the importance of intrinsic motivation for exercise adherence.

Relationship of Instruments to Research Hypotheses

Data obtained from responses to the IMI provide comparison of high-frequency sports/physical fitness activity participants' and low-frequency participants' intrinsic motivation for physical activity and academic activity in the areas of interest: interest-enjoyment, perceived competence, effort-importance, and pressure-tension. The results may provide valuable information about factors which contribute to adherence to physical fitness activity through the college years, as well as shed light on how the decision to continue or discontinue such activity is made. The research hypotheses are: (1) high-frequency sports/physical fitness activity participants will have significantly greater interest-enjoyment for physical activity than low-frequency participants; (2) high-frequency participants will have significantly greater perceptions of competence for physical activity than low-frequency participants; (3) high-frequency participants will report significantly greater effort-importance of physical activity than low-frequency participants; (4) high-frequency participants will report significantly less pressure-tension when

engaging in physical activity than will low-frequency participants; (5) high-frequency participants will report significantly greater interest-enjoyment for academic activities than low-frequency participants; (6) high-frequency participants will report significantly greater perceptions of competence for academics than low-frequency participants; (7) low-frequency participants will report placing significantly greater effort-importance of academic activities than high-frequency participants; and (8) low-frequency participants will report significantly greater pressure-tension when engaging in academic activities than high-frequency participants.

The PANAS scales provide data which enable us to ascertain differences in general affect between the two groups. It is hypothesized that high-frequency sports/physical activity participants will report significantly more positive affective descriptors and significantly fewer negative affective descriptors than low-frequency participants.

The demographic questionnaire solicits information related to type and frequency of current or past sports/physical fitness activity, along with responses to statements intended to elicit motives or reasons for engaging in sports. This instrument provides additional information about the characteristics of the two groups and generates data which can be used to develop additional studies of motivation.

Data Analysis

A total of 154 student participants completed the packet of assessments. For analysis purposes, the packets were divided by gender and ordered according to

hours per week spent in sports/physical activity, eliminating those students with less than a 2.5 grade point average (two students), to control for academic achievement. The responses of the upper 25 males and 25 females and the lower 25 males and 25 females in terms of frequency of physical activity were selected for analysis, leaving a final sample size of 100. This division was made to maximize the variability of the two groups.

Data were analyzed in various ways, according to complexity and type, and the particular question to be addressed. First, group means for the various items on the demographic questionnaire were computed and presented in table form. Second, the responses to the "Reasons for Participation" portion of the demographic questionnaire were analyzed to ascertain the role of gender or frequency of exercise in reasons for engaging in sports/exercise. Although the reasons for participating were not a primary focal question of the study and no hypotheses were generated, the information is relevant in terms of the question of motivation.

Next, the two Intrinsic Motivation Inventory instruments, one assessing intrinsic motivation for sports, the other for intrinsic motivation for academics, were analyzed, utilizing the mean of each subscale as the basis for comparison. The individual items were scored according to the Likert-scale numerical value indicated, with the exception of Items 3 and 4 of the Interest-Enjoyment subscale, Item 6 of the Competence subscale, Items 2 and 5 of the Effort-Importance subscale, and Items 1 and 3 of the Pressure-Tension subscale, which were scored in the reverse direction. Results are presented in table and figure form.

Finally, the PANAS scales were analyzed by comparing averages from each of the two subscales, Positive Affect and Negative Affect. Results are presented in table and figure form and subsequently discussed.

Correlations between each of the 10 dependent variables and the six items on the "Reasons for Participating" portion of the Demographic Questionnaire were calculated and presented in table form.

Results

Demographic Characteristics

The 100 Hastings College students in this study were all undergraduate students representing a variety of major fields. The average age was 20.3. Hastings College, located in Hastings, Nebraska, a town of about 24,000, is a private, church-based, predominately white population of about 1700 students. The respondents in this sample consisted of three African-Americans, one Asian, and one Native American student. As race was not surveyed directly, it is unknown whether any of these are among the 100 cases analyzed. Table 1 summarizes the demographic information pertaining to the student participants.

(Insert Table 1)

As the table indicates, the average ages of the four subgroups were nearly the same (range 18-27), and the groups tended to spend about the same amount of time in other activities (apart from school and sports), with the exception of the high-frequency-physical activity females, who tended to spend more time in other activities. The trend was for females to spend more time studying than males, and for males to spend approximately the same amount of time in sports/exercise as in

other activities.

Among the female participants, the high-frequency sports/exercise players were often involved in more than one level (varsity, intramural, etc.) and more than one type (team, individual), whereas for low-frequency females, the greater majority were involved in informal, individualized activity. The high-frequency males tended to be varsity athletes; the low-frequency males were more evenly divided among the levels. Most high-frequency males (23 of 25) also reported spending the same or more time in sports than before coming to college. Of the low-frequency males, about one-third reported spending less time in sports than they did prior to coming to college. This was true of about one-half of the low-frequency females. About two-thirds of the high-frequency females reported spending the same or more time in sports than before coming to college.

Reasons for Participation

The second portion of the demographic questionnaire, "Reasons for Participation", was based on the work of Vitulli and DePace (1992), and defined as Health/Appearance, Competence, Enjoyment, Self-Esteem, Stress Reduction, and Social Reasons. The purpose of including this was to ascertain the significance of any differences among reasons for participating in sports/exercise between the levels and the genders, and to see if any relationship existed between the reasons and the dependent variables. Results are presented in Table 2 .

(Insert Table 2)

As shown in the Table, ANCOVA revealed significant effects of frequency of physical activity participation for Health/Appearance, $F(1)=6.39$, $p=.002$, and

Competence, $F(1)=5.40$, $p=.02$, and significant gender effects for Health/Appearance, $F(1)=11.45$, $p=.001$, Competence, $F(1)=10.71$, $p=.001$, and Fun/Enjoyment, $F(1)=15.56$, $p=.000$, with females rating Health/Appearance and Self-Esteem as more important than did males, and which supported the findings of Battista (1990). Males gave more weight to Competence and Enjoyment as motives than did females.

Intrinsic Motivation Inventory

The two forms of the IMI were scored and analyses of variance utilizing frequency of sports/exercise as a covariant were conducted. This method was selected in order to treat frequency of sports as a continuous, as opposed to a discrete, variable, as the ranges of frequency of sports/exercise were unique for each gender. Table 3 presents the results of ANCOVA of the sports-related version of the IMI.

(Insert Table 3)

As can be seen, significant effects for frequency of sports participation were found for the Competence, $F(1)=5.04$, $p=.03$, Effort/Importance, $F(1)=22.71$, $p=.00$, and Pressure-Tension, $F(1)=4.77$, $p=.03$, subscales. Low-frequency sports/exercise participants report significantly greater feelings of competence for physical activity, which does not support the hypothesis. High-frequency participants reported putting less effort into and importance on sports than do low-frequency participants, regardless of gender. Males reported more interest and enjoyment and feelings of competence than did females. High-frequency participants of both genders reported less pressure-tension than did low-frequency

participants, with lowest levels being reported by high-frequency females. These relationships are further illustrated in Figures 1-4.

(Insert Fig.1-4)

Responses to the academics-related version of the IMI were analyzed in a similar fashion. ANCOVA revealed a significant gender effect for the Effort-Importance subscale, with females placing more effort-importance on academics. There were no other significant effects for remaining subscales, and therefore, none of the corresponding research hypotheses were supported.. These results are presented in Table 4 and Figures 5-8.

(Insert Table 4)

(Insert Fig. 5-8)

The results, although not significant, do however suggest a trend in the predicted direction in that high-frequency participants of both genders reported greater interest and enjoyment for academics than their low-frequency peers. Also non-significant but in the predicted direction are the responses to the Competence subscale, with high-frequency participants reporting greater feelings of competence for academics. It was predicted that low-frequency participants would report placing more effort-importance on academics than high-frequency participants, but this was true only for males. High-frequency female participants reported the highest degree of effort-importance for academics. This was true also for the Pressure/Tension subscale, with males responding in the predicted direction, but with high-frequency females reporting the greatest pressure/tension while engaging in academic activities.

Positive Affect Negative Affect Scales

Analyses of the PANAS scales revealed a significant effect of frequency for positive affect, although in the opposite direction than what was predicted, and a significant gender effect for negative affect. Results are presented in Table 5 and further illustrated in Figure 9-10.

(Insert Table 4)

(Insert Figure 9-10)

Low-frequency participants generally experience significantly more positive affect than their high-frequency counterparts, $F(1)=3.90$, $P=.05$, which was not anticipated, and males more than females, but the reporting of negative affect is not significantly different between the two levels, $F(1)=2.33$, $P=.13$. However, the trend is in the predicted direction, with high-frequency participants reporting experiencing less negative affect than low-frequency peers. In addition, females report significantly more negative affect than males.

Finally, partial correlations controlling for gender were calculated between the frequency level, reasons for participation, and each of the ten dependent variables. Results are presented in Table 6.

(Insert Table 6)

Perhaps the most noteworthy correlations are between sports- and academic-related Interest/Enjoyment, sports-related Interest/Enjoyment and academic-related Competence and Effort-Importance, academic- and sports-related Effort/Importance, academic-related Effort/Importance and sports-related Competence, and sports- and academic-related Effort/Importance. These results suggest some relationships between the sports and academic variables, but which

are not necessarily explained by differences in frequency of participation in sports/physical activity.

Discussion

Research on the role of physical fitness activity in psychological well-being is abundant, and many studies have examined the role of athletics/sports in school children in relation to academic performance and achievement. The popular notion, one which is generally although not totally supported by empirical research, is that physical fitness/participation in sports is essential to a healthy lifestyle and facilitates growth and achievement in other areas. The purpose of this study was to explore the relationship of frequency of participation in sports to elements of intrinsic motivation, both in physical and academic activities, of college students, and to overall affect as a measure of general well-being. More specifically, the study attempted to respond to the broader question, "Are college students who are highly involved in sports/physical activity more motivated for academic activities?" A large body of literature has supported the notion that individuals persist in activities in which they perceive themselves as competent. Perception of competence is therefore one of the more salient elements of intrinsic motivation, along with the opportunity to demonstrate that competence. At the college level, both athletic and academic achievements provide those opportunities.

The hypotheses of the current study predicted that individuals (students) who were involved in sports/physical fitness activity at a relatively high level would report greater interest/enjoyment, perceptions of competence, effort and importance, and less pressure-tension, not only for sports activities, but also for academic activities, than would their peers who spent relatively less time in

physical activity. Also, it was hypothesized that the more frequent sports participants would experience and report more positive affect and less negative affect than would their low-frequency counterparts. Affect has also been demonstrated to be an important element in motivation and persistence, and therefore is important to consider in studies of motivation.

In general, the results failed to support the majority of the hypotheses, with the exception of the ones addressing sports-related Competence, Effort-Importance, and Pressure-Tension, and Positive Affect. Significant gender effects were found for several of the variables, but there were no significant interactions for any of the variables. Non-significant results did suggest a trend in the predicted direction, however, for several of the dependent variables, and further investigation with improved methodology and a more heterogeneous student population is merited.

The demographic questionnaire indicated that students who responded to the assessment instruments tended to be involved in a wide variety of activities. Females tended to spend more time studying than males, while at the same time spending as much or more time in extracurricular activities. Research participants, particularly the more frequent sports players, tended to be involved in more than one level of physical activity, e.g., varsity players also spent time in informal, individual physical activity, apart from their varsity sport. This was also true, to a lesser extent, of non-varsity participants. High-frequency participants were typically more involved in team sports, whereas low-frequency participants clustered more in the individual areas, such as jogging, aerobics, and weightlifting. High-frequency participants tended to be involved at or above their

frequency before coming to college, while about one-third to one-half of the low-frequency participants reported being less involved than they were before coming to college. The significance of this change is open for investigation, as "giving up" or decreasing the frequency of previously enjoyed and valued activities may have an impact on motivation and persistence in less desirable or more stressful activities, and/or may affect adjustment or overall sense of well-being.

Manifest motives for participation in sports/physical activities was an important consideration in order to ascertain any relationship between the type of motive and the degree of intrinsic motivation. Six manifest motives, derived from the work of Vitulli and DePace (1992) and Frederick and Ryan (1993) were explored, including Health/Appearance, Competence, Enjoyment, Self-Esteem, Stress Relief, and Social Reasons. High-frequency participants endorsed Health/Appearance and Competence as significantly more true of them than did their low-frequency peers. Males endorsed Competence and Enjoyment significantly more than did females, regardless of level. Although the differences were not significant, slightly more high-frequency females rated Self-Esteem and Stress Relief as important motives than did low-frequency females. Ratings between the male groups were equal for Self-Esteem (and slightly lower than the females) and nearly equal for Stress Relief, with low-frequency males rating it slightly higher. Somewhat surprisingly, males and females of both levels tended to be neutral about or reject Social Reasons as a motive. The highest rating was given by low-frequency males. This is somewhat in contrast to the findings of Martindale, Devlin, and Vyse (1990), who found that varsity athletes considered Social Reasons a significant part of engaging in their sport, probably due to the emphasis on team efforts. Other

motives offered included enjoying competition, and financial reasons (scholarships).

Measures of intrinsic motivation for sports/physical activity revealed that males reported enjoying physical activity more than females, although both genders rated interest/enjoyment relatively high. Low-frequency males reported interest/enjoyment more than any of the other groups, a trend in the opposite direction of what was predicted. The lowest level of interest/enjoyment was among high-frequency females, again in the opposite direction.. Low-frequency males also reported the greater feelings of competence in regard to physical activity. The group reporting the least perceptions of competence were the high-frequency females, although the average rating fell in the "somewhat agree" range. Therefore, although these results tended to lie oppositionally to the predicted direction, the general trend for all groups was "positive". For the Effort/Importance variable, low-frequency males followed by low-frequency females reported more emphasis than did the high-frequency groups. Again, high-frequency females were the lowest-reporting group, with averages falling between the "neutral" and "somewhat agree" ranges. Low-frequency males rated Effort/Importance of sports well into the "agree" range. Interestingly, in light of the previous results, the low-frequency groups of both genders also reported the greatest feelings of Pressure/Tension when participating in sports, even though the ranges were lower than "neutral". High-frequency females were the group reporting the least Pressure/Tension in physical activity.

On the academics-related version of the IMI, high-frequency groups reported greater interest-enjoyment than low-frequency groups, which was in the predicted

direction, although the differences were not significant. High-frequency females had the highest reported Interest/Enjoyment for academics, in the "somewhat agree" range. Low-frequency males had the lowest reported Interest/Enjoyment for academics, averaging in the "neutral" range. High-frequency participants also reported the greater perceptions of competence in academics, which was again in the predicted direction, although not significant. High-frequency females had the highest reported ratings, and low-frequency males had the lowest, with all groups falling in the "neutral" or above ranges. High-frequency females placed the greatest effort and importance on academics, slightly more than that placed by this group on sports/physical activity, and in the direction predicted.. In contrast, high-frequency males placed the least Effort/Importance of the four groups on academics, and notably less than that placed on sports. High-frequency males were generally "neutral" about the Effort/Importance placed on academics. High-frequency females also reported more Pressure/Tension in regard to academics than did low-frequency females or males. Although frequency of physical activity does not appear to be a significant factor in most elements of intrinsic motivation for either sports or academics, some relationship between the variables is suggested, with Effort/Importance being somewhat correlated with Pressure/Tension. That is, in areas considered more important, pressure/tension is also somewhat greater.

Positive Affect tended to show the strongest relationship with frequency of physical activity. Differences were significant between the levels and between the genders. Both male groups reported a higher average rating of positive affect than

the female groups, but low-frequency participants of both genders reported slightly higher levels of positive affect, which was not in the predicted direction.

Negative Affect was highest in the low-frequency groups of both genders, which was in the predicted direction, even though the differences among the groups were rather small, and in general, females endorsed more negative affective descriptors than did males.

Correlations tended to support the aforementioned relationships. In general, students who are interested in and enjoy sports, perceive themselves as competent, view physical activity as important and worthy of effort, and experience a relative amount of pressure/tension also possess these same qualities in relation to academics. The relationship may not be reciprocal, however; that is, individuals high in the academic areas tend also to be high in sports, but individuals high in the sports areas are not necessarily so in academic endeavors. The hypotheses that individuals who participate more frequently in sports would be more intrinsically motivated in academics were not supported. Likely, there is some other factor or factors which more accurately reflect the components of intrinsic motivation.

Methodological Limitations

Two features of the student sample pose potential problems of validity and generalizability. The first is that the students of Hastings College are a fairly homogeneous group of students, in terms of race, socioeconomic status, religious background, general interests, etc., and therefore, not representative of the general college student population. The division of the total sample into the upper and lower thirds represents an effort to maximize the variance between the groups, and is a potential improvement over the method utilized by Adame et al. (1990), as in

that study there was minimal difference between high- and low-frequency exercisers, and the low-frequency group included some non-exercisers.

A second issue is that the probability that students responded in a "socially desirable" direction is relatively high. Participants were recruited personally in a classroom setting, and there may have been some element of peer pressure urging some students to agree to participate who might not otherwise have volunteered, or agreed.

The study was broad and exploratory in nature, in an attempt to detect relationships among several elements of intrinsic motivation and participation in athletics/physical fitness activity, and their relationship to academic motivation. As many factors enter into motivation, variables not examined in this study may be of greater significance to the question. Also, a more rigorous statistical analysis may shed more light on the nature and strength of these relationships.

In general, females appear to benefit most from a higher level of involvement in sports/physical activity. This may be due in part to differences in the manifest reasons for participating in such activity. Females are more likely to engage in sports for health and other intrapersonal reasons, whereas males prefer competition and the opportunity to demonstrate competence. For these reasons, females may be more likely to persist in such activities throughout the lifespan than are males. If the more extrinsic rewards of active sports participation are withdrawn after leaving college, (e.g., financial assistance, personal recognition, competition), males, who tended to be more heavily involved in varsity athletics as opposed to individual/informal fitness activities, will no longer receive these benefits and thus

motivation for participation may decrease.

Implications for Clinical Application

The information derived from this and similar studies will increase understanding of the role of physical fitness activity for college/university students' adjustment to, persistence in, achievement, and overall satisfaction with their college experience. Physical activity such as sports and exercise impacts both intra- and interpersonal factors, and greater understanding of its role will assist university personnel in helping students in distress. Such information may also serve a broader social function of eliminating myths and misunderstandings surrounding individuals who spend time in sports and physical fitness. More specifically, the clinician can use the information that regular physical activity is part of a healthy lifestyle, provides opportunities to enhance self-esteem by demonstrating competence, and provides relief from stress, to encourage student clients to reassess their values, priorities, and sense of balance in their lives, as well as the overall effectiveness of their current behaviors.

Implications for Research

As individuals tend to persist in activities in which they feel competent, and as athletics and academics provide opportunities for college students to demonstrate competence, further examination of the relationship of physical fitness to academic motivation, persistence, and achievement are merited. Additional studies might focus on different levels of physical activity participation, including students recruited for their athletic abilities, recreational athletes, sports dropouts, and non-exercisers. Another important area is the potential for physical activity as a stress-reliever for distressed students, potential enhancement of social skills and

interpersonal interactions, and ways to encourage students to make and/or continue healthy choices and lifestyles.

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APPENDICES

Table 1

Demographic Characteristics of Students

	FREQUENCY OF PHYSICAL ACTIVITY			
	HIGH*	LOW**	HIGH***	LOW****
n	25	25	25	25
MEAN AGE	20.64	20.68	20.04	20.12
MEAN HOURS/WEEK SPENT IN STUDY	19.16	17.80	10.85	11.10
MEAN HOURS/WEEK SPENT IN OTHER ACTIVITY	27.00	19.86	19.20	20.40
LEVEL OF SPORT ACTIVITY				
VARSITY	14.00	1.00	24.00	8.00
INTRAMURAL	3.00	0.00	6.00	8.00
COMMUNITY	5.00	2.00	1.00	2.00
INFORMAL/INDIVIDUAL	13.00	24.00	2.00	16.00
TYPE OF SPORT ACTIVITY				
TEAM	19.00	3.00	25.00	14.00
INDIVIDUAL	15.00	25.00	3.00	18.00
CHANGE IN FEQUENCY FROM PRE-COLLEGE LEVEL				
MORE	8.00	7.00	18.00	8.00
LESS	7.00	12.00	2.00	9.00
SAME	10.00	6.00	5.00	8.00

- * => OR = 10 HOURS PER WEEK
- ** => OR = 5 HOURS PER WEEK
- *** => OR = 15 HOURS PER WEEK
- **** => OR = 10 HOURS PER WEEK

Table 2

Analysis of Covariance for Reasons for Participation

REASON	SOURCE OF VARIATION	df	F	SIGNIFICANCE OF F
HEALTH/APPEARANCE	FREQUENCY	1	9.92	.002*
	GENDER	1	11.45	.001*
COMPETENCE	FREQUENCY	1	5.40	.022*
	GENDER	1	10.70	.001*
ENJOYMENT	FREQUENCY	1	.50	.48
	GENDER	1	15.56	.000*
SELF-ESTEEM	FREQUENCY	1	1.70	.20
	GENDER	1	.39	.53
STRESS REDUCTION	FREQUENCY	1	2.35	.13
	GENDER	1	2.35	.13
SOCIAL REASONS	FREQUENCY	1	1.26	.26
	GENDER	1	1.26	.26

* SIGNIFICANT AT THE .05 LEVEL

Table 3

Analysis of Covariance for the Intrinsic Motivation Inventory - Sports version

SUBSCALE	SOURCE OF VARIATION	df	F	SIGNIFICANCE OF F
INTEREST/ENJOYMENT	FREQUENCY	1	2.49	.12
	GENDER	1	8.13	.01*
COMPETENCE	FREQUENCY	1	5.04	.03*
	GENDER	1	3.86	.05*
EFFORT/IMPORTANCE	FREQUENCY	1	22.71	.00*
	GENDER	1	1.15	.29
PRESSURE/TENSION	FREQUENCY	1	4.77	.03*
	GENDER	1	1.13	.29

* SIGNIFICANT AT THE .05 LEVEL

Table 4

Analysis of Covariance for the Intrinsic Motivation Inventory - Academics

SUBSCALE	SOURCE OF VARIATION	df	F	SIGNIFICANCE OF F
INTEREST/ENJOYMENT	FREQUENCY	1	1.73	.19
	GENDER	1	.69	.48
COMPETENCE	FREQUENCY	1	2.01	.16
	GENDER	1	.02	.90
EFFORT/IMPORTANCE	FREQUENCY	1	.03	.86
	GENDER	1	4.70	.03*
PRESSURE/TENSION	FREQUENCY	1	.03	.87
	GENDER	1	.13	.13

* SIGNIFICANT AT THE .05 LEVEL

Table 5

Analysis of Covariance for the Positive Affect Negative Affect Scales

SUBSCALE	SOURCE OF VARIATION	df	F	SIGNIFICANCE OF F
POSITIVE AFFECT	FREQUENCY	1	3.90	.05*
	GENDER	1	2.38	.13*
NEGATIVE AFFECT	FREQUENCY	1	4.06	.13
	GENDER	1	2.47	.05*

* SIGNIFICANT AT THE .05 LEVEL

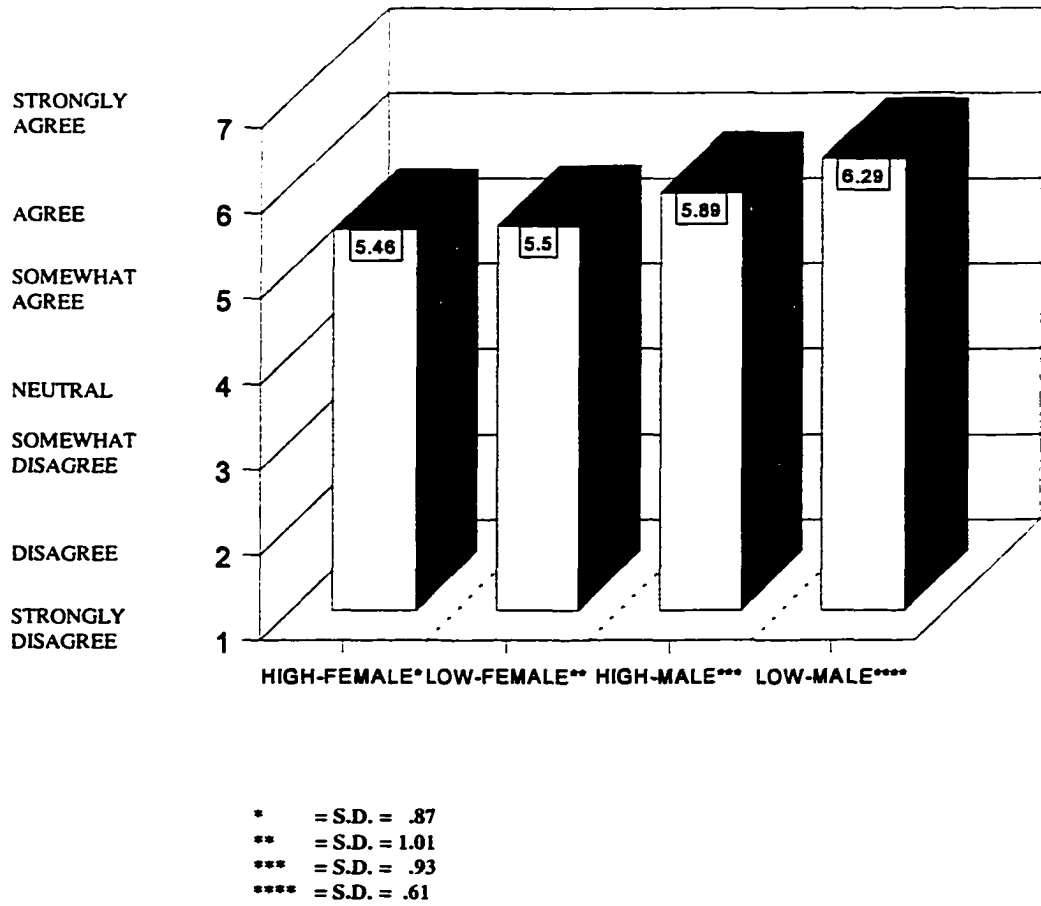
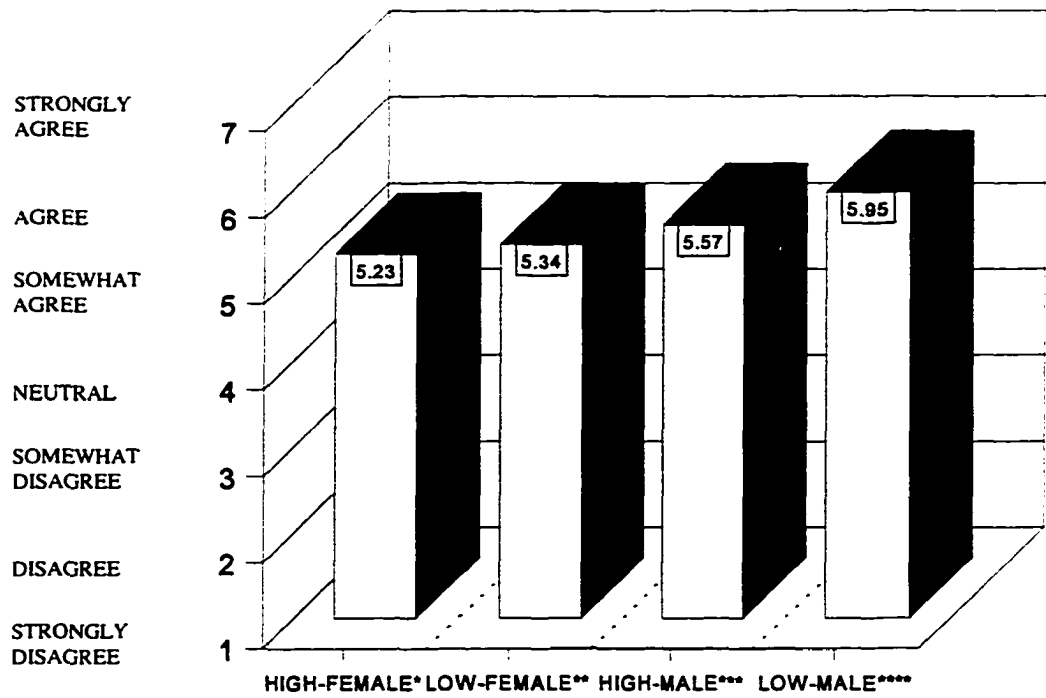


Figure 1 Comparison of mean subscale responses by frequency-gender group to the Interest/Enjoyment subscale of the Intrinsic Motivation Inventory (sports version). Higher scores indicate greater tendency toward factor measured by the subscale.



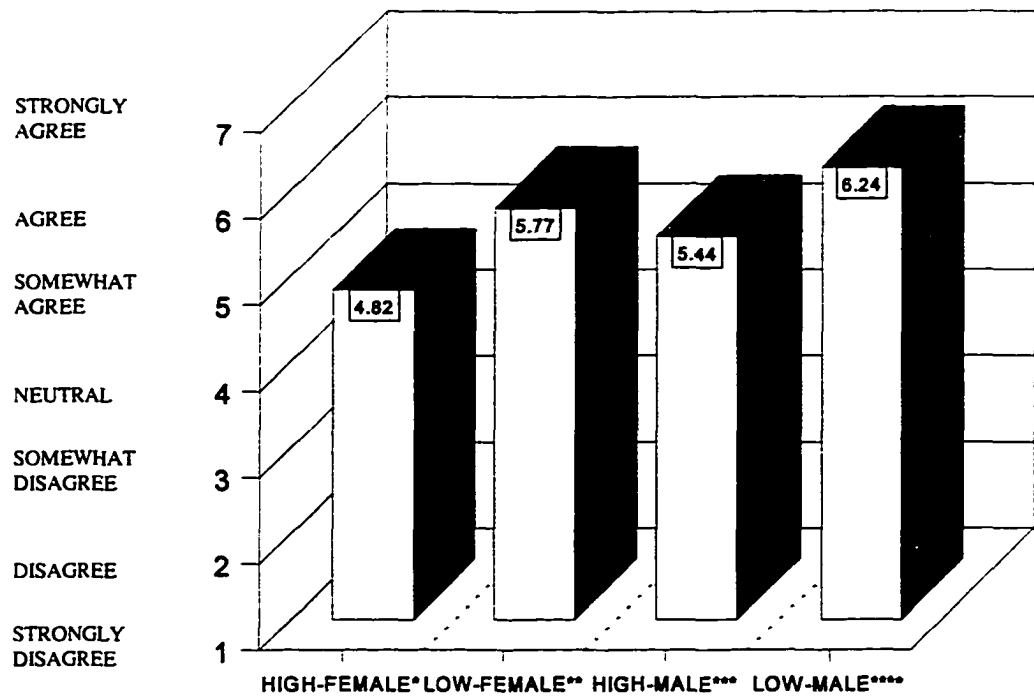
* = S.D. = .74

** = S.D. = 1.06

*** = S.D. = .88

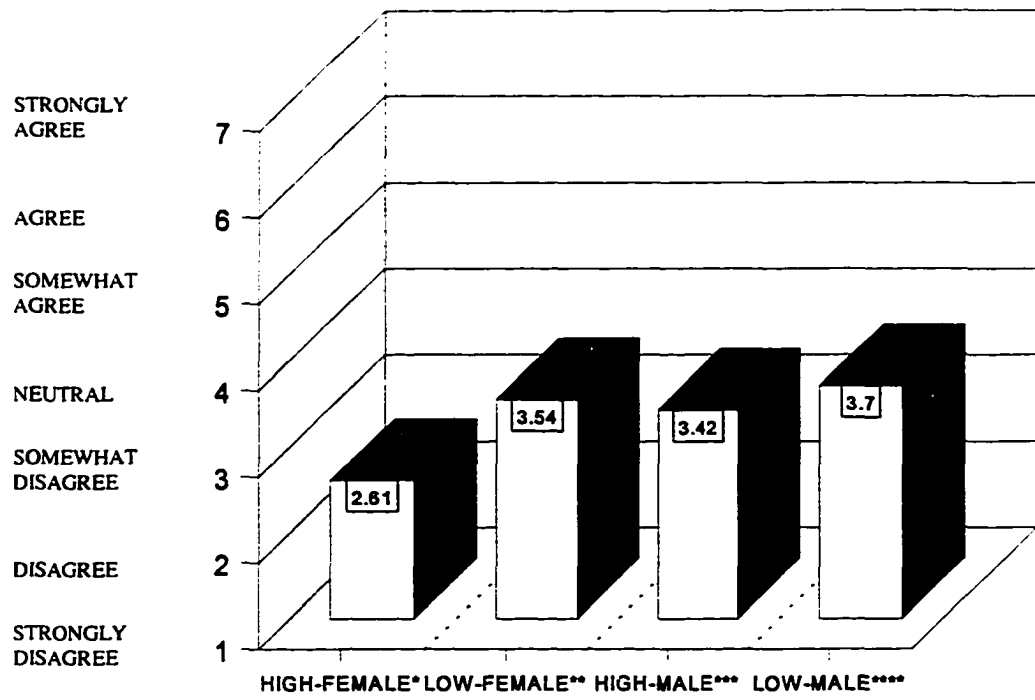
**** = S.D. = .68

Figure 2 Comparison of mean subscale responses by frequency-gender group to the Competence subscale of the Intrinsic Motivation Inventory (sports version). Higher scores indicate greater tendency toward factor measured by the subscale.



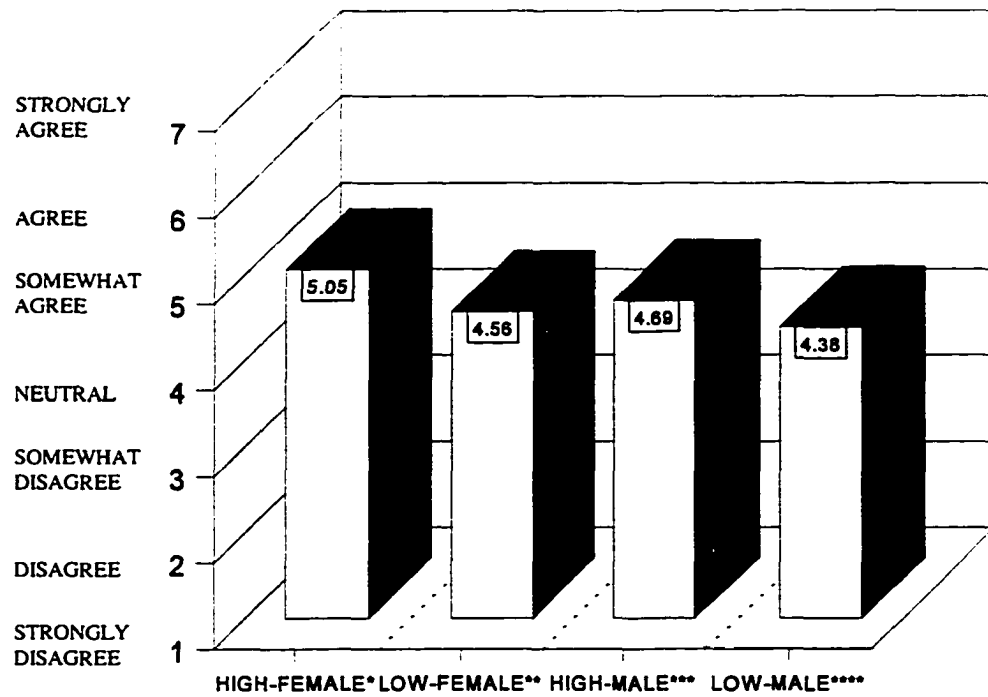
* = S.D. = 1.17
 ** = S.D. = .94
 *** = S.D. = 1.15
 **** = S.D. = .83

Figure 3 Comparison of mean subscale responses by frequency-gender group to the Effort/Importance subscale of the Intrinsic Motivation Inventory (sports version). Higher scores indicate greater tendency toward factor measured by the subscale.



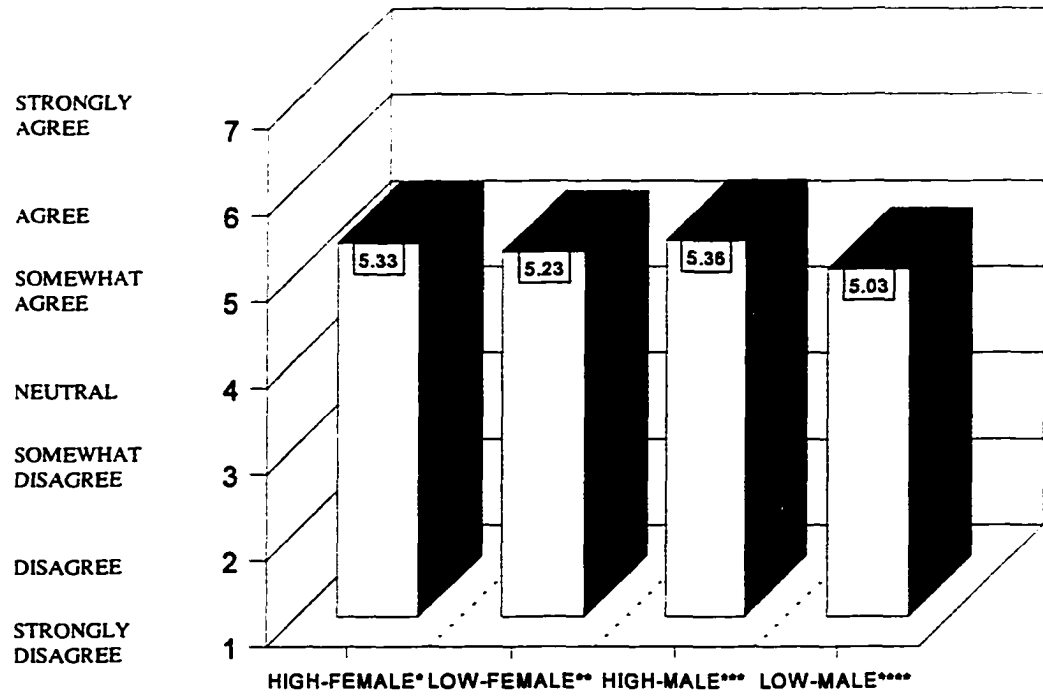
* = S.D. = .79
 ** = S.D. = 1.54
 *** = S.D. = 1.33
 **** = S.D. = 1.39

Figure 4 Comparison of mean subscale responses by frequency-gender group to the Pressure/Tension subscale of the Intrinsic Motivation Inventory (sports version). Higher scores indicate greater tendency toward factor measured by the subscale.



* = S.D. = .78
 ** = S.D. = 1.26
 *** = S.D. = 1.12
 **** = S.D. = .85

Figure 5 Comparison of mean subscale responses by frequency-gender group to the Interest/Enjoyment subscale of the Intrinsic Motivation Inventory (academics version). Higher scores indicate greater tendency toward factor measured by the subscale.



* = S.D. = .64
 ** = S.D. = 1.10
 *** = S.D. = .89
 **** = S.D. = 1.32

Figure 6 Comparison of mean subscale responses by frequency-gender group to the Competence subscale of the Intrinsic Motivation Inventory (academics version). Higher scores indicate greater tendency toward factor measured by the subscale.

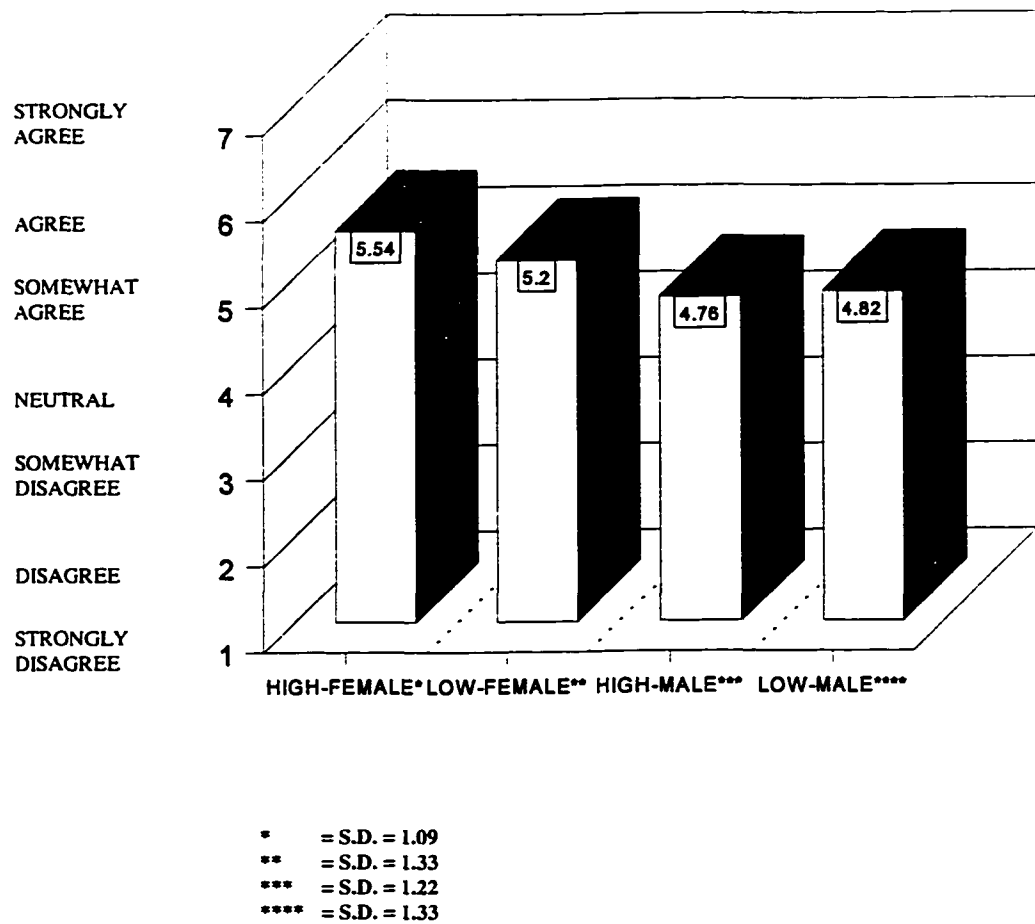


Figure 7 Comparison of mean subscale responses by frequency-gender group to the Effort/Importance subscale of the Intrinsic Motivation Inventory (academics version). Higher scores indicate greater tendency toward factor measured by the subscale.

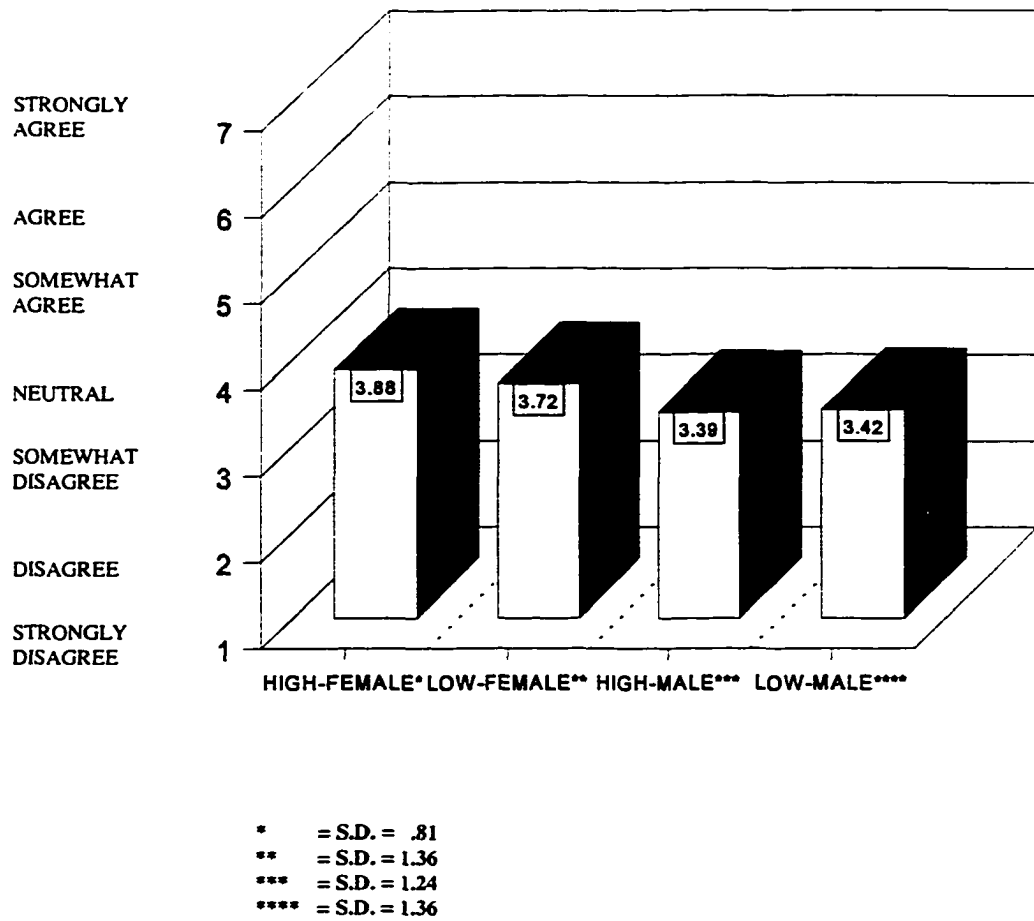
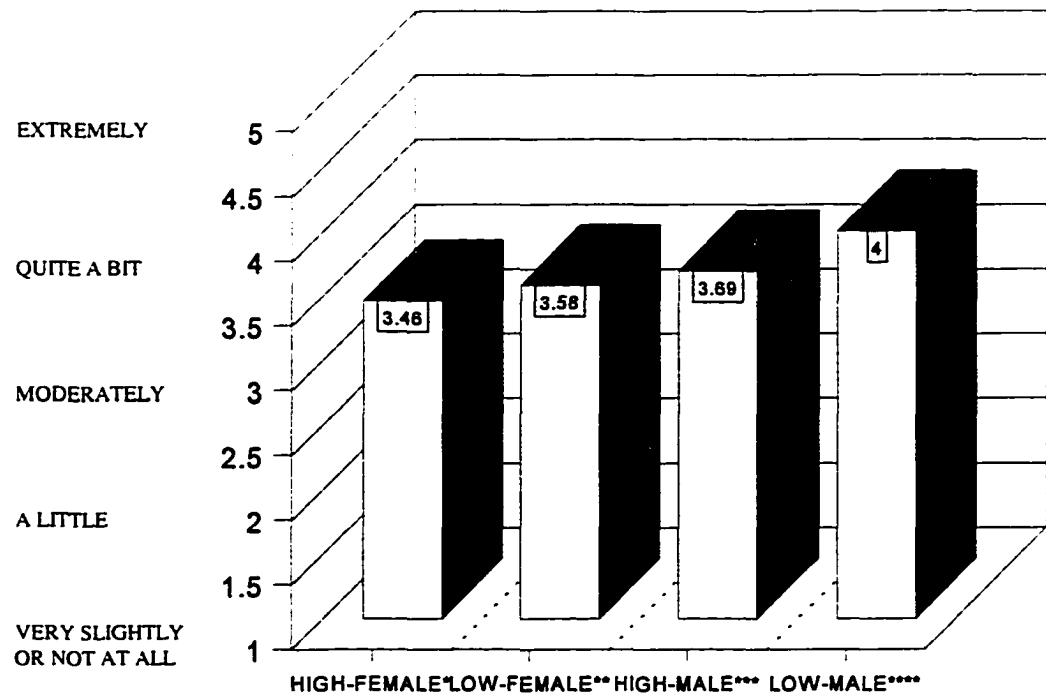


Figure 8 Comparison of mean subscale responses by frequency-gender group to the Pressure/Tension subscale of the Intrinsic Motivation Inventory (academics version). Higher scores indicate greater tendency toward factor measured by the subscale.



* = S.D. = .54
 ** = S.D. = .70
 *** = S.D. = .61
 **** = S.D. = .56

Figure 9 Comparison of mean subscale responses by frequency-gender group for the Positive Affect subscale of the Positive Affect Negative Affect Scales. Higher scores indicate stronger endorsement of positive affective descriptors.

INTRINSIC MOTIVATION INVENTORY

Sport/Physical Fitness

For each of the following statements, please circle the number that best indicates how strongly you agree or disagree with the sentence, as it relates to your involvement in the physical fitness or sport activity in which you most frequently engage, using the following scale as a guide:

1	2	3	4	5	6	7
strongly disagree	disagree	somewhat disagree	neutral	somewhat agree	agree	strongly agree

Interest-Enjoyment

I enjoy doing this activity very much.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

This activity is fun to do.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

I think this is a boring activity.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

This activity does not hold my attention at all.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

I would describe this activity as very interesting.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

I think this activity is quite enjoyable.

1 2 3 4 5 6 7

While I do this activity, I think about how much I enjoy it.

1 2 3 4 5 6 7

Competence

I think I am pretty good at this activity.

1 2 3 4 5 6 7

I think I do pretty well at this activity, compared to other students.

1 2 3 4 5 6 7

The more I do this activity, the more competent I feel.

1 2 3 4 5 6 7

I am satisfied with my performance at this activity.

1 2 3 4 5 6 7

I am pretty skilled at this activity.

1 2 3 4 5 6 7

This is an activity that I cannot do very well.

1 2 3 4 5 6 7

Effort-Importance

I put a lot of effort into this activity.

1 2 3 4 5 6 7

I don't try very hard to do well at this activity.

1 2 3 4 5 6 7

I try very hard in this activity.

1 2 3 4 5 6 7

It is important to me to do well at this activity.

1 2 3 4 5 6 7

I don't put much energy into this activity.

1 2 3 4 5 6 7

Pressure-Tension

I do not feel nervous at all while doing this activity.

1 2 3 4 5 6 7

I feel very tense while doing this activity.

1 2 3 4 5 6 7

I am very relaxed in doing this activity.

1 2 3 4 5 6 7

I am anxious when engaging in this activity.

1 2 3 4 5 6 7

I feel pressured when doing this activity.

1 2 3 4 5 6 7

INTRINSIC MOTIVATION INVENTORY

Academics

For each of the following statements, please circle the number that best indicates how strongly you agree or disagree with the sentence, as it relates to your involvement in academic activities (e.g., attending class, studying, preparing assignments), using the following scale as a guide:

1	2	3	4	5	6	7
strongly disagree	disagree	somewhat disagree	neutral	somewhat agree	agree	strongly agree

Interest-Enjoyment

I enjoy academics very much.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Academic activity is fun to do.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

I think academics are boring.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Academics does not hold my attention at all.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

I would describe academics as very interesting.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

I think academics are quite enjoyable.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

While I am doing academic activity, I think about how much I enjoy it.

1 2 3 4 5 6 7

Competence

I think I am pretty good in academics.

1 2 3 4 5 6 7

I think I do pretty well in academics, compared to other students.

1 2 3 4 5 6 7

The more I work at academics, the more competent I feel.

1 2 3 4 5 6 7

I am satisfied with my academic performance.

1 2 3 4 5 6 7

I am pretty skilled academically.

1 2 3 4 5 6 7

Academics are an activity I cannot do very well.

1 2 3 4 5 6 7

Effort-Importance

I put a lot of effort into academics.

1 2 3 4 5 6 7

I don't try very hard to do well academically.

1 2 3 4 5 6 7

I try very hard in academics.

1 2 3 4 5 6 7

It is important to me to do well academically.

1 2 3 4 5 6 7

I don't put much energy into academics

1 2 3 4 5 6 7

Pressure-Tension

I do not feel nervous at all while engaged in academic activities.

1 2 3 4 5 6 7

I feel very tense while engaging in academic activities.

1 2 3 4 5 6 7

I am very relaxed while doing academic activities.

1 2 3 4 5 6 7

I am anxious while working on academics.

1 2 3 4 5 6 7

I feel pressured while doing academic activities.

1 2 3 4 5 6 7

THE PANAS

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you generally feel this way; that is, how you feel on the average, using the following scale as a guide.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

_____ interested	_____ irritable
_____ distressed	_____ alert
_____ excited	_____ ashamed
_____ upset	_____ inspired
_____ strong	_____ nervous
_____ guilty	_____ determined
_____ scared	_____ attentive
_____ hostile	_____ jittery
_____ enthusiastic	_____ active
_____ proud	_____ afraid

DEMOGRAPHIC QUESTIONNAIRE

Age: _____

Gender: _____

Health: Excellent _____ Good _____ Fair _____

Classification: Freshman _____ Sophomore _____ Junior _____ Senior _____

Major field: _____

How many hours per week do you spend studying? _____

What is your cumulative GPA? 3.5-4.0 _____; 3.0-3.49 _____; 2.5-2.99 _____; < 2.5 _____

Please list other extracurricular activities in which you are involved, and average hours per week you spend in them (e.g., fraternity/sorority, employment, volunteer work, clubs and organizations).

Please check the appropriate blanks as they pertain to the sport/physical fitness activity in which you engage most frequently.

_____ Varsity

_____ Intramural

_____ Community

_____ Individual

Type of activity:

_____ Team (Please specify what type, e.g., basketball): _____

_____ Individual (Please specify what type, e.g., aerobics): _____

Hours per week you spend in this activity: _____

Is this more, less, or about the same amount as before coming to college? _____

REASONS FOR SPORTS PARTICIPATION

This scale consists of a number of statements that relate to the reasons why people may choose to engage in a sport or physical fitness activity. Read each item and then mark the appropriate answer in the space next to that statement. Respond in relation to the sport or physical activity in which you most frequently engage, using the following scale as your guide.

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

I engage in this activity:

_____ In order to improve my health and/or appearance.

_____ Because I can do it well.

_____ Because it is highly enjoyable to me.

_____ Because it helps me to feel good about myself.

_____ Because it relieves my stress.

_____ Because most of my friends are also involved in it.

Other reasons:

INFORMED CONSENT

Consent to participate in research under the
auspices of the University of Oklahoma

INTRODUCTION:

This is a study intended to examine the relationship between participation in sports and physical fitness activity and intrinsic motivation for physical activity and academics, and affect in college/university students with average or better academic success. Two groups will be compared: high-frequency and low-frequency physical activity participants. The study is being conducted by Debbie Burchfield, doctoral student, of the University of Oklahoma.

You will be asked to complete four different assessment instruments, two measures of intrinsic motivation, one measure of general affect, and a questionnaire about your personal involvement in and reasons for participating in sports or physical fitness activity. There are no right or wrong answers on any of the assessment forms. The entire process should take no more than about twenty to thirty minutes to complete.

Your assessment packet will contain a number, used to identify each assessment form as belonging to the same person. You will not be asked to write your name on any of the questionnaires. The records will be kept in a file cabinet in my home and will be inaccessible to other parties.

When the study is completed and the data analyzed, you will be entitled to know the results of the study, if you wish.

Your participation in the project is voluntary, and you are free to withdraw at any time without negative consequences. Any questions or concerns may be directed to Debbie Burchfield, P.O. Box 579, Hastings, NE 68902.

If you agree to participate in this study, please sign as indicated below. Thank you very much for your willingness to be a part of this project.

NAME: _____ DATE: _____