

THE RELATIONSHIP BETWEEN ATTITUDES TOWARD PHYSICAL ACTIVITY
AND HEALTH-RELATED PHYSICAL FITNESS AND PHYSICAL ACTIVITY

THESIS

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CHAPTER I

INTRODUCTION TO THE STUDY

Physical inactivity (U.S. Department of Health & Human Services, 1996), low levels of physical fitness (U.S. Department of Health & Human Services, 1996) and obesity (Pi-Sunyer, 1991) increase the risk of such chronic ailments as coronary heart disease, hypertension, diabetes mellitus, gallbladder disease, osteoarthritis, and cancer. Recent reports on adults' levels of physical activity and fitness indicate that: 1) 60 % are sedentary; 2) only 27.7% are physically active at the recommended levels (i.e., perform bouts of physical activity at least 10 minutes in duration 5 or more times per week or perform bouts of exercise of at least 20 minutes in duration 3 or more times per week at an intensity equal to or greater than 50% of their age and gender specific maximum cardiorespiratory capacity) (U.S. Department of Health and Human Services, 1996); and 3) 33% of males and 36% of females are overweight (i.e. BMI was greater than or equal to 27.8 for men and 27.3 for women) (Centers for Disease Control and Prevention, 1997).

Since the early 1980s, the prevalence of obesity has escalated while levels of physical activity and fitness have declined in adults. Evidence suggests that many obese, sedentary, and/or physically unfit adults were obese, inactive,

and/or unfit as children and/or adolescents (Guo, Roche, Chumlea, Gardner, & Siervogel, 1994; Serdula, Ivery, Coates, Freeman, Williamson, Byers, 1993). Nieto, Szklo, & Comstock (1992) showed that overweight youth and especially overweight adolescents are at increased risk of entering adulthood as overweight adults and becoming overweight adults. Based on such evidence, preventive measures of chronic conditions related to lifestyle need to be implemented well before an individual enters adulthood.

Reports on children's and adolescents' level of physical activity and fitness indicate that: 1) 20% of children and adolescents are obese (Dietz, 1998); 2) children and adolescents are becoming increasingly overweight (Troiano & Flegal, 1998); 3) only approximately 64% of high school students participate in vigorous physical activity (Centers for Disease Control and Prevention, 1998); and 4) participation in vigorous physical activity decreases with both grade and age (Centers for Disease Control and Prevention, 1998). Reported reasons for low levels of physical fitness, low levels of physical activity, and poor body composition among children and adolescents include but are not limited to: 1) an increase in dietary energy consumption (Federation of American Societies for Experimental Biology, 1995); 2) a reduction in enrollment in physical education courses (Heath, Pratt, Warren, & Kann, 1994), 3) a reduction in child safety at play grounds and parks (Gutin & Manos, 1993); and/or 4) an increase in television viewing (Dietz & Gortmaker, 1985; Gutin & Manos, 1993; Heath et al., 1994).

Studies are discordant on the impact that attitude toward physical activity and health has on physical activity and health-related physical fitness. Some studies suggest that attitudes toward physical activity are not a factor in physical fitness. Sherrill, Holguin, & Caywood (1989) concluded that there is no association between a student's attitude toward physical education and his/her level of physical fitness. Using motor skill-related fitness, Smoll, Schutz, & Keeney (1976) observed that the level of a student's motor ability was unrelated to his/her attitude toward physical activity. Other studies have reported a positive relationship between health-related fitness and children's (Bocket, 1993) and early adolescents' (Birtwistle & Brodie, 1991) attitudes toward physical activity. Additionally, Bocket (1994) found that students who scored on the Health and Fitness subdomain of the revised Children's Attitudes Toward Physical Activity as both valuable and enjoyable were more likely to achieve criterion referenced standards (CRS) of the Connecticut Physical Fitness Assessment for the 1-mile run/walk test. Students who scored more positively in the Social Growth subdomain of the CATPA were more likely to achieve CRS for modified sit-ups. Moreover, in examining the relationship between children's attitude toward health-related physical fitness and aerobic endurance, Heale & Wearing (1983) reported that there is a difference between high and low cardiorespiratory fitness groups and physical activity attitudes in grades 6-8 students.

Research in the area of attitudes toward physical activity and its relationship to physical activity is limited. There is a crucial need for further research to clearly identify the relationship between attitudes toward physical

activity and measures of physical activity and fitness and to determine whether positive attitude toward physical activity impacts levels of physical activity and physical fitness. Smoll et al., (1976) observed a significant relationship ($p < .05$) between an older version of the CATPA and degree of primary involvement in physical activities and suggested that children are primarily involved in those activities for which they hold the most positive attitudes. This relationship between children's attitudes toward physical activity and physical activity levels is consistent with the popular view that participation in physical activity is associated with positive attitudes (Smoll et al., 1976). Additionally, in a pilot study, (Ferguson, Yesalis, Pomrehn, & Kirkpatrick, 1989) researchers found that students who had positive attitudes toward physical activity were more likely to say they intended to exercise in the future.

According to the Health Belief Model, perceptions about the benefits of a behavior as well as the risks associated with not engaging in a behavior impact engagement in that particular behavior (Janz & Becker, 1984). A relationship between attitudes toward physical activity and measures of physical activity and fitness may indicate that physical education classes that provide pleasant experiences in physical activity and explain specific benefits of exercise may enhance students' attitudes toward physical activity (Ferguson et al., 1989). Students in such a positive environment may develop positive beliefs about and attitudes toward physical activity and will be more inclined to develop lifelong exercise and wellness habits (Ferguson et al., 1989).

Previous research suggests that lifestyle behaviors of obese, unfit, and inactive adults are partially formed during childhood and adolescence (Guo, Rocke, Chumlea, Gardner, & Siervogel, 1994; Pi-Sunyer, 1991; Serdula, Ivery, Coates, Freeman, Williamson, & Byers, 1993). Research is discordant in the area of childhood activity levels predicting adult activity levels. However, few studies may suggest that children who exercise regularly have a greater chance of continuing their exercise habits through adulthood (Sallis & McKenzie, 1991). Consequently, promotion of health, fitness, and wellness for prevention of chronic illnesses related to lifestyle should begin during childhood and adolescence. Although reasons why children choose to participate in regular bouts of physical activity are numerous and complex, limited research suggests that attitudes toward physical activity may influence children's levels of physical activity (Ferguson et al., 1989; Smoll et al., 1976), and levels of physical fitness (Birtwistle & Brodie, 1991; Bocket, 1993; Bocket, 1994; Heale & Wearing, 1983). There has been little previous research concerning the relationship between physical activity and the attitude toward physical activity. More research is warranted to confirm these preliminary findings and further characterize the relationship between attitudes toward physical activity and measures of physical activity and fitness. Identifying if there is a particular age that attitudes begin to influence children or adolescents is an important question that needs further investigation. This study will further investigate adolescents' and young adults' attitudes towards physical activity and its relationship to physical activity and health-related physical fitness. By doing so, it will help to gain a better

understanding of that relationship. This understanding is warranted so that intervention may be successful in increasing students' levels of physical activity and health-related physical fitness. The purposes of this study were: 1) to determine the relationship between attitudes toward physical activity and measures of physical activity and fitness in 12-19 year old male and female students; 2) to determine whether differences exist between boys' and girls' attitudes toward physical activity; and 3) to determine whether differences exist between attitudes toward physical activity among adolescents of different ages.

CHAPTER II

METHODS

Subjects

Subjects (n=165) were recruited from approximately 400 male and female students, 12 to 19 years of age, enrolled in physical education, fitness, and wellness classes at an intermediate school, high school, and university in Central, Texas (Table 1). Each student enrolled in these physical education, fitness, and wellness classes were advised about the components of the study. A letter, describing the protocol was provided to them along with an informed consent. An informed consent (Appendix E) was obtained from each participant. In order for individuals under the age of 18 to participate in this study, both their parent/guardian and themselves must have signed the informed consent form. This investigation was approved by Southwest Texas State University's Committee for Protection of Human Subjects.

Instruments

FITNESSGRAM Testing. Subjects performed the FITNESSGRAM to measure health-related components of physical fitness. The following FITNESSGRAM (The Cooper Institute for Aerobics Research, 1999) test items were administered to all

of the subjects: 1) Progressive Aerobic Cardiovascular Endurance Run (PACER) test; 2) Sum of triceps and medial calf skinfolds; 3) Body mass index (BMI); 4) Curl-ups test; and 5) Push-ups test. The test administrators followed precisely the administration and assessment guidelines outlined in the FITNESSGRAM's test administration manual (The Cooper Institute for Aerobics Research, 1999).

Revised Children's Attitudes Toward Physical Activity (CATPA) Inventory.

The revised Children's Attitudes Toward Physical Activity (CATPA) (Schutz, Smoll, Carre, & Mosher, 1985) inventory is a modified version of the Children's Attitude Toward Physical Activity (Simon & Smoll, 1974) and was used in this study to assess the participant's attitude toward physical activity. The revised CATPA has been found to be a reliable and valid measure of young people's attitudes toward physical activity (Schutz et al., 1985). It has been previously used to measure children's (Bocket, 1993; Bocket, 1994; Patterson & Faucette, 1990) adolescents' (Birtwistle & Brodie, 1991; Bocket, 1994; Carre, Mosher, & Schultz, 1980; Heale & Wearing, 1983; Schutz et al., 1985; Schutz & Smoll; 1986), and college-aged student's (Smoll & Schutz, 1983) attitudes toward physical activity. It is a seven-item test that measures young people's attitudes toward physical activity as a promoter of: 'Social Growth' (SG) (e.g., physical activity provides an opportunity to meet new people), 'Social Continuation' (SC) (e.g., physical activity provides an opportunity to be with friends), 'Health and Fitness: Value' (HFV) (e.g., physical activity enhances health and physical conditioning), 'Health and Fitness: Enjoyment' (HFE) (e.g., promotion of health and physical conditioning is enjoying), 'Vertigo' (VR) (e.g., physical activity is

exciting), 'Aesthetic' (AS) (physical activity is graceful), 'Catharsis' (CA) (e.g., physical activity is an outlet for release of tension), and 'Ascetic' (AC) (e.g., physical activity is hard work) (Schutz et al., 1985). Scoring of the revised CATPA is based on a 5-point scale for each of the five bipolar adjective pairs within each subdomain. A more comprehensive explanation of scoring procedures for the revised CAPTA may be found in a review by Schutz et al., (1985).

Adolescent's Attitude Toward Physical Activity and Physical Fitness

(AATPAPF): The Adolescent's Attitude Toward Health and Physical Activity (AATPAPF) was developed to assess adolescent's attitudes toward health and physical activity; with special emphasis on healthy lifestyles and behaviors related to physical activity. The AATPAPF consists of 33 items. Items were drawn from a previous questionnaire (Rainey & Murray, 1997) and input from 5 experts with training in exercise science, pedagogy, epidemiology, and who are involved in physical activity research in youth. Statements were counterbalanced so that some were positively weighted and others negatively weighted. This was done in order to: (1) encourage the participants to read each statement carefully; and (2) facilitate comprehension of the meaning of each of the items (Solmon & Lee, 1997). Scoring of each item was based on a 5-point likert scale that required students to indicate their level of agreement with statements from strongly disagree (1) to strongly agree (5).

Stability for the AATPAPF was assessed using an intra-class reliability coefficient. The test-retest reliability in a subset of the sample (n=15) was 0.90

which is consistent to similar test-retest reproducibility of other attitudinal questionnaires, such as the revised CATPA inventory (Smoll & Schutz, 1983). Test-retest reliability coefficients calculated for each subdomain, separately by sex, had a median of .71 for a 2-week interval, and a median of .67 for a 9-week interval for college students (Smoll & Schutz, 1983).

Physical Activity Questionnaire for Adolescents (PAQ-A): The Physical Activity Questionnaire for Adolescents (PAQ-A) (Kowalski, Crocker, & Kowalski, 1997) is a high school student version of the Physical Activity Questionnaire for Older Children (PAQ-C) (Kowalski et al., 1997). The PAQ-A was used to assess the participant's general level of physical activity. It is a self-administered questionnaire that asks students to recall their physical activity for the last 7 days. The PAQ-A was designed for large-sample studies and can be completed in a classroom setting. It takes approximately 10 to 15 minutes for a student to complete the PAQ-A. The PAQ-A total activity score is derived from eight items, each scored on a 5-point scale (Kowalski et al., 1997). Discussion of reliability and validity of the PAQ-A for the use of adolescents between the ages of 13 to 20 years can be found in the same reference (Kowalski et al., 1997).

Procedures

The physical fitness tests and questionnaires on attitude toward physical activity and levels of physical activity were administered on two separate days during the students' regularly scheduled fitness classes.

Physical Fitness testing: Measures of health-related physical fitness were obtained by administering the PACER, curl-ups, and push-ups tests according to the procedures outlined in *The FITNESSGRAM Test Administration Manual* (The Cooper Institute for Aerobics Research, 1999).

Anthropometrics. A Lafayette skinfold caliper (Lafayette Instruments, Lafayette, IN) was used for measuring skinfold thickness. The triceps and medial calf skinfold thicknesses were measured (The Cooper Aerobics Institute for Aerobic Research, 1999) and percent body fat was estimated from sum of skinfolds using the equations by Slaughter, Lohman, Boileau, Horswill, Stillman, Van Loan, & Bembien (1988). A calibrated scale was used to obtain height and weight for each participant.

Questionnaires. The CATPA, AATPAPF, and PAQ-A were administered once all of the fitness testing was completed.

Data Analysis

The dependent variables in this study were the following: 1) Number of correctly performed curl-ups for the curl-up test; 2) Number of correctly performed push-ups for the push-up test; 3) Scores (laps) for the PACER test; 4) Sum of two-site (triceps and medial calf) skinfold thickness (mm); 5) Body mass index (kg m^{-2}); and 6) Physical activity scores for the PAQ-A. The independent variables in this study were the following: 1) Age; 2) Gender; 3) Height (m); 4) Scores for the revised CATPA; and 5) Scores for the AATPAPF.

Pearson product-moment correlation was used to determine whether the two attitude inventories were related to skinfold thickness, performance on fitness tests, levels of physical activity, and age. Tests for the relationship between scores on the attitude questionnaires and the fitness variables across age and gender were generated from a multiple regression model. Gender differences in CATPA, AATPAPF, physical activity, and health-related fitness were determined by a one-way MANOVA.

CHAPTER III

RESULTS

Table 1 reports the descriptive statistics for the subjects' physical growth, adiposity, and fitness test performance scores by gender and age. Significant differences between males and females were observed for SSF and BMI ($p < .05$). The male participants were leaner and had lower BMI than the female participants. No significant age differences were observed for the measures of body composition ($p > .05$). Significant differences between males and females were observed for push-ups, curl-ups, and PACER ($p < .05$). The male participants performed more push-ups and curl-ups and ran more laps during the PACER test than the females. No significant age differences were observed for the fitness test items ($p > .05$).

Table 2 displays the means and standard deviations for the PAQ-A by gender and age. Significant gender differences were also seen in scores for the PAQ-A ($p < .05$). Males were more physically active than the females. A significant relationship was observed between age and the sum of scores from each item of the PAQ-A inventory ($r = .24$, $p < .05$). This relationship was found to be curvilinear ($p < .05$). Physical activity increased during middle adolescent years and decreased in late adolescence.

Table 3 reports the means and standard deviations for each subdomain of the revised CATPA and AATPAPF inventories by gender. A multivariate analysis of variance revealed a significant difference between genders for the Social Growth ($p<.05$), Aesthetic ($p<.05$), and Vertigo ($p<.05$) subdomains. Girls had significantly higher scores on the Social Growth and Aesthetic subdomains, while boys had significantly higher scores on the Vertigo subdomain. No significant age differences were observed for the sum of scores from each subdomain of the revised CATPA or AATPAPF inventories ($p>.05$).

The relationship between attitudes toward physical activity, measured by the CATPA and AATPAPF inventories, and measures of physical fitness and physical activity is displayed in Table 4. The Ascetic subdomain of the revised CATPA inventory was significantly correlated with PAQ-A ($r=.19$, $p<.05$). The Health and Fitness: Enjoyment subdomain of the revised CATPA inventory was significantly correlated with curl-up scores ($r=.21$, $p<.05$). The Aesthetic subdomain of the revised CATPA inventory was significantly correlated with SSF ($r=.24$) and scores from the PACER ($r=.24$, $p<.05$). The Vertigo subdomain of the revised CATPA inventory was significantly correlated with curl-up scores ($r=.20$, $p<.05$). Scores from the AATPAPF inventory were significantly correlated with scores from the push-ups ($r=.39$), curl-ups ($r=.42$), PACER ($r=.37$) tests as well as with sum of all items from the PAQ-A inventory ($r=.46$, $p<.05$).

CHAPTER IV

DISCUSSION

The purposes of this study were: 1) to determine the relationship between attitudes toward physical activity and measures of physical activity and fitness in 12-19 year old male and female students; 2) to determine whether differences exist between boys' and girls' attitudes toward physical activity; and 3) to determine whether differences exist between attitudes toward physical activity among adolescents of different ages.

Attitudes Toward Physical Activity and Measures of Physical Activity.

There was a relationship ($r=.19$) between self-reported physical activity levels and the Ascetic subdomain on the revised CATPA. As scores for the Ascetic subdomain increased, PAQ-A scores increased as well. This result suggests that students who tend to view physical activity as serious and difficult training are more likely to have increased levels of physical activity. The Ascetic subdomain was the only revised CATPA subdomain which demonstrated the relationship between attitude and physical activity. A review of the literature revealed a lack of research studying the relationship between attitudes toward physical activity measured by the revised CATPA with measures of physical activity. In a previous study using an older version of the CATPA inventory,

Smoll et al., (1976) found a strong association between attitude and involvement in the health and fitness subdomain in fifth-grade boys and a strong association between attitude and involvement in both the pursuit of vertigo and aesthetic subdomains in sixth-grade boys.

There was a significant correlation between the sum of all items for the AATPAPF inventory and the sum of all items from the PAQ-A inventory ($r=.46$). As scores for the AATPAPF inventory increased, the sum of all items from the PAQ-A inventory increased as well. It appears that students who hold a more favorable attitude towards physical activity and physical fitness on this scale have higher self-reported levels of physical activity. Due to the first time use of the AATPAPF inventory, other studies using this inventory were unavailable for analysis and comparison with results from the present study.

Attitudes Toward Physical Activity and Measures of Physical Fitness.

Results from the present study indicate that there was a positive correlation between scores for the Health and Fitness: Enjoyment subdomain and scores from the curl-ups test ($r=.21$). This result indicates that students who positively view physical activity more for the enjoyment of health improvement and physical conditioning, have greater abdominal strength and endurance.

There was also a significant, but weaker relationship between scores for the Aesthetic subdomain and measures of body composition ($r=.24$) as well as of cardiorespiratory endurance ($r=.24$) scores. As scores for the Aesthetic subdomain increased, SSF measurements increased while PACER scores correspondingly decreased. It appears that females have a positive attitude

toward physical activities, which have beautiful and graceful movements, but are fatter and have lower cardiovascular endurance. The significant gender difference between males and females with females scoring higher on the Aesthetic subdomain may explain this finding. Females universally have greater SSF and less aerobic power than males (Bar-Or, 1983; Krahenbuhl, Skinner, & Kohrt, 1985; Murray, Walker, Jackson, Morrow, Eldridge, & Rainey, 1993).

Results from this study further indicated that there was a weak, yet significant positive correlation between scores for the Vertigo subdomain and scores from the curl-up test ($r=.20$). As scores for the Vertigo subdomain increased, curl-up scores increased. Students who valued physical activity as thrilling or exciting had greater abdominal strength and endurance.

Bocket (1994) compared physical activity attitudes using the revised CATPA and students who had and had not achieved criterion reference standards (CRS) in the 1-mile run/walk and modified sit-up test. It was observed that participants who achieved the CRS for the sit-up test scored higher in the Social Growth domain than those that did not achieve the CRS. Furthermore, Bocket (1994) also found that those students who achieved the CRS for the 1-mile run/walk test scored higher in the Health and Fitness subdomain as both valuable and enjoyable than those that did not achieve the CRS for the 1-mile run/walk.

There was a relationship between the sum of all items for the AATPAPF inventory and scores from the push-ups ($r=.39$), curl-ups ($r=.42$), and PACER ($r=.37$) tests. As scores for the AATPAPF inventory increased, scores from the

push-ups, curl-ups and PACER tests increased as well. It appears that students who have positive attitudes towards physical activity and physical fitness have greater upper body and abdominal strength and endurance as well as greater cardiovascular endurance.

Impact of Gender on Attitude Inventories. There were gender differences in attitudes toward physical activity on the Social Growth, Aesthetic and Vertigo subdomains of the revised CATPA. The higher scores on attitudes toward the Aesthetic subdomain for girls and the higher scores on attitudes of boys toward the Vertigo subdomain corroborate findings of other studies using the revised CATPA in children grades 6 and 8 (Bocket, 1994) and children in grades 4-6 (Patterson & Faucette, 1990), as well as other studies using an older version of the CATPA testing children in grades 4-6 (Schutz, Small & Wood, 1981; Smoll & Schutz, 1980). These results indicated that girls have a greater tendency to view physical activity as beautiful and graceful movement. In contrast, the boys in our sample view physical activity as thrilling and exciting. A higher attitude toward the Social Growth subdomain in girls has not been demonstrated in previous investigations using the CATPA. Therefore, results from this suggest that girls perceive physical activity as a chance to meet new people. The presence of some gender differences in attitude toward physical activity may arise from cultural values and physical education program design (DeMarco & Sidney 1989).

There was a lack of a gender difference in the Cathartic subdomain in this study. This result in agreement with a study by Patterson & Faucette (1990), but

discordant with other studies (Schutz et al., 1981; Smoll & Schutz, 1980) using an older version of the CATPA. Prior studies have reported that boys had significantly higher attitudes toward the Cathartic subdomain (Schutz et al., 1981; Smoll & Schutz, 1980). Those findings show that boys view physical activity as a way to reduce stress or to get away from problems that they might have. There were no significant gender differences for the sum of all items for the AATPAPF inventory.

Impact of Gender on Measures of Physical Activity. This study found that significant gender differences were present in level of physical activity. Males had higher scores on the PAQ-A when compared to females. These results are consistent with previous studies indicating that from pre-school through adulthood, males are slightly more active than females (Pate, Long, & Heath, 1994; Sallis, 1995). In a review of six studies of self-report measures of physical activity, it was found that males reported more activity than females (Sallis, 1993). In addition, higher levels of vigorous physical activity among boys than girls have been shown in all surveys of U.S. children and adolescents (Douglas, K.A., Collins, J.L., Warren, C. et al., 1997; Kann, L., Kinchen, S.A., Williams, B.I. et al. 1998; U.S. Department of Health and Human Services, 1997).

Impact of Gender on Measures of Physical Fitness. Significant differences between males and females were observed for measures of body composition. Males had a significantly higher mean BMI but a significantly lower mean SSF than females. A higher BMI and lower SSF indicate that the males were leaner and more muscular than the females. The male participants performed more

push-ups and curl-ups and ran more laps during the PACER test than the females. The relationship between gender and fitness test items in the present study is consistent with earlier research that males generally have higher cardiorespiratory fitness levels than females (Sallis, 1993), as well as higher upper body strength (Looney & Plowman, 1990) and abdominal muscular endurance (Looney & Plowman, 1990). The gender differences in health-related physical fitness is believed to be attributed to increased muscle mass and physical activity in males (Bar-Or, 1983; Krahenbuhl, Skinner, & Kohrt, 1985).

Impact of Age on Attitude. There were no significant age differences for revised CATPA subdomains or for the sum of all items for the AATPAPF inventory. This result is consistent with a previous study using an older version of the CATPA, there were no significant grade effects across grades 4 to 6 (Smoll & Schutz, 1980). In contrast, Bocket (1994) reported age differences in 6th grade and 8th grade students attitudes toward physical activity . Results from the study indicated that declines in the 'Social Growth' and 'Health and Fitness: Enjoyment' dimensions of the revised CATPA were most notable. Bocket (1994) suggests that perhaps physical activity as a means to meet new friends or as a fun way to develop physical fitness is viewed as less positive as students advance through middle school. Similarly, Godin and Shepard (1986) observed that as students advance from grades 7 through 9 there is a decrease in the belief that exercise is fun.

Impact of Age on Measures of Physical Activity. There was a significant difference in age and reported PAQ-A scores. The relationship between age and

physical activity is curvilinear. Physical activity increased with middle adolescence and then declined. These results are consistent with some results from previous research. Findings from the Youth Risk Behavior Survey indicated that reported vigorous physical activity falls from 72.7% to 57.5% between grades 9 and 12 (The Centers for Disease Control and Prevention, 1997). Moreover, Sallis (1993) in a review of literature reported that there is a mean decline in physical activity for males of 2.7% per year, and for females 7.4% per year. These data also suggest that older youth and females are at increased risk of obesity because of a sedentary lifestyle (Sallis, 1993).

Impact of Age on Physical Fitness. No significant age differences were observed for the fitness test items. This finding is discordant with previous research indicating that fitness scores increases with age (Pangrazi & Corbin, 1990; Ross, Pate, Delpy, Gold, & Svilar, 1987).

Conclusions. Results of this investigation suggest that attitudes towards physical activity and personal fitness, measured by the CATPA and AATPAF inventories, are positively related to levels of physical activity, health-related physical fitness, and obesity among adolescents. However, the results of this study do not clearly define this relationship. It is not clear whether attitudes impact levels of physical activity and health-related physical fitness or vice versa. Further research is warranted to clearly define the role that a positive attitude toward health and physical activity may have on shaping and influencing healthy lifestyle behaviors among adolescents.

Results from this study suggest that physical educators and other health and fitness professionals should focus not only on the development of physical fitness and promotion of physical activity but also on the development of positive attitudes toward physical activity and health. These findings indicate that there are relationships among attitudes toward physical activity and health-related physical fitness and levels of physical activity. Therefore a more holistic approach to the development of health and fitness in adolescents should be taken in physical education classes and other health and fitness-type settings for adolescents.

Significant gender differences in physical activity and physical fitness were present in agreement with previous research concluding that males are more physically active and physically fit when compared to their female counterparts. It is advisable for educators to focus on measures for increasing the levels of physical activity and health-related physical fitness in females. Such an effect would mean that females are not more prone to a sedentary lifestyle and are not at an increased risk for development of a chronic disease. Further studies are needed to identify successful techniques for the promotion of physical activity in female adolescents.

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Table 1. Subject Characteristics and Fitness Test Performance Scores (n=165).

	Height (m)	Weight (kg)	SSF* (mm)	BMI*	Push-Ups*	Curl-Ups*	PACER*
All Subjects (n=165)	1.66±.09	64.9±16.3	31.8±14.9	23.3±4.7	18.1±11.0	47.8±23.5	47.7±24.4
Males (n=89)	1.69±.09	69.7±18.2	27.8±14.6	24.1±5.3	15.1±10.2	43.9±21.1	42.5±24.3
Females (n=76)	1.63±.06	59.2±11.4	36.8±13.9	22.3±3.8	21.5±10.8	52.0±25.4	54.0±23.0
12 year olds (n=1)	1.51±0	45.9±0	17.0±0	20.1±0	21.0±0	74.0±0	72.0±0
Males (n=1)	1.51±0	45.9±0	17.0±0	20.1±0	21.0±0	74.0±0	72.0±0
Females (n=0)	NA	NA	NA	NA	NA	NA	NA
13 year olds (n=7)	1.61±.04	62.5±20.1	32.1±21.1	24.0±6.9	24.0±10.1	71.2±9.4	62.4±27.0
Males (n=7)	1.61±.04	62.5±20.1	32.1±21.1	24.0±6.9	24.0±10.1	71.2±9.4	62.4±27.0
Females (n=0)	NA	NA	NA	NA	NA	NA	NA
14 year olds (n=51)	1.65±.08	61.7±13.8	31.3±11.1	22.4±3.8	13.4±8.8	40.0±20.6	40.1±22.9
Males (n=27)	1.68±.09	65.4±16.0	27.8±11.3	23.0±4.4	19.2±9.2	56.7±22.8	49.2±18.0
Females (n=24)	1.62±.06	57.7±9.6	35.0±9.8	21.8±2.9	10.0±7.7	37.3±19.3	34.0±19.5
15 year olds (n=46)	1.67±.08	65.3±18.5	32.4±17.7	23.4±5.8	19.3±10.6	55.3±22.3	50.1±23.2
Males (n=23)	1.70±.08	71.3±20.0	27.3±14.9	24.5±6.2	21.7±10.5	51.0±25.1	57.7±22.7
Females (n=23)	1.63±.05	59.0±14.8	37.8±19.1	22.2±5.2	14.4±10.3	40.4±21.9	42.0±25.8
16 year olds (n=25)	1.68±.10	67.3±16.9	28.8±16.4	23.8±4.7	20.8±9.1	52.2±24.0	55.3±22.0
Males (n=17)	1.71±.10	71.5±18.8	27.5±19.1	24.4±5.6	21.3±11.4	43.3±26.4	52.9±26.9
Females (n=9)	1.62±.07	59.6±9.3	31.5±9.6	22.6±2.5	14.6±7.7	41.8±17.0	41.8±21.5
17 year olds (n=17)	1.70±.09	70.1±18.2	33.9±15.3	24.1±4.4	23.5±11.8	43.3±26.4	53.1±23.6
Males (n=7)	1.78±.05	84.9±15.8	30.2±14.2	26.8±4.2	21.0±12.3	50.9±28.2	49.9±32.3
Females (n=10)	1.63±.05	58.6±9.5	37.6±16.5	22.0±3.4	24.9±12.8	52.5±24.9	56.1±29.2
18 year olds (n=9)	1.70±.08	70.8±13.0	28.0±12.6	24.7±4.4	23.6±12.4	59.7±26.8	56.7±34.8
Males (n=6)	1.73±.07	74.0±11.7	23.1±9.9	24.8±4.3	30.0±15.4	56.2±29.9	63.3±20.5
Females (n=3)	1.60±0	62.7±16.7	40.3±11.8	24.5±6.5	8.7±2.3	25.3±15.2	24.0±8.7
19 year olds (n=8)	1.68±.10	64.6±10.6	41.5±8.4	23.0±2.8	25.9±14.8	50.6±26.6	61.1±20.1
Males (n=1)	1.80±0	68.2±0	30.0±0	21.0±0	21.0±0	29.0±0	72.0±0
Females (n=7)	1.66±.09	64.1±11.4	43.1±7.6	23.2±2.9	13.3±7.7	48.7±15.1	30.6±7.9

Note: SSF = sum of skinfolds, BMI = Body Mass Index, PACER = Progressive Endurance Run

Note: *Significant gender differences were observed (p<.05)

Table 2: Means and Standard Deviations of the Physical Activity Questionnaire for Adolescents

Age	Boys		Girls		All Students	
	n	x±sd	n	x±sd	n	x±sd
12	1	2.4±0	0	NA	1	2.4±0
13	7	3.1±.47	0	NA	7	3.1±.47
14	27	2.9±.78	24	2.6±.68	51	2.7±.74
15	23	3.3±.64	23	2.7±.53	46	3.0±.66
16	17	2.8±.72	9	2.6±.61	26	2.8±.67
17	7	2.7±.85	10	2.8±.79	17	2.7±.78
18	6	2.5±.83	3	2.3±.05	9	2.4±.65
19	1	2.0±0	7	1.7±.40	8	1.8±.37

Note: Significant differences between age and sum of scores for PAQ-A were observed ($p<.05$).

Table 3. Means and Standard Deviations of CATPA Subdomains and the AATPAPF Inventory

	MALES	FEMALES	TOTAL
Catharsis	19.4±3.9	20.4±3.0	19.8±3.6
Ascetic	16.5±4.2	15.7±3.4	16.1±3.9
Social Growth	19.7±4.0	21.9±3.4	20.6±3.9
Social Relations	21.4±3.3	22.0±3.9	21.7±3.6
H&F: Value	9.3±1.3	9.4±1.2	9.4±1.2
H&F: Enjoyment	11.9±2.7	12.4±2.1	12.1±2.5
Aesthetic	16.7±4.8	20.6±3.4	18.4±4.7
Vertigo	18.2±5.6	16.1±4.3	17.3±5.2
AATPAPF	79.0±11.1	79.0±10.1	79.0±10.6

Note: *Significant differences between males and females were observed for the Social Growth, Aesthetic, and Vertigo subdomains of the CATPA ($p<.05$).

Table 4. Correlations Between Attitude Inventories and Measures of Physical Activity and Fitness.

CATPA Subdomains	SSF	BMI	Push-Ups	Curl-Ups	PACER	PAQ-A
Catharsis	0.15	0.02	0.00	0.09	0.03	0.02
Ascetic	0.03	0.12	0.14	0.13	0.10	0.19*
Social Growth	0.12	0.06	0.06	0.07	0.04	0.01
Social Relations	0.08	0.08	0.02	0.06	0.12	0.10
HF: Value	0.03	0.13	0.11	0.10	0.09	0.02
HF: Enjoyment	0.06	0.16	0.16	0.21*	0.14	0.13
Aesthetic	0.24*	0.01	0.16	0.05	0.24*	0.02
Vertigo	0.06	0.13	0.12	0.20*	0.16	0.15
AATPAPF	-0.03	0.05	0.39*	0.42*	0.37*	0.46*

*Note: ($p < .05$)

APPENDIX A
HYPOTHESES

Hypotheses

It is hypothesized that:

1. There will be a difference in fitness (PACER, curl-ups, push-ups, sum of skinfolds, BMI) based on attitude scores on the CATPA.
2. There will be a difference in levels of physical activity based on attitude scores on the CATPA.
3. There will be a difference in fitness based on student's age and gender.
4. There will be a difference in physical activity levels based on student's age and gender.

APPENDIX B

DELIMITATIONS

Delimitations

This study will be delimited as follows:

1. Only students ages 12-19 will be included in the study.
2. Only schools in the towns of Navarro, Pflugerville, and San Marcos, geographically located in south central Texas, will be chosen as sampling sites.
3. Only cardiorespiratory endurance, abdominal muscle strength and endurance, upper body strength and endurance, and body composition will be used to determine health-related physical fitness.
4. Only the FITNESSGRAM health-related physical fitness components standards will be used.
5. Attitudes toward physical activity were measured only by the CATPA (Schutz et al., 1985) and the Adolescent's Attitudes Toward Physical Activity & Physical Fitness inventories.
6. Levels of physical activity will be measured only by the Physical Activity Questionnaire for Adolescents (Kowalski et al., 1997)

APPENDIX C

DEFINITIONS

Definitions

Terms as defined in this study include the following:

1. Attitude: defined by Kenyon (1968) as “a latent or non-observable, complex, but relatively stable behavioral disposition reflecting both direction and intensity of feeling toward a particular object, whether it be concrete or abstract” (p. 566).
2. Attitude Toward Physical Activity: defined as an attitude object measured by the Children’s Attitude Toward Physical Activity inventory (CATPA) (Schutz, Smoll, Carre, & Mosher, 1985) which is comprised of eight dimensions: ‘Social Growth’, ‘Social Continuation’, ‘health and Fitness: Value’, ‘Health and Fitness: Enjoyment’, ‘Vertigo’, ‘Aesthetic’, ‘Catharsis’, and ‘Ascetic’.
3. Social Growth: Attitude toward physical activity for social growth was defined by Schutz et al. (1985) as “taking part in physical activities which give you a chance to meet new people” (p.359).
4. Social Continuation: Attitude toward physical activity to continue social relations was defined by Schutz et al. (1985) as “taking part in physical activities which give you a chance to be with your friends” (p. 259).
5. Health and Fitness: Attitude toward physical activity for health and fitness was defined by Schutz et al. (1985) as “taking part in physical activities to make your health better and to get your body in better condition” with respect to both and enjoyment orientation and a value orientation (p. 259).

6. Vertigo: Attitude toward physical activity as a thrill but involving some risk was defined by Schutz et al. (1985) as “taking part in physical activities that could be dangerous because you move very fast and must change direction quickly” (p. 259).
7. Aesthetic: Attitude toward physical activity as aesthetic was defined by Schutz et al. (1985) as “taking part in physical activities which have beautiful and graceful movements” (p. 259).
8. Catharsis: Attitude toward physical activity for catharsis was defined by Schutz et al. (1985) as “taking part in physical activities to reduce stress or to get away from problems you might have” (p. 259).
9. Ascetic: Attitude toward physical activity as ascetic was defined by Schutz et al. (1985) as “taking part in physical activities that have long and hard practices” (p.259).
10. Exercise: Exercise was defined by Caspersen, Powell, and Christenson (1985) as “physical activity that is planned, structured, repetitive, and purposive in the sense that improvement or maintenance of one or more components of physical fitness is an objective” (p.128).
11. Health-related Fitness: The health-related components of fitness are cardiorespiratory endurance, muscle strength, muscle endurance, body composition, and flexibility (Caspersen et al., 1985).
12. Physical Activity: Physical activity was defined by Caspersen et al. (1985) as “any bodily movement produced by skeletal muscles that results in energy expenditure” (p. 126).

13. Physical Fitness: Physical Fitness was defined by AAHPERD (1989) as “a physical state of well being that allows people to perform daily activities with vigor, reduces their risk of health problems related to lack of exercise, and establishes a fitness base for participation in a variety of physical activities” (p.1).

APPENDIX D

LITERATURE REVIEW

Review of Literature

Physical inactivity (U.S. Department of Health & Human Services, 1996), low levels of physical fitness (U.S. Department of Health & Human Services, 1996) and obesity (Pi-Sunyer, 1991) increase the risk of such chronic ailments as coronary heart disease, hypertension, diabetes mellitus, gallbladder disease, osteoarthritis, and cancer. Recent reports on adults' levels of physical activity and fitness indicate that: 1) 60 % are sedentary; 2) 27.7% of adults are physically active at the recommended levels (i.e., perform bouts of physical activity at least 10 minutes in duration 5 or more times per week or perform bouts of exercise of at least 20 minutes in duration 3 or more times per week at an intensity equal to or greater than 50% of their age and gender specific maximum cardiorespiratory capacity) (U.S. Department of Health and Human Services, 1996); and 3) 33% of adult males and 36% adult are females overweight (i.e. BMI was greater than or equal to 27.8 for men and 27.3 for women) (Centers for Disease Control and Prevention, 1997).

Since the early 1980's, incidences of obesity as well as low levels of inactivity and physical fitness among adults have escalated. It has been suggested that many adults are predisposed to obesity, sedentary lifestyle, and/or poor levels of fitness because they were obese, unfit, and/or inactive during their youth (Guo, Roche, Chumlea, Gardner, and Siervogel, 1994; Serdula, Ivery, Coates, Freeman, Williamson, Byers, 1993). Nieto, Szklo, and Comstock (1992) showed that overweight youth and especially overweight

adolescents are at increased risk of becoming overweight adults or are likely to enter adulthood as overweight adults.

Presently, obesity affects one in five children in the United States (Dietz, 1998). Data compiled from the National Health and Nutrition Examination Surveys and other sources from 1963 to 1994 indicate that children and adolescents are becoming increasingly overweight (Troiano & Flegal, 1998). It was found that 11% of young people from 6-17 years of age were overweight in 1988-1994, compared to about 4% in 1963-1965. In addition, 14% of the children and adolescents recently surveyed had body weights relative to height that were close to, but not quite considered, overweight, i.e., had a BMI between the 85th and 95th percentiles (Troiano, Flegal, Kuczmarski, Campbell, & Johnson, 1995).

The increase in prevalence of child, adolescent, and adult obesity reflects a population shift toward positive energy balance, i.e. dietary energy consumption is greater than energy expenditure among most individuals of all age groups in the United States. Causes for this imbalance between energy intake and energy expenditure include but are not limited to: 1) an increase in dietary energy consumption (Federation of American Societies for Experimental Biology, 1995); 2) a reduction in enrollment in physical education courses (Heath, Pratt, Warren, & Kann, 1994); and 3) a reduction in child safety at play grounds and parks (Gutin & Manos, 1993); and/or 4) an increase in television viewing (Dietz & Gortmaker, 1985; Gutin & Manos, 1993; Heath et al., 1994). These reasons are complex and many, but obesity is the underlying consequence when

dietary energy consumption that exceeds metabolic expenditure (McDowell, Briefell, Alaimo, et al., 1994).

Energy-dense foods are becoming increasingly more abundant and more readily available in the United States. The number of meals prepared outside the home has risen since 1970, and such meals tend to be associated with higher total calories, especially in total fat, and saturated fat calories than prepared at home (Federation of Associated Societies for Experimental Biology, 1989). In addition, fried foods and high-fat snacks are reportedly consumed frequently by adolescents (McGinnis, 1992). However, dietary data from NHANES II and NHANES III suggest that an increase in energy intake alone does not explain the dramatic increase in the prevalence of overweight children and adolescents (McDowell, Briefell, Alaimo et al., 1994).

Physical Activity

Concurrent with increased availability of calorically dense foods, the United States has also moved toward a sedentary lifestyle (McGinnis, 1992). Although data on secular trends in activity for young children is limited, a study of high school students found that participation in physical education declined from 1984 to 1990 (Heath, Pratt, Warren, & Kann, 1994). The 1990 Youth Risk Behavior Survey found that only approximately half of all students in grades 9 through 12 reported being enrolled in physical education classes (Heath, Pratt, Warren, & Kann, 1994). Several studies have shown that fewer than half of school children received daily physical education, and games and competitive

sports were the mainstays of existing programs (U.S. Department of Health and Human Services, 1991). The decline in physical education participation is particularly troubling because school-based, health-oriented physical education may provide both immediate effects of the activity and sustained effects through encouragement of lifelong activity patterns. For such programs to contribute to the public health goal of lifelong activity, they should be frequent, include activities of moderate intensity, and should not focus exclusively on team-oriented sports activities (Sallis & McKenzie, 1991).

In addition, because of changes in safety, parental work habits, television viewing, availability of video games, and other cultural aspects of the environment children may exercise less (Gutin & Manos, 1993). For example data from the 1990 Youth Risk Behavior Survey (YRBS) disclosed that more than 70% of students in grades 9 through 12 reported at least 1 hour of watching television each school day, and more than 35% reported watching television 3 or more hours each school day. (Heath, Pratt, Warren, & Kann 1994). Although it may be easy to conclude that TV viewing is a direct cause of obesity, studies are discordant. For instance some researchers found a strong relationship (Dietz, Gortmaker, 1985) while others did not and suggest that there is no evidence to infer that an increase in TV viewing causes obesity thereby questioning the presence of a direct relationship (Malina, 1995). Therefore, according to the literature, increased TV viewing may increase the risk of obesity.

The most recent national data from the 1996 Behavioral risk Factor Surveillance System (BRFSS) indicate that 29.2% of adults are inactive in their

leisure time, 43.1% participate in some activity but not enough to ensure health benefits, and 27.7% are physically active at recommended levels (Stephens & Caspersen, 1994). In youth, 63.8% of high school students responding to the 1997 Youth Risk Behavior Survey (YRBS) reported participating in vigorous physical activity. On the 1992 National Health Interview Survey (NHIS)-YRBS, 53.7% of young people aged 12-21 reported participating in vigorous physical activity, and on the 1995 National College Health Risk Behavior Survey (NCHRBBS), 41.8% of students 18-24 and 30.6% of students 25 and older were vigorously active. Vigorous activity levels among young people are clearly much higher than those for adults. There is a progressive decrease in the prevalence of reported participation in vigorous physical activity with both grade and age. Between grades 9 and 12 reported vigorous physical activity falls from 72.7% to 57.5%. Similarly large decrease between ages 12 and 21 are observed in the NHIS-YRBS for both boys (70.8% to 42.2%) and girls (66.2% to 30.2%) (U.S. Department of Health and Human Services, 1991).

Little is known as to whether attitudes affects an individual's exercise behaviors and levels of health-related physical fitness. Research is discordant in the area of childhood activity levels predicting adult activity levels. However, few studies may suggest that children who exercise regularly have a greater chance of continuing their exercise habits through adulthood (Sallis & McKenzie, 1991). In particular, the middle school years can be a period of change with respect to attitudes toward physical activity (DeMarco & Sidney, 1989). However, previous research has failed to use a large sample of students ranging in age from early

adolescence to young adulthood to examine at what age attitudes begin to influence their exercise behavior and levels of fitness. A further understanding of physical activity attitude is needed in order to provide meaningful experiences for students enrolled in physical education.

Attitudes and Physical Activity

In order to examine the relationships among children's attitudes toward physical activity and the involvement and/or proficiency in physical activities, Smoll et al., (1976) assessed data on the attitudes towards physical activity of 127 boys and 137 girls in grades 4th through 6th. Smoll et al. (1976) utilized an older version of the CATPA inventory, and results from this study suggested that children are primarily involved in those activities for which they hold the most positive attitudes. This significant relationship ($p < .05$) between children's attitudes toward physical activity and involvement support the previous findings of Kenyon (1968) and is consistent with the popular view that participation in physical activity is associated with positive attitudes (Smoll et al, 1976).

However, further investigation, particularly of a longitudinal nature is warranted to determine whether attitudes influence the degree of involvement, or involvement affects the formation of attitudes.

Preliminary results from recent studies suggest that attitudes toward physical activity may also be a factor in physical activity (Ferguson, Yesalis, Pomrehn, & Kirkpatrick, 1989). In a preliminary pilot study of 603 sixth through eight grade students, students who had positive attitudes toward physical activity

were more likely to say they intended to exercise in the future (Ferguson et al., 1989).

A study conducted by Konrad (1988) investigated if student attitude toward physical activity changed following exposure to one semester of fitness and lifetime skills instruction. The attitudes of 343 college-aged males and females were measured using Kenyon's multi-dimensional Attitude Toward Physical Activity (ATPA) and Body Image Inventory. It was concluded that there was a significant increase in attitude toward physical activity as a social experience, health and fitness, as an aesthetic experience, and catharsis following participation in one semester of fitness and lifetime skills instruction in college males and females. Since wellness classes are also taught at some junior highs and high schools, it would be interesting to investigate whether or not wellness classes have the same effect on those students as the class had on the college-age students.

Herbert-Martin (1979) investigated the degree of difference in attitudes toward physical activity, knowledge about physical activity, and involvement in physical activity between an experimental group of adolescent girls who experienced the "Health and Fitness Package" and two similar groups who had the standard physical education class offered by the school, called "shape up". These degrees of difference were measured before, immediately after, and three months after the experiment. Forty-eight girls, 15-18 years of age, volunteered to participate in this study. The Health and Fitness Package consisted of dance exercises to "disco" music for a period of 45 minutes, three times a week, with

two adolescent girls as models. The girls also participated in a five to ten minute group discussion twice a week, and listened to a lecture, from the regular teacher, on the value of exercise for five minutes once a week. Cardiorespiratory fitness and skinfold measurements were assessed three times during the eight weeks of the program. The research instruments utilized included the Attitudes Toward Physical Activity scale, the Involvement Inventory, and the Knowledge Questionnaire. Results from this study indicated a significant change in the experimental group compared to the students in the "shape up" physical education classes on the social experience and health and fitness attitudes dimensions immediately post and three months post the experiment. This group's knowledge level and attitude toward physical activity as an ascetic experience also increased significantly between pre and post test measurements. These differences, however, were no longer evident three months later. While this study does provide some interesting results, unfortunately the sample consisted only of high school-aged females and a significant difference was not found three months post-experiment. Therefore, the results are not applicable to high school-aged males and the Health and Fitness Package does not appear to have long lasting effects on the students.

Attitudes and Physical Fitness

Several studies examining attitudes toward physical activity related to fitness were found in the literature. The relationship between physical performance (50-yd dash standing long jump, and softball throw for distance) and

attitudes toward physical activity was examined by Smoll et al., (1976). An older version of the CATPA (Simon, & Smoll, 1974) and a physical activity involvement questionnaire was administered to students in grades 4 through 6. Researchers found no significant ($p>.05$) relationships existed between motor performance and attitudes toward physical activity.

A relationship was found between attitudes toward physical activity as measured by the revised CATPA (Schutz et al., 1985) and one's health-related fitness profile in a study conducted by Birtwistle and Brodie (1991).

Questionnaires and fitness tests were administered to 14 (N=121) subjects during a 2-week period in the first term of the academic year. Birtwistle and Brodie (1991) noted a significant ($p<.05$) linear relationship between students' attitudes toward physical activity and health-related fitness profiles.

To determine the association between physical activity attitudes, fitness knowledge, and actual health-related fitness levels of 6th and 8th graders Bocket (1994) administered the Connecticut Physical Fitness Assessment, the revised Children's Attitudes Toward Physical Activity (CATPA) inventory, and the Fitness Knowledge Test to 819 males and females ages 10-15 years from Connecticut school districts. The Connecticut Physical Fitness Assessment, consisting of a test battery of a 1 mile run/walk, sit and reach, and modified sit-ups, measured the students' aerobic endurance, flexibility, and abdominal muscle strength/endurance, respectively. The revised Children's Attitudes Toward Physical Activity (CATPA) inventory, containing seven items reflecting eight physical activity subdomains measured attitudes toward physical activity. The

Fitness Knowledge Test measured knowledge of fitness concepts among the 6th and 8th graders. Results indicated that students who scored higher in the Health and Fitness subdomain as both valuable and enjoyable were more likely to achieve criterion referenced standards (CRS) in the Connecticut Physical Fitness Assessment for the 1-mile run/walk test. In addition, students who scored high in the Social Growth subdomain of the CATPA were more likely to achieve CRS for modified sit-ups. Sixth grade students scored higher in 'Social Growth', 'Health and Fitness: Enjoyment' and 'Aesthetic' domains of the CATPA. In general, 8th grade or nonachievement groups tend to have less positive attitudes toward physical activity than 6th grade or achievement groups, respectively. While this study measured attitudes of 6th and 8th graders, it failed to look at older youth and possibly young adults to see if the attitudes continue to be less positive toward physical activity as the students get older.

A study to investigate factors that might differentiate those in high fit group from those in a low fit group was conducted by (Heale & Wearing, 1983) using 6th and 8th grade students from three schools in Canada. The Cooper 12-minute Walk-run test was administered to the top 20th percentile students along with other health-related fitness measurements and the CATPA inventory. Heale & Wearing (1983) reported that a more positive attitude toward physical activity in only the Social experiences subscale was held by the children in the most fit group. The researchers inferred that all students believe that physical activity is valuable in developing health and fitness. In contrast, the low fit group may not

perceive physical activity as a way to meet friends and have fun, thereby possibly resulting in less involvement in physical activity.

To examine the relationship between children's attitude toward physical fitness and aerobic endurance, Bocket (1993) conducted a study with 6th grade children (n=510). The researcher found that children who have higher levels of fitness also hold more positive attitudes toward physical fitness in comparison to children who are lower in fitness. A significant ($p < .05$) difference was found between those who exceeded a 1 mile run/walk health fitness standard and those who did not meet the standard was found across subscales of Attraction Estimation, and Value as measured by the Children's Physical Fitness Attitude Inventory (Barber, 1991).

Because it is believed that children with high fitness will have good attitudes toward physical education and subsequently develop active, healthy lifestyles, promotion of physical fitness is one of the primary goals in physical education. Little research, however, has examined attitude toward physical education and self-concept specifically in relation to fitness of elementary school children (Dishman & Dunn, 1988; Gruber, 1985).

Sherrill, Holguin, & Caywood (1989) examined the differences in self-concept and attitude toward physical education in 393 fourth and fifth grade children who scored highest and lowest 26% or 27% respectively, of their classes on the Texas Physical Fitness test and determined the correlations between fitness, self-concept, and attitude. Participants performed a one-mile run, 2-minute bent knee sit-ups, and 90-sec. flexed arm hang test and competed two

surveys (Children's Attitude Inventory toward Physical Education and Game of Pairs) assessing attitude toward physical education and one questionnaire (Children's Self-Concept Scale) measuring self concept. The Children's Attitude Inventory Toward Physical Education (Barrow, McGee, & Tritschler, 1989; Sherrill & Toulmin, 1977) included 50 items about what is taught in physical education, how it is taught, and how students perceive selves, classmates, and physical education teachers in the gymnasium setting. The Game of Pairs was a paired comparison inventory which required a forced-choice comparison of the 10 school subjects against one another, pair by pair, in accordance with procedure recommended by Edwards (1957). Sherrill et al. (1989) found that overall, attitude toward physical education did not appear to be associated with level of physical fitness. While this may hold true for fourth and fifth graders, it would be interesting to evaluate whether it holds true for older students.

Attitudes & Knowledge : Fitness, Exercise & Health

In a study designed to explore young people's attitudes, views and beliefs with respect to health, fitness and exercise, sixty-one young people (11-14 years) were involved in focus groups and were encouraged to discuss 'health', 'fitness' and 'exercise' topics. The focus groups (majority mixed sex, some single sex) ranged in sizes from 3 to 6 in number and the discussions were of 40-50 minutes in length. Findings revealed that young people have a limited bio-medical view of health, which excludes social and psychological dimensions. They appear knowledgeable about health, fitness, and exercise but have a limited

understanding of the issues. Furthermore, their knowledge is not closely reflected in their health behaviors, and fitness is viewed as a negative concept associated with uncomfortable physical exertion and high levels of performance.

Harris (1993) also discovered that students view 'fitness' as associated primarily with exercise, food and body shape. Being fit involves being good at sport and exercising a lot, eating 'good' food, and being slim or skinny.

Additional associations with the term fitness are: not smoking or, at least, not too many cigarettes and not drinking too much. The term 'not fit' or 'unfit' is associated primarily with exercise, food, body shape and activity level. Being unfit involves not exercising or not being good at sport, eating the 'wrong' things, being fat, and being lazy. Additional associations with the term 'not fit' or unfit are: staying indoors a lot, not having many hobbies, smoking and drinking.

When discussing the possible relationships between health and fitness, it became evident that fitness is determined more by physical ability. Peers are deemed health and fit according to high levels of activity and physical ability, especially being good at games and running fast. This reflects a performance model of fitness as opposed to a participation model, which focuses on fitness for everyday life. It carries with it the assumption of hidden message that health and fitness are unattainable goals for those who consider that they are not physically able.

Student's perceptions of exercise were also studied by Harris (1993). It was found that many young people stated that they lead fairly sedentary lives, particularly in and around the home. Most seemed to enjoy their physical

education lessons at school but a performance orientation was evident in that they quickly offered an assessment of their ability and competence in relation to their peers. Over half of the young people involved in the interviews considered that they were poor performers and would probably do less physical activity in future years. This is a concern given that the activity levels of children (Cale & Almond, 1992) and adults (Sports Council & Health Education Authority, 1992) are considered to be lower than desirable in terms of enhancing health status.

Young people in the Harris (1993) study consider that high levels of exercise somehow or other negates the harmful effects of smoking, drinking and eating fatty foods. This is consistent with observations made of people they know who play sport and who may also smoke, drink excessively and eat fried food. The role of exercise in weight management seems to be an area of confusion with many young people believing that it is necessary to run fast to burn off fat. As a consequence, it is likely that, for any, dieting is adopted as the sole method of weight control and the role of exercise in weight management is virtually dismissed. This discussion group study provided some insightful information as to how adolescents view health, fitness, and wellness.

Unfortunately, the sample for this study was a small isolated group of students, and it would be beneficial to know whether the perceptions and knowledge they had towards health, fitness, and wellness are universal among students their age.

APPENDIX E

INSTITUTIONAL REVIEW BOARD

Institutional Review Board

Human Subjects Packet

The Relationship Between Attitudes and Knowledge on Levels of
Physical Activity, Physical Fitness, and Body Composition

I. Synopsis of Proposal

1. Subjects will be recruited from physical education, fitness, and wellness classes from the Navarro and Pflugerville School Districts and Southwest Texas State University. The sample will be selected from approximately 600 students ranging in ages from 13-19 both male and female of all ethnic backgrounds. Children, adolescents, and young adults are of particular interest to this study because there is a need to further understand determinants of exercise behavior and obesity in these age groups.
2. Each student will be advised about the components of the study. In addition, a letter, describing the protocol and importance of the study, along with an informed consent, will be given to the students. In order to participate in this study, the students recruited from Navarro and Pflugerville School Districts and their parent/guardian must sign the informed consent form.
3. The potential risks of the study are minimal. The only ramification to be encountered would likely be delayed onset muscle soreness or minimal

fatigue. It is important to note that the intensity and duration of exercise will be no greater than that experienced during a normal physical education or fitness class.

4. In order to minimize potential risk, each subject will be able to terminate the test at any given time. In addition to having self-control over termination, there will be a nurse on campus and an investigator who is certified in CPR. The certified health-care provider will have a first aid kit and a medical bag in close proximity.
5. Student's participation in the study will provide him/her with knowledge about exercise testing procedures. He or she will learn about the components necessary to carry out a scientific experiment. The results of this test will provide each individual with a working knowledge about his/her muscular strength, cardiovascular endurance, flexibility, and body composition. Although there may be no direct benefit, there may be future benefit to identifying determinants of exercise behavior and obesity among young people.
6. There will be minimal risks to healthy children under the testing conditions specified. Potential risks associated with the study may be delayed onset muscle soreness, muscle spasms, or breathlessness.

7. A letter of explanation and approval will be sent to principals of Navarro and Pflugerville schools and Dr. Bob Pankey, chair of Southwest Texas State University HPERD department. In addition, a letter will be sent to Steve Zaleski (Physical Education Coordinator at Navarro-Middle School) explaining in detail the procedures to be carried out and the ramifications it will have on future physical education classes. Approval for exercise testing will come from Steve Zaleski.
8. This project is being conducted for my thesis. My Committee Chair is Dr. Lisa Lloyd, professor in the Health, Physical Education, and Recreation Department at Southwest Texas State University. She can be reached at (512) 245-8358. Dr. John Walker, Dr. Tinker Murray, and Dr. Bob Pankey in the Health, Physical Education, and Recreation Department at Southwest Texas State University are also on my committee.
9. This investigation has the approval of Dr. Lisa Lloyd, chair.
10. This project has not had prior review by another IRB.
11. The individuals being tested, Steve Zaleski, and the thesis committee will have access to the unpublished results of the study.

II. Selected Elements of the Proposal

- A. As a society in the “information age” we as individuals are inundated with knowledge and information, especially on the subject of health and wellness. Little is known as to whether attitudes or fitness knowledge affects an individual’s exercise behaviors and levels of health-related physical fitness. It has been found that children who exercise regularly have a greater chance of continuing their exercise habits on through adulthood. In particular, the middle school years can be a period of change with respect to attitudes toward physical activity. A further understanding of physical activity attitude and fitness knowledge is needed in order to provide meaningful experiences for students enrolled in physical education. The purpose of this study is to determine the influence of attitudes and fitness knowledge of 13-19 year old students’: 1) levels of physical activity; and 2) achievement of the FITNESSGRAM CRS for cardiovascular endurance, body composition, abdominal strength and endurance, and upper body strength. The following hypotheses will be tested during this investigation:
1. There will be a difference in the mean Fitness Knowledge Test and Children’s Attitudes Towards Physical Activity scores between the student’s with high levels of physical activity and low levels of physical activity.

2. There will be a difference in the mean Fitness Knowledge Test and Children's Attitudes Towards Physical Activity scores between the students who achieved FITNESSGRAM criterion-referenced standards and those that did not.

- B. The sample will be selected from approximately 600 students, ranging in ages from 13-19. We expect 400 students to volunteer.

The variables for which the data will be collected are:

1. Age (years)
2. Gender
3. Height
4. Weight
5. Attitudes towards physical activity (CATPA Inventory)
6. Knowledge of Physical Fitness
7. Percent fat estimated from sum of two-site (triceps and medial calf) skinfold thickness (mm)
8. The scores (laps) for the PACER test
9. The number of correctly performed curl-ups for the curl-up test
10. The scores (inches) for the trunk-lift test
11. The number of correctly performed push-ups for the push-up test
12. Level of physical activity

C. A portion of the study will involve group testing. Data will be obtained from results of FITNESSGRAM test items. The FITNESSGRAM test items that will be administered to students as a group include the following: 1) Progressive Aerobic Cardiovascular Endurance Run (PACER) test; 2) curl-up test; and 3) push-up test. The data collectors, Steve Zaleski (Physical Education Coordinator at Navarro Middle School) Sonia Dominguez, and Dr. Lisa Lloyd, will follow the administration, assessment, and data collection guidelines outlined in the FITNESSGRAM's test administration manual. The Children's Attitudes Toward Physical Activity inventory (CATPA) and a Fitness Knowledge Test (FKT), and a levels of physical activity questionnaire will also require group testing. These tests will be administered during a physical education class.

A portion of the study will involve individual testing. The testing area will be a room adjacent to a gymnasium used for physical education class. Each subject will be tested during his/her physical education class. A physical education AIDE will observe all individual testing. At the testing area, the following will be measured: age; gender; height; weight; triceps and medial calf skinfolds. A Lafayette skinfold caliper will determine skinfolds.

III. Statement of Informed Consent

The Influence of Attitudes and Knowledge on Levels of Physical Activity, Physical Fitness, and Body Composition

You are invited to participate in a study to determine the influence of attitudes and knowledge on the levels of physical activity, levels of physical fitness, and the performance of health-related fitness tests in children. I am a graduate student at Southwest Texas State University at San Marcos, Health, Physical Education, Recreation and Dance. This study will count towards my fulfillment of my thesis requirements for graduation from Southwest Texas State University. I hope to learn whether attitudes and/or knowledge influence levels of physical activity, performance on fitness tests, and/or body composition. If you participate, you will be given the Children's Attitudes Toward Physical Activity inventory (CATPA), a Fitness Knowledge Test (FKT), a physical activity questionnaire, and the FITNESSGRAM health-related physical fitness test. The fitness data along with the CATPA, FKT, and physical activity questionnaire will be used to explore relationships between fitness levels, activity levels, attitudes, and knowledge.

You were selected as a possible participant in this study because you are 13-19 years old enrolled in a regular physical education, fitness, or wellness class. You will be one of approximately 400 subjects chosen to participate in this study. If you decide to participate, I will explain and demonstrate the following procedures step by step:

I understand that my body composition will be determined by one technique. Body composition will be conducted in privacy (i.e., in a physical education office adjacent to the gymnasium). An assistant will be observing all body composition analysis. You will be fully clothed while the measurements are taken.

1. Body composition will be estimated from the measurement of skinfold thickness taken from two sites (i.e., the triceps and medial calf). The triceps skinfold will be measured on the back of my arm midway between the elbow and the shoulder joint. At this midpoint, the skin will be pinched slightly and the thickness will be measured with a caliper. For the calf skinfold measurement, the right foot will be placed on an elevated surface with the knees flexed at a 90° angle. The calf

skinfold will be measured on the inside of the right leg at the level of the maximal calf girth.

I understand that there are minimal risks to healthy individuals under the testing conditions specified above. I understand that the potential risks associated with the tests may include muscle soreness and temporary breathlessness, though it is unlikely given the nature of the duration of these tests. I understand that the effort required during the tests is very similar to the physical efforts required of an individual during a normal physical education class period. I understand that the test administrators are experienced and have conducted numerous submaximal tests of this nature. I understand that emergency equipment is available at the school.

My participation in the study will provide me with knowledge about exercise testing procedures and my muscular strength, body composition, cardiovascular endurance, and flexibility. The results obtained from these assessments will be used as research to the influence that knowledge about fitness and attitude toward physical activity may have on physical fitness, physical activity, and obesity. Although there may be no other direct benefits anticipated from my participation, there may be future benefit to identifying determinants of exercise behavior and obesity among young people.

Any information that is obtained in connection with this study and that can be identified with you **will remain confidential** and will be disclosed only with your permission.

Your decision whether or not to participate will not prejudice your future relations with Southwest Texas State University, Navarro or Pflugerville School Districts. If you decide to participate, you are free to discontinue participation at any time without prejudice.

If you have any further questions, please ask us. If you have any questions later, you may contact Steve Zaleski, Navarro Middle School, Navarro, TX, 830-372-1931 or Sonia Dominguez, Southwest Texas State University, San Marcos, TX, (512) 245-3480.

You will be offered a copy of this form to keep.

You are making a decision whether or not to participate. Your signature indicates that you have read the information provided above and have decided to participate. You may withdraw without prejudice at any time after signing this form, should you choose to discontinue participation in this study.

Child's signature

Date

Parent's signature

Date

Investigator's signature

Date

APPENDIX F

CATPA INVENTORY AND ADMINISTRATION INSTRUCTIONS

Revised CATPA Inventory: Administration Instructions
(Smoll, Schutz, & Keeney, 1985)

This questionnaire is designed to find out how you feel about physical activity. Physical activities are games, sports and dance such as tag, soccer, hockey, ballet, and figure skating on ice.

Each one of you has a booklet and an answer sheet. Do not open it yet. Please listen carefully to the instructions.

Print your name on the top of the answer sheet. Do NOT write in the booklet.

At the top of each section there is a box, and in the box there is an idea. Down below the box are 5 different pairs of words. You will be marking these word pairs to show how you feel about the idea. This is not a test, so there are no right or wrong answers.

Read the idea in the box, for example, REFEREE. Now go down to the first pair of words -Good – Bad. How do you feel about referees? If you think they are very good, you would put a “√” in the corresponding (or appropriate) box on the answer sheet (point at the end next to GOOD) or, if you think that they are very bad, you would put a “√” in the appropriate box on the answer sheet (point at the end next to BAD). If you think that referees are pretty good but not super good you would put a “√” in the appropriate box on the answer sheet (indicate the 2nd closest mark to GOOD) or if you think that referees are sort of bad but not really bad you would put a “√” in the appropriate box on the answer sheet (indicate 2nd closest mark to BAD). If you think that referees are neither good nor bad (i.e. a neutral feeling) then put a “√” in the appropriate box on the answer sheet. If you do not understand the idea put a “√” in the appropriate circle located in the last column of the answer sheet. If you understand the idea in the box but not the word pair, leave the word pair blank and go on to the next word pair. Do you have any questions?

It is important for you to remember several things. First of all, do not write on test booklet. Only write on answer sheet. Secondly, put your “√” right in the middle of the space on the answer sheet. Second, there are five pairs of words in each section, so how many “√’s” will you have on each section? (Five).

When I tell you to begin, go through the booklet page by page. Read the idea in the box at the top of a section and fill in how you feel about all of the word pairs before you go on to the next page. Don't go back to a page after you have finished it; and don't try to remember how you answered the other sections. Think about each word pair by itself. As you go through the booklet go fairly quickly; the idea in the box at the top of each section is a new idea, so think only about that idea.

When you are all finished, put down your pencil and go back through the booklet to make sure that you haven't left anything out by mistake. After you have finished checking, turn your booklet over and wait until everyone is finished. If you have any questions raise your hand and I will come around and help you. You may begin.

Revised CATPA Inventory

Do not open until you are told.

Do not write on test booklet.

Item #1

How do you feel about the idea in the box?

PHYSICAL ACTIVITY FOR THE RELEASE OF TENSION

Taking part in physical activities to reduce stress
or to get away from problems you might have.

Always think about the Idea in the Box

If you do not understand this idea, place a check mark under the column "*I do not understand*" on your answer sheet and go to the next section.

		Very	Sort of	Neutral	Sort of	Very	
1.	Good						Bad
2.	Unuseful						Useful
3.	Unpleasant						Pleasant
4.	Nice						Awful
5.	Happy						Sad

Item #2

How do you feel about the idea in the box?

PHYSICAL ACTIVITY AS LONG AND HARD TRAINING

Taking part in physical activities that have long and hard practices. To spend time in practice you need to give up other things you like to do.

Always think about the Idea in the Box

If you do not understand this idea, place a check mark under the column "*I do not understand*" on your answer sheet and go to the next section.

		Very	Sort of	Neutral	Sort of	Very	
6.	Good						Bad
7.	Unuseful						Useful
8.	Unpleasant						Pleasant
9.	Nice						Awful
10.	Happy						Sad

Item #3

How do you feel about the idea in the box?

PHYSICAL ACTIVITY FOR SOCIAL GROWTH

Taking part in physical activities which give
you a chance to meet new people.

Always think about the Idea in the Box

If you do not understand this idea, place a check mark under the column "*I do not understand*" on your answer sheet and go to the next section.

		Very	Sort of	Neutral	Sort of	Very	
11.	Good						Bad
12.	Unuseful						Useful
13.	Unpleasant						Pleasant
14.	Nice						Awful
15.	Happy						Sad

Item #4

How do you feel about the idea in the box?

PHYSICAL ACTIVITY TO CONTINUE SOCIAL RELATIONS

Taking part in physical activities which give you
a chance to be with your friends.

Always think about the Idea in the Box

If you do not understand this idea, place a check mark under the column "*I do not understand*" on your answer sheet and go to the next section.

		Very	Sort of	Neutral	Sort of	Very	
16.	Good						Bad
17.	Unuseful						Useful
18.	Unpleasant						Pleasant
19.	Nice						Awful
20.	Happy						Sad

Item #5

How do you feel about the idea in the box?

PHYSICAL ACTIVITY FOR HEALTH AND FITNESS

Taking part in physical activities to make your health better
and to get your body in better condition.

Always think about the Idea in the Box

If you do not understand this idea, place a check mark under the column "*I do not understand*" on your answer sheet and go to the next section.

		Very	Sort of	Neutral	Sort of	Very	
21.	Good						Bad
22.	Unuseful						Useful
23	Unpleasant						Pleasant
24.	Nice						Awful
25.	Happy						Sad

Item #6

How do you feel about the idea in the box?

PHYSICAL ACTIVITY AS THE BEAUTY IN MOVEMENT

Taking part in physical activities which have beautiful and graceful moves.

Always think about the Idea in the Box

If you do not understand this idea, place a check mark under the column "*I do not understand*" on your answer sheet and go to the next section.

		Very	Sort of	Neutral	Sort of	Very	
26.	Good						Bad
27.	Unuseful						Useful
28.	Unpleasant						Pleasant
29.	Nice						Awful
30.	Happy						Sad

Item #7

How do you feel about the idea in the box?

PHYSICAL ACTIVITY AS A THRILL BUT INVOLVING SOME RISK

Taking part in physical activities that could be dangerous because you move very fast and must change directions quickly.

Always think about the Idea in the Box

If you do not understand this idea, place a check mark under the column "*I do not understand*" on your answer sheet and go to the next section.

		Very	Sort of	Neutral	Sort of	Very	
31.	Good						Bad
32.	Unuseful						Useful
33.	Unpleasant						Pleasant
34.	Nice						Awful
35.	Happy						Sad

APPENDIX G

ADOLESCENT'S ATTITUDES TOWARD PHYSICAL ACTIVITY AND PHYSICAL FITNESS (AATPAF)

Name: _____

Teacher: _____

Period: _____

What Are Your Current Attitudes and Belief about Personal Fitness?

The following is a series of statements of attitudes and beliefs about physical activity, exercise, and physical fitness. They are designed to evaluate your current attitudes and beliefs about physical activity, exercise, and physical fitness. Use the scale to rate how you feel about the statements presented. Try to be as honest as you possibly can with each of your answers. If you are unsure about your answer, mark “unsure” for your response. There will be no grade assigned to this activity, so feel free to express your opinions.

	A	B	C	D	E
	I Agree Strongly	I Agree	I Am Unsure	I Disagree	I Disagree Strongly
1. I don't have time to exercise.					
2. Regular physical activity and exercise make me feel better.					
3. I have always enjoyed participation in physical activities and exercise.					
4. I enjoy physical education classes.					
5. I like to walk and jog.					
6. I like team games and sports.					
7. I like to lift weights.					
8. I like to engage in physical activities with friends.					
9. Athletes, cheerleaders, and band members should be excused from taking physical education.					
10. Learning about personal fitness will be valuable to me later in life.					
11. Physical education classes have always been boring to me.					
12. Physical education should be a required class.					
13. Engaging in physical activity or exercise helps me forget my problems and reduces my stress levels.					
14. I would take physical education as an elective even if it were not a required course.					
15. Personal fitness teaches self-discipline.					
16. Doing physical activity and exercise can improve your health					
17. After a day at school, I am too tired to exercise					
18. I would rather watch sports on television than actually participate in sports.					
19. I feel guilty when I don't exercise everyday.					
20. I believe good nutritional habits can improve my body composition.					

APPENDIX H

PHYSICAL ACTIVITY QUESTIONNAIRE FOR ADOLESCENTS (PAQ-A)

Physical Activity Questionnaire for Adolescents

We are trying to find about your level of physical activity from the last 7 days (in the last week). This includes sports or dance that make you sweat or make your legs feel tired, or games that make you breathe hard, like tag, skipping, running, climbing and others.

Remember:

Do not write in this booklet. **Mark the correct letter** on the answer sheet.

There are no right or wrong answers—this is not a test.

Please answer all the questions as honestly and accurately as you can—this is very important.

1. Physical activity in your spare time: Have you done any of the following activities in the past 7 days (last week)? If yes, how many times? (Mark only one answer per row.)

	A	B	C	D	E
	No	1-2	3-4	5-6	7 times or more
Skipping					
Rowing/canoeing					
In-line skating					
Tag					
Walking					
Bicycling					
Jogging or running					
Aerobics					
Swimming					
Baseball, softball					
Dance					
Football					
Badminton					
Skateboarding					
Soccer					
Street hockey					
Volleyball					
Floor Hockey					
Basketball					
Ice skating					
Cross-country skiing					
Ice hockey					
Other:					

2. In the last 7 days, during your physical education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)? (Select one answer.)
- A. I don't do PE
 - B. Hardly Ever
 - C. Sometimes
 - D. Quite often
 - E. Always
3. In the last 7 days, what did you normally do *at lunch* (besides eating lunch)? (Select one answer.)
- A. Sat down (thinking, reading, doing schoolwork).
 - B. Stood around or walked around.
 - C. Ran or played a little bit.
 - D. Ran around and played quite a bit.
 - E. Ran and played hard most of the time.
4. In the last 7 days, how many days *right after school*, did you do sports, dance, or play games in which you were very active? (Select one answer).
- A. None
 - B. 1 time last week.
 - C. 2 or 3 times last week.
 - D. 4 times last week.
 - E. 5 times last week.
5. In the last 7 days, on how many *evenings* did you do sports, dance, or play games in which you were very active? (Select one answer).
- A. None
 - B. 1 time last week.
 - C. 2 or 3 times last week.
 - D. 4 times last week.
 - E. 6 or 7 times last week.
6. *On the last weekend*, how many times did you do sports, dance, or play games in which you were very active? (Select one answer).
- A. None
 - B. 1 time.
 - C. 2-3 times.
 - D. 4-5 times.
 - E. 6 or more times.

Which *one* of the following describes you best for the last 7 days? Read *all five* statements before deciding on the *one* answer that describes you.

- A. All or most of my free time was spent doing things that involve little physical effort.
- B. I sometimes (1-2 times a week) did physical things in my free time (e.g., played sports, went running, swimming, bike riding, did aerobics).
- C. I often (3-4 times last week) did physical things in my free time.
- D. I quite often (5-6 times last week) did physical things in my free time.
- E. I very often (7 or more times last week) did physical things in my free time.

7. Mark how often you did physically activity (like playing sports, games, doing dance, or any other physical activity) for each day last week.

	A	B	C	D	E
	None	Little bit	Medium	Often	Very often
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					
Sunday					

8. Were you sick last week, or did anything prevent you from doing your normal physical activities? (Select one answer).

- A. Yes
- B. No

If Yes, what prevented you?

VITA

Sonia Dominguez was born in Weslaco, Texas, on November 10, 1976, the daughter of Rosalda Chavez and Ernesto Dominguez, Jr.. After completing her work at South Texas High School for Health Professions, Mercedes, Texas, in 1995, she entered DePauw University in Greencastle, Indiana. After one year there, she transferred and completed her degree of Bachelor of Science for the University of Texas-Pan American in May 1999. In September 1999, she entered the Graduate School of Southwest Texas State University, San Marcos, Texas.

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This thesis was typed by Sonia Dominguez.