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THE RELATIONSHIP BETWEEN PHYSICAL FITNESS SCORES OF SIXTH-GRADE CHILDREN AND PARENTAL ATTITUDE TOWARD PHYSICAL ACTIVITY

A Dissertation
Submitted to the Graduate School of
Middle Tennessee State University

---

in Partial Fulfillment

of the Requirements for the Degree

Doctor of Arts

---

by

Patricia J. Jordan

August 1997

THE RELATIONSHIP BETWEEN PHYSICAL FITNESS SCORES OF

SIXTH-GRADE STUDENTS AND PARENTAL ATTITUDE

TOWARD PHYSICAL ACTIVITY

Approved:

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Abstract

The purpose of this study was to examine the relationship between parental attitudes toward physical activity and the physical fitness levels of their sixth-grade children. Additionally, the study examined the relationship between the attitude toward physical activity of the mother and that of the father on the physical fitness levels of their sixth grade boys and girls, respectively. The participants in the study included 194 children enrolled in the sixth grade at Prescott Central Middle School in Cookeville, Tennessee and one or both of their parents. The study was conducted during the 1996-97 school year.

Each child was administered test items selected from two recognized test batteries, the Fitnessgram (Institute for Aerobic Research, 1987) and the Physical Best (AAHPERD, 1988). Concurrently, each parent was asked to complete the Attitudes Toward Physical Activity Inventory (ATPA, Kenyon, 1968). This inventory is a multi-dimensional approach to the measurement of attitude toward physical activity.

The comparison between the mean scores of the parent attitude on the six dimensions of physical activity and the mean fitness scores of their sixth-grade children suggested that there was no statistically significant relationship between the parents' attitude toward physical activity and the fitness levels of their sixth-grade children.

Acknowledgments

Many people have been instrumental in the completion of this project. I would like to thank the chairman of my dissertation committee, Dr. Douglas Winborn, whose encouragement and assistance has always been supportive. Dr. Jan Hayes should be nominated for the "reader-editor of the year" for her efforts, encouragement, and timely editing via both "snail-mail" and E-mail. In times of doubt, Dr. Dianne Bartley, was supportative and cooperative.

I appreciate the mentoring of Dr. Ralph Ballou, now retired from Middle Tennessee State University, and Dr. Sondra Wilcox, who either already knew or willingly looked for answers to questions.

The administration at Prescott, Principal David Little and Vice-Principal Mary Higdon have been more than generous in allowing me the freedom to pursue my goals of teaching and writing concurrently.

I am grateful for the assistance of the other physical educators on my team, particularly Mikey Butner, my teaching partner at Prescott Middle School who provided help in the recording of the fitness scores, the collection of the surveys, and the encouragement they gave to the students to remember to return the survey.

Statistical advisors, Dr. R.K. Fletcher, of Tennessee Technological University, and Dr. David Rowe, of Middle Tennessee State University who helped make the numbers take life and be meaningful. Their expertise and assistance are much applauded.

The cooperation, willingness to participate, and enthusiasm for the project of the sixth-grade students of Prescott and their parents was a source of pleasure to me that made the research project not only possible, but also pleasurable.

Typist, Wanda Maxwell who was calm and "cool" in the time of a computer emergency, when it seemed that the two computer platforms were not compatible. The professionalism that was displayed was wonderful, making what seemed a major problem to me, no problem at all. She was wonderful. Kudos to Martha Greer, the "Guru of the Mac," who patiently assisted with the compatibility dilemma.

The friends and family, who encouraged me, made the commute with me, and listened to the never-ending litany of "hoops" and were always there, I appreciate you more than I can ever say.

Lastly, to my friend and advisor, editor, and walking thesaurus, Mendy Richards, I could not, nor would not have completed neither the dissertation, nor the degree, without your help and encouragement.

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CHAPTER I

Introduction

"The concept of attitudes is probably the most distinctive and indispensable concept in contemporary American social psychology" (Allport, 1937, p. 789). Social psychologists have shown an interest in the concept of attitudes since the early 1860's when the concept was introduced in the literature. There are numerous definitions for the term "attitude." Authorities concur that attitudes are predispositions to response (Fishbein, 1967; Newcomb, 1950; Osgood, 1967; Triandis, 1971).

The effect of parental attitude on child development and behavior has long been a topic of interest for psychologists and sociologists. One study has shown evidence to suggest that a relationship exists between attitudes of parents and the attitudes of their children (Melcher, 1975).

Although America has been committed to a fitness boom for over a decade, over sixty percent of all American children tested in the 1985 National Children and Youth Fitness Study were below the average on composite fitness scores (Ross & Gilbert, 1985). The low prevalence of an acceptable level of physical fitness in the population of the United States has contributed to an increased interest in the determinants of physical activity habits, such as attitude toward physical activity, parental influence, and other factors which may influence exercise habits in children. Studies to date have consistently substantiated the notion that family members, especially parents, exert powerful

influences on children's physical activity levels (Moore, Lombardi, White, Campbell, Oliveria, & Ellison, 1991). Several studies have demonstrated family aggregation of physical activity habits with children ranging in age from preschool to early adolescence. This suggests that family members may serve as role models for one another (Sallis, Patterson, Buono, Atkin, & Nader, 1988). According to Cratty (1967), the family exerts the earliest effect, and a lasting one, on the child.

Promotion of physical activity was of interest to physical educators and health professionals alike, because activity appears to prevent or at least minimize the development of heart disease and/or its associated risk factors in adults (Paffenbarger & Hyde, 1984; U.S. Department of Health and Human Services, 1987). Efforts have focused on modifying adult behavior, yet inactivity may begin in youth as television and video games draw children into a sedentary lifestyle (Dietz & Gortmaker, 1985; Robinson, 1993). Attempts have been made at improving the fitness levels of children, usually within the school environment, where increased knowledge and physical activity are readily attainable (Butcher, Franks, Harsha, Serpas, Little, Nicklas, Hunter, & Berenson, 1989; Nader, Sallis, Patterson, Abramson, Rupp, Seen, Atkins, Roppe, Morris, Wallace, & Vega, 1989; Weber, Johnson, Carter, Dietsch, Caldwell-Stacy, Pallmer, & Hansen, 1989).

However, several studies have reported that, outside of the structure of the schools, modifications of lifestyle habits were not easily maintained due to the influence of the media, peers, and parents (Dishman & Sallis; Orenstein, 1985; Ferguson, Yesalis, Pomrehn, & Kirkpatrick, 1989; Godin, Shephard, & Colantonio, 1986).

Epidemiological studies have demonstrated the importance of the protective effects of physical activity to general health and well-being in adults (Bouchard, Stephens, & McPherson, 1990), as well as associations between physical activity and both physiological risk factors and mental health variables in children (Rowland, 1990). Behavioral studies exploring children's physical activity have suggested that numerous variables can influence children's physical activity. These influences may be biological, psychological, social, cultural, or environmental (Sallis, Simons-Morton, & Stone, 1992).

There have been a number of studies which have investigated the relationship between the parent and the child and their similarities and differences with regard to basic attitudes, values, goals, and behaviors. Familial aggregation, the combination of genetic and environmental influences within a family, has been studied in relation to many factors associated with health. Familial clustering of multiple coronary artery disease risk factors has also been well recognized (Snowden, McNamara, Garrison, Feinlei, Kannel, & Epstein, 1982). There have been studies of the familial associations between mothers and both their younger and older children for time spent in physically demanding leisure activities (Sallis, Patterson, Buono, & Nader, 1988). These studies have suggested that there is a relationship found in familial resemblance in physical activity between parents and their offspring (Moore, Lombardi, White, Campbell, Oliveria, & Ellison, 1991; Perusse, LeBlanc, & Bouchard, 1988; Perusse, Trenblay, LeBlanc, & Bouchard, 1989). However, relatively few studies dealing specifically with the effect of parental attitudes toward physical activity on the physical performance of children were found in the literature (Moore et al., 1991).

With the development of Kenyon's ATPA (1968), there has been an increased interest in research designed to measure attitude, especially with regard to physical activity. One of the first such studies examined the relationship between parent attitudes and the motor ability or physical performance of their children (Melcher, 1975). A number of the studies have investigated the attitudes of the college or high school student (Hergart, 1969; Lockhart, 1971; Mowatt, DePauw, & Hulac, 1988).

With the development of technology and the concomitant decline of an agrarian lifestyle within our society, conventional wisdom holds that there has been less and less physical activity engaged in by the children, resulting in lower and lower levels of physical fitness. This trend is one which is becoming of more serious national concern with the passage of time. The results of research into attitudes towards physical activity which affect negatively or positively upon student level of physical fitness has much to offer modern physical educators, as this study will show.

Generally speaking, professionals have agreed that attitudes are acquired through positive experiences, negative experiences, and modeling (Williams & Smith, 1980). If the attitude of parents towards physical activity did affect the physical fitness level of their children, an understanding of how this effect was achieved is important for the physical educator to grasp. Given this understanding, program planning may reflect the knowledge of how to motivate the students, to ensure that the students achieve their maximum level of physical fitness.

Statement of the Problem

This study was designed to answer the question: "Is there a relationship between the physical fitness scores of sixth grade children and parental attitude toward physical activity?"

Purpose of the Study

The purpose of the study was to determine the relationship between the physical fitness scores of sixth grade students and the attitude of their parents toward physical activity. The over-arching consideration of this study is to provide information that will be useful to elementary physical educators in the never-ending quest to increase the physical fitness level of their students. In addition, if there is found to exist a strong relationship between the attitude of the parents and the physical fitness scores of their children, then the physical education curriculum should be designed to incorporate not only the needs and attitudes of the child, but also the needs and attitudes of the parents as well. If no significant relationship should be shown to exist, the attitude of parents toward physical activity would not be a factor in curriculum or program development.

The specific purposes of this study were to:

1. Determine the relationship between physical fitness scores of sixth-grade children and their mothers' and/or fathers' attitude scores on the dimension of physical activity as a Social Experience.

2. Determine the relationship between physical fitness scores of sixth-grade children and their mothers' and/or fathers' attitude scores on the dimension of physical

activity as Health and Fitness.

3. Determine the relationship between physical fitness scores of sixth-grade children and their mothers' and/or fathers' attitude scores on the dimension of physical activity as a thrill-seeking activity, involving some risk (Pursuit of Vertigo).

4. Determine the relationship between physical fitness scores of sixth-grade children and their mothers' and/or fathers' attitude scores on the dimension of physical activity as beauty in human movement (Aesthetic).

5. Determine the relationship between physical fitness scores of sixth-grade children and their mothers' and/or fathers' attitude scores on the dimension of physical activity for the release of tension (Catharsis).

6. Determine the relationship between physical fitness scores of sixth-grade children and their mothers' and/or fathers' attitude scores on the dimension of physical activity as prolonged and strenuous training (Ascetic).

7. Determine the relationship between the attitude of the father and the attitude of the mother toward physical activity.

8. Compare the findings of this study to the findings of similar studies.

Hypotheses

To investigate the questions raised by this study, the following null hypotheses were tested:

H1: There is no significant relationship between the physical fitness scores of sixth-grade children and their mothers' and/or fathers' attitude scores on the dimension of

physical activity as a Social Experience.

H2: There is no significant relationship between the physical fitness scores of sixth-grade children and their mothers' and/or fathers' attitude scores on the dimension of physical activity as Health and Fitness.

H3: There is no significant relationship between the physical fitness scores of sixth-grade children and their mothers' and/or fathers' attitude scores on the dimension of physical activity as a thrill, but involving some risk (vertigo).

H4: There is no significant relationship between the physical fitness scores of sixth-grade children and their mothers' and/or fathers' attitude scores on the dimension of physical activity as beauty in human movement (aesthetic).

H5: There is no significant relationship between the physical fitness scores of sixth-grade children and their mothers' and/or fathers' attitude scores on the dimension of physical activity for the release of tension (catharsis).

H6: There is no significant relationship between the physical fitness scores of sixth-grade children and their mothers' and/or fathers' attitude scores on the dimension of physical activity as prolonged and strenuous training (aesthetic).

Conditions of the Study

This study was conducted with the following conditions:

1. This study included only boys and girls in the sixth grade at Prescott Central Middle School, in Cookeville, Tennessee, and their parents.

2. This study was limited to the 1996-97 school year.

3. Parents were either biological or custodial who resided with the child during the time of the investigation.

4. Only students whose parent or parents agreed to participate and answer the questionnaire were included in the study.

5. The parents of the students surveyed came from a rural community in central Tennessee. The population was approximately 60,000 people.

6. The attitudes of the parents in the study were restricted to the subdomains of Kenyon's ATPA (1968).

A. Physical Activity as a Social Experience

B. Physical Activity for Health and Fitness

c. Physical Activity as the Pursuit of Vertigo

D. Physical Activity as an Aesthetic Experience

E. Physical Activity as Catharsis

F. Physical Activity as an Ascetic Experience

7. Physical fitness in this study was measured by the AAHPERD Physical Best Test and the Prudential Fitnessgram. The test items included sit-ups, curl-ups, sit-and-reach, back saver sit-and-reach, pull-ups, flexed arm hang, one mile walk/run, body mass index, and sum of skinfold measurements.

8. Any variables and conditions not so specified should be considered beyond the scope of this study.

Assumptions

This study was administered while acknowledging the following assumptions:

1. The AAHPERD Physical Best Test and the Prudential Fitnessgram accurately measured the physical fitness level of the students.

2. The Kenyon, ATPA (1968) accurately assessed the attitudes of the parents toward physical activity.

3. The parents were completely honest when answering the attitudinal questionnaire.

Definition of Terms

For the purpose of the study the following terms were defined:

Attitude -- "A latent or nonobservable, complex, but relatively stable behavioral disposition reflecting both direction and intensity of feeling toward a particular object, whether it be (sic) concrete or abstract." (Kenyon, 1968, p. 100). Attitude in this investigation will be measured by Kenyon's ATPA (1968).

Dimension -- A part or subdomain of the broader concept of physical activity.

Physical Activity -- Any bodily movement produced by skeletal muscles that results in energy expenditure (Caspersen, Powell, & Christenson, 1985).

Physical Fitness -- To possess the stamina to perform daily tasks, the energy to engage in active, leisure-time pursuits, the physical resources to meet unforeseen emergencies without undue fatigue and the vitality to perform at the fullest capacity (Neiman, 1990; Howley & Franks, 1992). In this investigation, physical fitness was

confined to the capacity for activity and flexibility through the large or gross muscle movements of the body. The components of physical fitness measured were, aerobic endurance, body composition, muscular strength and endurance, and flexibility.

Physical fitness scores -- operationally defined as those components tested by the American Alliance for Health, Physical Education, Recreation, and Dance (AAHPERD) Physical Best assessment program and the Prudential Fitnessgram. The fitness test items include the one mile walk/run, sit-up, curl-up, sit and reach, back saver sit and reach, pull-up, flexed arm hang, body mass index, and the skinfolds sum of measurement (Fitnessgram, 1987).

Parents -- includes biological and/or custodial parents, or single parent, and/or guardian with whom the student is living.

Parental Attitudes -- parental attitudes toward physical activity as measured by the Kenyon's ATPA (1968).

The six domains included in the inventory are defined as follows:

1. Physical activity as an Ascetic Experience -- physical activity involving long, strenuous, and often painful training and stiff competition, demanding a deferment of many gratifications (Kenyon, 1968, p.101)

2. Physical activity as an Aesthetic Experience -- activity conceived as possessing beauty or certain artistic qualities (Kenyon, 1968, p. 100)

3. Physical activity as a Catharsis -- physical activity perceived as providing a release of tension, precipitated by frustration through some vicarious means (Kenyon, 1968, p. 100)

4. Physical activity for Health and Fitness-- physical activity characterized primarily by its contribution to the improvement of one's health and fitness (Kenyon, 1968, p. 99)

5. Physical activity as a Social Experience--physical activity whose primary purpose is to provide a medium for social intercourse (i.e., to meet new people and to perpetuate existing friendships) (Kenyon, 1968, p. 98).

6. Physical activity as a Pursuit of Vertigo--experience providing some risk to the participant, an element of thrill through the medium of speed, acceleration, sudden change of direction, or exposure to dangerous situations, with the participant usually remaining in control (Kenyon, 1968, p. 99)

7. Sixth Grade Children--males and females in the sixth grade in one selected middle school in Cookeville, Tennessee.

Justification of the Study

In the early formative years, the family is the child's only model and each tends to assimilate the responses, reactions, and attitudes to which one is exposed most frequently (Melcher, 1975). Other studies, mostly in the fields of sociology and psychology, have examined the relationship between the similarities of the parental attitudes, values, behaviors and goals with that of the child. If in the area of physical fitness, the children did not reflect the enhanced level of physical fitness of their parents, but did reflect the attitude of their parents toward goals, attitudes and values, what would be the reason for this result?

The findings of the 1985 National Children and Youth Fitness Study showed that one third of the youth of the nation were not physically active (McGinnis, 1987). The adult problems of obesity, diabetes, and high cholesterol levels are shared by the youth of our nation (Marsh, 1988). The lifestyles of children need to be changed before they reach the age of eight (Dauer and Pangrezi, 1987). The information from the National Children and Youth Fitness Study suggests that current elementary physical education programs may be inadequate to promote lifetime fitness. These findings challenge researchers to find ways to enhance the physical fitness levels and physical activity habits of the children.

By determining if a relationship exists between parental attitudes toward physical activity and physical fitness levels of their sixth-grade children, physical educators would acquire the knowledge and information necessary to better plan elementary school-level physical education programs. If a relationship is found between these two variables, a physical education curriculum should not only address the need of the child, but also the parents as well.

CHAPTER II

Review of the Literature

The study was designed to determine whether there is a relationship between parental attitudes toward physical activity and the fitness scores of their sixth grade children. The review of literature was divided into the following sections: (1) Attitudes Toward Physical Education, (2) Attitudes Toward Physical Activity, (3) Parental Attitudes Toward Physical Activity, (4) Attitudes and Physical Fitness, (5) Review of Related Studies, and (6) Summary.

Attitudes Toward Physical Education

A number of instruments have been developed which were intended to measure attitudes toward physical education. These instruments laid the foundation for the physical activity attitude scales which are discussed later in the text. Some of the instruments which purport to measure attitude toward physical education were included in the review of literature.

Broer administered a questionnaire to freshman, sophomore, junior and senior women at the University of Washington to determine their attitudes toward physical education. The results of the research suggested that senior women possessed more positive attitudes toward physical education than women who are freshmen, sophomores

and juniors. She also found that women in team and individual sports felt more favorable toward physical education than did women who were dance majors (Broer, 1955).

Early studies of attitudes toward physical education involved primarily high school and college students as subjects. The findings of these studies were of interest because of their relationship to this investigation. One investigation that attempted to examine attitudes toward physical education and sex differences was done by Keogh. Keogh (1962) examined the attitudes of 136 male and 136 female students at the University of California, Los Angeles, using Wear's Physical Education Attitudes Inventory (1955), which will be referred to hereafter as the Wear Inventory.

With almost equal numbers, favorable attitudes toward physical education were found among women and men. The women registered positive attitudes toward physical education, but indicated that they would not participate were they not required to do so. Broer, Fox and Way investigated the attitudes of women toward physical education by also employing the Wear Inventory. The results of that study suggested that women were influenced more strongly by the most recent physical activity in which they had participated (Broer, Fox, & Way, 1955).

In a study which examined the relationship of attitudes toward physical education and the grades earned, Vincent found that those students who possessed a more positive attitudes toward physical education received higher grades in physical education (Vincent, 1967). Similarly, Seaman studied the attitudes of handicapped children toward physical education and found that those children who participated in physical activities

outside the classes offered had a more favorable attitudes toward physical education (Seaman, 1970).

The relationship of attitudes toward physical education and level of physical fitness among socio-economic classes was studied by Young. He administered the AAHPERD Physical Fitness Test and the Wear Attitudes Inventory (Wear, 1955) to 25 students of the upper-middle class, 78 of the middle class, and 11 of the lower-middle class, socioeconomically. Findings suggested that a favorable attitudes toward physical education was positively correlated with the level of physical fitness (Young, 1970).

Mista (1968) attempted to determine what factors within an individual's life experience contribute toward the development of attitudes toward physical education. His subjects were 1,126 college freshmen from fourteen selected private colleges. Findings were that individuals who had the most opportunities to participate in physical activities had the most favorable attitudes toward physical education .

In an attempt to ascertain the attitudes of high school students toward personal health and fitness, Rice (1968) tested 602 students who were freshman, sophomore, junior or seniors from 5 urban and 2 rural high schools with a self-report questionnaire. The results suggested that 85 % of all students enjoyed their physical education classes and 69 % considered themselves to be physically fit, with slightly more males than females responding positively (Rice, 1988).

A summary of 84 papers which dealt with student attitudes toward physical education was done by Aicinena in 1991. The results were obtained through examination

of questionnaires, critical incident reports and personal interviews. The results of this study delineated both areas in which students indicated positive and negative attitudes. These findings suggested that teachers may affect student attitudes positively (Aicinena, 1991).

An investigation was conducted to determine the attitudes toward physical education of 603 middle school students, measured through a 45 question survey. The results suggested that students who had positive attitudes about physical education were more likely to say that they planned to exercise in the future (Ferguson, Yesalis, Pomrehn, & Kirkpatrick, 1989).

A study conducted in England by Pritchard (1988) examined the attitudes towards physical education in that country. This research was based on eight economic planning regions in England, taking into account the urban and rural education authority in each. Questionnaires were sent to 10 secondary schools within each authority. In each school, questionnaires were to be completed by two male and two female pupils selected at random from those in the fifth year of secondary education. The results of this study suggested that the total sample included in the study attributed value in physical education to the improvement of personal health and fitness and for the development of good sporting behavior (Pritchard, 1988).

Attitudes Toward Physical Activity

Although related to attitudes toward physical education, attitudes toward physical activity is very different in that it is a multi-dimensional concept which allows for greater

specificity not considered in most of the investigations measuring attitudes toward physical education. The most widely used and highly respected instrument for the measurement of attitudes toward physical activity was developed by Gerald S. Kenyon in 1968. Kenyon believed that a model could be constructed in which physical activity could be conceived as a socio-psychological phenomenon. Kenyon's assertion was that physical activity was multidimensional and as such could be broken down into logical sub-sets (Kenyon, 1968).

Kenyon published two articles in the Research Quarterly in 1968, the first of which described the instrument and the rationale for the multi-dimensional approach to physical activity and how the integrity of the instrument was determined through internal consistency and subdomain independence. The second article discussed the development of the Attitude Toward Physical Activity Inventory, ATPA (Kenyon, 1968) which included the reliability and validity indices for the inventory. Validity was demonstrated on all dimensions except that of catharsis. The scale, however, demonstrated adequate reliability and validity to be used as an instrument in determining attitudes toward physical activities (Kenyon, 1968).

The Likert-type scale was replaced by Kenyon with the semantic differential method which places word opposites at the polar extremes of a bipolar continuum. The scale has seven numbered check-points between two words. The subject responds by placing an "x" in the position which most closely agrees with his/her attitudes about a particular concept (Kenyon, 1968).

To meet the need for an instrument which could measure attitudes toward physical activity of younger children (grades three through six), Julie Simon and Frank Smoll (1974) developed a scale which was in effect an adaptation of the Kenyon scale. The vocabulary was made more appropriate for the younger students in the development of a forty-eight item scale using the Semantic Differential form. The scale, called the Children's Attitudes Toward Physical Activity measured the same six dimensions of physical activity as the Kenyon scale (Simon & Smoll, 1974).

The Kenyon ATPA (1968) was administered by Hergart to college students who were enrolled in different physical education courses to determine if there were differences in attitudes toward physical activity. He found significant differences in attitudes between the women and the men tested; however, there were no significant differences between the groups taking different activities (Hergert, 1969).

Dorothy Harris (1970) studied the attitudes toward physical activity of middle-aged men (ages 40 to 49). A questionnaire on physical activity history was completed by each subject. Based on the questionnaire results, the subjects were placed into two groups which were labeled: sedentary and volitionally active. The sedentary subjects were randomly assigned to either an exercise group or a non-exercise group. The exercise group participated in a regular program of physical activity for one year. After the year, all subjects completed a Physical Activity Attitudes Inventory. The results showed that the sedentary men who became active scored as high on the Physical Activity Attitudes Inventory as did the volitionally active men (Harris, 1970).

Patterson & Faucette (1990) examined differences in attitudes toward physical activity among fourth- and fifth-grade boys and girls. The results revealed that girls expressed more favorable attitudes toward the Aesthetic, Social, and Catharsis sub-scales, while boys were more favorably disposed toward the Health and Fitness, Pursuit of Vertigo, and Ascetic scales. In general, girls were more positively inclined toward less active activities, and boys were more positively inclined toward the more active activities. (Patterson, 1990).

Alderman (1970), using Kenyon's Semantic Differential Scale, investigated attitudes toward physical activity of world-class athletes. The subjects in this study were the athletes participating in the 1967 Pan American Games in Winnipeg, Manitoba, Canada. The results suggested that both male and female athletes held similar attitudes regarding physical activity. Physical activity as an ascetic experience ranked lowest, while physical activity as an aesthetic experience ranked highest (Alderman, 1970).

In a more recent study, Mowatt, DePauw & Hulac (1988) investigated the differences in attitudes by gender, year in school, activity class, mini-lecture, and time among 564 college students enrolled in an elective activity course program at a northwestern land grant university. The results suggested that the students felt very strongly that being physically fit was important. Mowat et al. (1988) also concluded that there was a scientific basis for the value of physical activity. Moreover, females, on the average, exhibited more positive attitudes towards physical activity than did males (Mowatt, DePauw & Hulac, 1988).

Brocket found that in 800 sixth- and eighth-grade males and females, the higher achievers in the fitness standards tended to score higher in fitness knowledge and attitudes towards physical activity than low achievers. In general, eighth grade lower achievement groups tended to hold less positive attitudes toward physical activity than did any of the other four groups, either the sixth graders in general or the sixth- and eighth-grade high achievement groups, respectively (Bocket, 1994).

The goal of the study conducted by Hunt (1995) was to examine selected aspects of daily physical education programs in order to assess the relative student behaviors and attitudes toward physical activity. The results suggested that the males held a more favorable attitudes towards the risk-taking and thrill-seeking (pursuit of vertigo) aspects of physical activities when compared to females. Also consistent with past research, females were found to have held more favorable attitudes towards the aesthetic nature of physical activities. There were no statistically significant differences between the attitudes towards physical activity between the two program groups (Hunt, 1995).

The purpose of the study conducted by Stephens, Jacobs, and White in 1985 was to determine the epidemiology of leisure-time physical activity. While their finding was difficult to generalize, the researchers nevertheless concluded that younger and higher socio-economic status citizens were more physically active in their leisure time. The researchers also found that males and females were equally likely to be involved in conditioning-type activities, and that 20 % of the population exercises at a level frequently recommended for cardiovascular benefits (Stephens, Jacobs, & White, 1985).

Parental Attitudes Toward Physical Activity

Although in the past, relatively few research studies were designed and conducted to measure parental attitudes toward physical activity, the decade of the 1980's has seen an increase in interest among researchers in measuring the influence of family on children's exercise behavior. In an early study, Wylie (1953) attempted to assess the status of family participation in recreational activities. A total of 504 families were interviewed with regard to their perceived satisfaction with their recreational activities. The results suggested that families in the middle-income range were the most satisfied with their recreational activities. This was due in part to the fact that these families had both the income and the time to enjoy recreational pursuits (Wylie, 1953).

Greendorfer and Lewko (1978) examined the effects of a summer fitness program on children between the ages of eight and thirteen. Children in this age group were presupposed to be highly influenced by their parents in terms of attitudes. Their findings suggested that parents appear to be a significant socializing agent in influencing sport involvement of both boys and girls. This study was considered to be important to the present study because of the ages of the subjects encompassing those of the children in the present study.

Synder and Spreitzer (1976) examined a comparison between parent involvement in sport activity and the child's participation in physical activity. The results suggested that family encouragement and the actual involvement of parents was instrumental in the child's participation. The researchers also found that the same-sex parent was the most significant influence on a child's involvement in sport activities.

Shepard and Godin (1986) studied early adolescent children and influences on the intent to exercise. The study was designed to examine psycho-social factors which influence the intention of junior high students to engage in vigorous exercise. Results of the study suggested that prior experience of physical activity and parental attitudes toward exercise have a significant influence upon the intent to exercise.

The Bowman Parent Attitude Inventory and the Scott Attitude Scale were employed by Cobb to determine and compare parental attitudes of 308 sixth-grade students toward elementary physical education and athletic competition. The results suggested that fathers and mothers of sixth-grade students held generally positive attitudes toward elementary physical education, but were less positive toward athletic competition. An additional finding was that the mothers of the girls constituted the group with the highest perception of physical education of any other group (Cobb, 1971).

In a study of primary school-aged children and their parents done by Zeller, Wear's Attitude Inventory (1955) was used to assess the parental attitudes toward physical education. Cratt's Perceptual Motor Battery was used to measure the skill level of the children and identify those children who were above and below the mean for their age. The results suggested that parents of the more highly skilled students scored significantly higher on the attitude inventory than parents of the lower skilled students (Zeller, 1968).

In 1956, Skubic investigated parental attitudes of children participating in Little League and Middle League baseball. Results suggested that the parents strongly favored the programs, and that the students chosen for the team achieved higher marks in school

and were better socially adjusted than those students not selected for the team. The parents held that Little League participation was a positive factor in their sons' development (Skubic, 1956). Moore et al. (1991) determined in a study of four- to seven-year-old children that when both parents were active children were 5.8 times as likely to be active as children of two inactive parents. The researchers reasoned that this was possibly due to parents serving as role models, sharing of activities by family members and genetically transmitted factors that predispose the child to increased levels of physical activity (Moore, Lombardi ,White, Campbell, Oliveria, & Ellison, 1991).

The purpose of the study conducted by McMurray, Bradley, Harrell, Bernthal, Fauman, and Bangdiwala (1993) was to determine the effect of parental attitudes and self-reported exercise habits on the fitness and activity levels of their children. One parent from each of 1,253 family dyads was asked about exercise habits and completed a questionnaire to determine his/her personal attitudes toward exercise. The children were to complete a self-reported activity questionnaire and to perform a cycle ergometer test in order to predict their aerobic capacity. The findings of this study suggested that the children's self-reported activity scores were not correlated with the parents' attitudes or exercise habits. These results further suggest two possibilities: either that factors other than parental attitudes and exercise habits are more influential in determining the fitness and activity levels of children, or the instruments were lacking in precision (McMurray et al., 1993).

In a broad-based study of the effects of including parents in a school-based exercise and nutrition program for children, Hopper, Gruber, Munoz, & Herb (1992),

determined that as a result of the program the students realized increased scores in flexibility and nutritional knowledge; however, there was no increase, in either diet benefits or exercise behaviors (Hopper et al., 1992).

Freedson and Evenson conducted a study to determine if there was family aggregation in physical activity level. A total of 30 five-to nine-year-old children and their biological parents wore accelerometers for three consecutive days. At the same time, parents completed an activity record for themselves and their child. The accelerometer displayed a familial resemblance in 67 % of the families. The activity record also displayed a familial aggregation in 70% of the families. Thus, the findings of this study suggested that children exhibited physical activity patterns which were similar to their parents, regardless of whether more or less active (Freedson & Evenson, 1991).

Attitude and Physical Fitness

In a study of 127 boys and 137 girls in the fourth, fifth and sixth grades by Smoll, Schutz & Keeney (1976), the results suggested that the relationship between attitudes toward physical activity and the frequency of involvement in physical activity demonstrated only a slight relationship. Wessell and Nelson studied the relationship between the attitude of college women toward physical education, physical activity and their muscular strength. The results of the study demonstrated a positive relationship between muscular strength and attitudes toward physical education and physical activity (Wessell & Nelson, 1962).

Scott compared the attitudes of parents, teachers, and school administrators toward intensive competition in team games in elementary grades four through six. She found that the majority of subjects in all three groups tended to favor intensive competition. However, the parents demonstrated the most favorable attitudes toward intensive competition. Conversely, the school administrators demonstrated the least favorable attitudes towards intensive completion (Scott, 1953).

Similar results were obtained by Neale, Sonstroem, & Metz (1969). In a study designed to distinguish differences in attitude toward participation in physical activity between high and low fitness groups, the findings suggested a relationship between attitudes toward physical activities and physical fitness. The high fitness groups felt that they were more capable of performing the activities and more attracted to them than low fitness groups.

In a more recent study involving 148 fourth-grade girls and 149 fourth-grade boys and their parents, Sallis and his colleagues examined the relationship between parental behaviors and physical activity and fitness in elementary school-aged children. Their findings failed to support the notion that parental attitudes affected their child's fitness levels. The findings suggested that parents' reported physical activity was not associated with the child's activity or fitness levels (Sallis, Alcaraz, McKenzie, Hovell, Bohdan, & Nader, 1992).

Review of Related Studies

Four studies were found in the related literature which were closely related to the current investigation. These studies, by Shackelford, Aycock, Melcher, and Ray, were all designed to explore the relationship between children's fitness levels and the attitudes of the parents. Each of these studies is described in detail in the following section.

Shackelford examined the relationship between the physical fitness scores of primary children and parental attitudes toward physical activity, parental exercise level, socioeconomic status, and educational level. Two hundred twenty-six children in the first, second, and third grades were administered the AAHPERD Physical Best fitness test battery (AAHPERD, 1988). Parental attitudes toward physical activity were measured by the ATPA (Kenyon, 1966) questionnaire. The population selected for this study came from a variety of socio-economic backgrounds, educational levels, and dual- or single-parent households. The primary purpose of Shackelford's 1989 study was to determine whether a relationship existed between the physical fitness scores of primary grade students and parental attitudes toward physical activity. Shackelford also examined the relationship between children's fitness scores and parents' educational and socio-economic level and parents' participation in physical exercise.

The multiple-linear regression statistical method was utilized to test the hypotheses of the study. A summary of the results of the study suggested that (1) the mothers and fathers in general held positive attitudes toward physical activity; (2) there was a significant relationship between the mothers' and fathers' attitudes toward physical activity as health and fitness and the males' fitness score; (3) a significant independent

relationship was also found in the males' fitness score and the mothers' attitudes toward health and fitness; (4) neither the socioeconomic status nor the educational level of the parents showed any significant relationship to the fitness scores of their children; and (5) the exercise patterns of the parents showed little relationship to their children's fitness scores (Shackelford, 1989).

Aycock (1980) tested first-, second-, and third-grade students using the Glover Fitness Test. The parental attitudes toward physical activity was measured by the ATPA (Kenyon, 1968). There were approximately ninety-eight children and their parents included in the study.

The scores of each child on each of the physical fitness items were compared individually with the fathers' and mothers' scores on each of the six subdomains of physical activity as described by Kenyon (1968). Statistical analysis was accomplished by means of the Pearson Product Moment Correlation. The findings of Aycock's study suggested that 91 of the 96 possible correlations between boys' and girls' attitude scores did not have any statistically significant relationship. However, a significant relationship ($p<.05$) was found between the attitude scores of the mother and father on all six dimensions of physical activity. The relationship produced correlations of 0.410 (Social), 0.411(Health and Fitness), 0.334 (Vertigo), 0.312 (Aesthetic), 0.487 (Catharsis), and 0.469 (Ascetic). Positive attitudes toward physical activity were found to exist on all six dimensions by fathers and mothers. Aycock concluded from the data analysis that a significant relationship did not exist between parental attitudes of physical activity and physical performance of primary grade children (Aycock, 1982).

The Melcher (1975) study was designed to investigate the relationship between parental and student attitudes toward physical activity and the motor ability of high school girls. Melcher used the ATPA (Kenyon, 1968) to measure the attitudes of 242 high school-aged girls and their mothers and fathers. Each girl was given the Scott Motor Ability Test to determine her level of physical performance. The study was divided into two-parts. The first phase involved determining the existence of a relationship between the motor ability of the girls whose scores were in the higher 31 % or the lower 32 % of the group tested and the attitude score of their mothers and fathers on each of the independent subdomains of the ATPA inventory (Kenyon, 1968). A total of three multiple linear regression models were used to determine the existence of a relationship between the attitude scores of the father, mother, daughter and the daughter's motor ability score. The second phase involved all of the subjects and their parents. The statistical analysis was accomplished by means of Pearson Product Moment Correlation to determine the correlation between the attitude toward physical activity of the daughter and her mother and the daughter and her father on each of the six dimensions of physical activity .

During analysis of the first phase of the study, Melcher found that, when the daughter's motor ability scores were in the upper 31 % or the lower 32 %, the father's attitude toward physical activity was more closely related to the daughter's motor ability scores than were the mother's attitude. These findings demonstrate the existence of a statistically significant relationship between the father's attitude toward physical activity and the daughter's motor ability score. Melcher also found a positive relationship

($p < .05$) between the attitude toward physical activity and the motor ability of tenth-grade girls when the girls have motor ability scores in the upper 31% or lower 32% of the population of study. The second phase of Melcher's study produced statistically significant relationships ($p < .05$) between the daughters' attitude scores and both the mother's and the fathers' attitude scores on each of the six dimensions of physical activity (Melcher, 1975).

Ray (1968) investigated the relationship between parental attitude toward physical activity and the physical fitness scores of 191 high school girls. The Wear Attitude Inventory was used to measure the attitude of the parents. Each girl was given the Kneer Adaptation of the Wear Inventory. The AAHPERD Youth Fitness Test (seven items) was used to measure physical fitness.

The purpose of Ray's study was to: (1) compare the attitudes of the students in a high physical fitness group with the attitudes of the students in a low fitness group; (2) compare the attitudes of parents whose daughters' physical fitness scores fell in the high group with the attitudes of parents whose daughters' physical fitness scores fell in the low group; (3) compare the attitudes of the students in the high group with the attitudes of their parents according to four different aspects of attitude: social, physical-physiological, mental-emotional, and general aspects; (4) compare the attitudes of the students in the low group with the attitudes of their parents according to: social, physical-physiological, mental-emotional, and general aspects; and (5) determine the relationship of the parents' attitudes and of the students' attitudes to the students' achieved fitness (Ray, 1968).

From the results of this study, Ray concluded that: (1) students who achieved high scores on the AAHPERD Youth Fitness Test viewed physical education much more favorably than did those students who achieved low scores; (2) parents whose daughters achieved high fitness scores viewed physical education much more favorably than parents whose daughters achieved low scores; (3) a positive relationship was found to exist between student attitudes toward physical education and their physical fitness scores; and (4) a positive relationship was found to exist between parental attitude toward physical education and the physical fitness scores of their daughters (Ray, 1968).

Summary

Psychologists have defined attitude as "a fitness" or ability to adapt (Shackelford, 1989). Instruments measuring attitude toward physical education were the precursors of the measurement instruments for the general concept of physical activity. Physical activity, in its own right, has been measured by many methods. Prior to the development of the ATPA Scale (Kenyon, 1968), the most frequently used measure for attitude towards physical activity is the 1955 Wear Attitudes Toward Physical Education Inventory (Aycock, 1982).

A review of the literature investigating attitude toward physical education revealed that, in general, positive attitudes were held by students and parents toward physical education. Several factors that may affect attitude toward physical education were (1) grades received; (2) type of program; (3) physical fitness of the participant; and (4) attitudes of peers or family members.

The ATPA (Kenyon, 1968) was an important addition to the instruments available to the physical educator to measure physical activity. Kenyon (1968) separated physical activity into six independent dimensions. They were physical activity as: (1) a Social Experience; (2) Health and Fitness; (3) Catharsis; (4) an Aesthetic Experience; (5) Pursuit of Vertigo; and (6) an Ascetic Experience.

Following the development of the conceptual model and testing of the ATPA (Kenyon, 1968), numerous studies have been conducted utilizing this multidimensional approach for evaluation of attitudes toward physical activity. The research indicates that a positive relationship exists between the child and his parents with regard to many aspects of his behavior, confirming the notion that parents are highly influential in the physical activity level of their child. A review of related studies suggested that most subjects have ranked the dimensions of "physical activity as health and fitness" and "physical activity as catharsis" very high. Most all of the studies indicated generally positive attitude toward physical activity; however, conflicting results in the relationship between parents' attitudes toward physical activity and children's fitness scores exist in the literature.

There is also general agreement that the more active the individual, the more positively that individual views physical activity. Essentially all of the studies reviewed by this investigator found that most parents have generally positive attitudes toward physical activity and physical education programs.

CHAPTER III

Method

This chapter will include a description of the following: (1) selection of participants, (2) procedures for data collection, (3) instruments to be utilized, and (4) methods of statistical analysis.

Selection of Subjects

The study was conducted at Prescott Central Middle School, a newly reorganized public school located in Cookeville, Tennessee, the county seat of Putnam County, with an area population of approximately 65,000. The economy of the area depends largely upon light industry, agriculture and a regional university, Tennessee Technological University, which is located in Cookeville, Tennessee. Prescott Central Middle School draws students from six area elementary schools located within a ten-mile radius of the campus. The school's total enrollment is 1003 (564 boys and 439 girls) in grades five and six.

The participants for this investigation were 194 students enrolled in the sixth grade at Prescott Middle School and their parents. Eighty-eight of the total population were boys and 106 were girls. One-hundred, twenty-two fathers and 183 mothers made up the parent pool. These participants were chosen because of their availability to this

investigator and because they meet the grade-level requirement selected for inclusion in the study.

Data Collection

Written permission was obtained from the Putnam County School Superintendent prior to collection of the data (see Appendix A).

Each child was given the Fitnessgram (Institute for Aerobic Research, 1987). This particular test was selected because it was specifically developed for boys and girls ages 10 to 17. The Fitnessgram test battery (Institute for Aerobic Research, 1987) measures the basic components of physical fitness: (1) flexibility; (2) muscular strength; (3) muscular endurance; (4) body composition; and (5) aerobic endurance. Additionally, each child was given the Physical Best Health-Related Physical Fitness Test, (AAHPERD, 1988) to corroborate the Prudential test scores in each component measured.

This investigator administered each test item to all of the children. The three other physical educators at the school assisted in recording scores. The tests where administered during the regular physical education classes.

The Fitnessgram test items were administered according to the Fitnessgram Test Administration Instructions (see Appendix F). The following test items were included:

1. Back saver sit and reach
2. Pull-up
3. Flexed Arm Hang

4. Curl-up

5. One Mile walk/run

6. Body Composition

The following Physical Best (AAHPERD, 1988) test items were administered according to the protocols included in Physical Best: the AAHPERD Guide to Physical Fitness Education and Assessment (AAHPERD, 1988):

1. Sit and reach test

2. Sit-up test

3. Skin-fold Test (sum of triceps and calf)

A questionnaire and ATPA inventory (Kenyon, 1968) were sent to the parents of each child participating in the investigation at Prescott Central Middle School. Each student was asked to take the questionnaire and inventory home in a self- addressed, sealed envelope. The questionnaire and inventories were numbered and color-coded, with the mother's copy being white and the father's copy being blue. Contained in each envelope was a letter explaining the study, a questionnaire, and an ATPA inventory (Kenyon, 1968) for each parent with instructions for completion of the forms. All response sheets were likewise numbered and color-coded to aid in identification and collection (see Appendices B and C). The questionnaires and attitude surveys were to be returned to the investigator when completed. Each child included in the study had at least one parent who completed the survey; several of the children had parents who agreed to participate as a dyad. The total number of parent questionnaires returned after two weeks was 313. The eight surveys that were not complete and/or the students who moved or

otherwise indicated an unwillingness to participate were eliminated from the study. The total number of participants in the study was 194 sixth-grade children and 305 parents, of whom 183 were mothers and 122 were fathers.

The scores of each child on the Fitnessgram test and the Physical Best test were compared with the ATPA (Kenyon, 1968) scores of the parents. Additional demographic information on each of the parents was obtained from the responses to the questionnaire on marital status, exercise with child, and exercise level (see Appendix D).

Instrumentation

Attitude Toward Physical Activity (ATPA)

Attitude toward physical activity was measured by the Attitude Toward Physical Activity, a scale developed by Kenyon in 1968. The instrument is based on Kenyon's conceptual model for characterizing physical activity.

The six subdomains of physical activity which are measured by the Kenyon scale are (1) social experience; (2) health and fitness; (3) pursuit of vertigo; (4) aesthetic experience; (5) catharsis; and (6) ascetic experience. These are defined by Harris (1970) as follows:

1. Social Experience: Physical activity as a social experience is based on the theory that physical activity engaged in by groups of two or more is perceived as having some social value.

2. Health and Fitness: Physical activity for health and fitness was supported by the fact that modern man generally believes that physical activity has the capacity to enhance personal health.

3. Pursuit of Vertigo: Physical activity as a pursuit of vertigo is based on Caillois' classification. Kenyon includes those activities which provide, at some risk to the participant, an element of thrill through change of direction, speed, acceleration and danger while the participant stays in command of the situation.

4. Aesthetic Experience: Physical activity as an aesthetic experience is proposed as a result of pleasure gained through watching physical activity that is pleasing and satisfies aesthetic needs.

5. Catharsis: Physical activity as catharsis is a proposition supported by the idea that aggression and hostility can be vented through some equivalent form of aggressive behavior. How the participant perceives the physical activity as being cathartic is more important than whether it actually is or not.

6. Ascetic Experience: Physical activity as an ascetic experience was included based on Caillois' category of competition and supported by McIntosh. Kenyon theorized that, if sport provided a medium for the expression of superiority, then those aspiring for high levels of achievement become disciplined so they can delay gratification and tolerate long periods of training for their goals (Harris, 1970).

Each of the six dimensions is measured by eight pairs of bi-polar adjectives which are separated by seven-step intervals, using Likert-type statements. The eight of bi-polar adjectives are as follows:

1. good-bad
2. worthless-worthwhile
3. pleasant-unpleasant
4. sour-sweet
5. nice-awful
6. sad-happy
7. clean-dirty
8. relaxed-intense

The ATPA (Kenyon, 1968) is included in Appendix E. Hoyt's reliabilities for each of the six scales for assessing attitude toward physical activity were listed by Melcher in a similar study (Melcher, 1975).

Scale	Number of Items	Hoyt
1. Social experience	8	.68-.72
2. Health & Fitness	11	.86
4. Aesthetic experience	9	.87
5. Catharsis	9	.79
6. Ascetic experience	8	.74-.78

The Fitness Tests

Physical fitness was measured in this investigation by the Fitnessgram (Institute for Aerobic Research, 1987) and The Physical Best (AAHPERD, 1988) fitness test batteries. The Fitnessgram instrument was developed by the Cooper Institute for

Aerobics Research in 1987. Physical Best is a comprehensive health related fitness test battery introduced to the profession of physical education in 1988 and published by the American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD). The Physical Best (AAHPERD, 1988) test battery was the first nationally representative health-related physical fitness test designed especially for primary grade children.

The basic components of physical fitness measured by this investigation included:

(1) Aerobic Endurance: the ability to perform large muscle, whole body physical activity of moderate-to-high intensity over time.

(2) Body Composition: the division of the total body weight into two components -- fat and lean.

(3) Muscular Strength: the ability of the muscles to produce force at high intensities over short intervals of time.

(4) Muscular Endurance: the ability of muscles to sustain repeated productions of force at low-to-moderate intensities over extended intervals of time.

(5) Flexibility: the ability to move muscles and joints through their range of motion (AAHPERD, 1988).

These tests were designed to measure achievement in physical fitness for students of the age group designated in this investigation.

The test items utilized from the Fitnessgram (Institute for Aerobic Research, 1987) are listed below, together with the reliability of each obtained from the Fitnessgram Technical Manual (Institute for Aerobic Research, 1987):

1. One mile walk/run = not yet available

2. Flexed-arm hang = 0.64-0.85 range of reliability

3. Back saver sit and reach = not yet available

4. Curl-up = listed as "high degree"

5. Pull-up = not yet available

6. Body mass index = listed as "high degree"

Measures of reliability for the elementary school age population were not yet available. The information from the Institute for Aerobic Research was found to be current as of April 25, 1997 (personal communication, 1997). Attempts have been made by others, however, to establish reliability measures for the one-mile walk/run on the elementary school-aged population. In a study designed to test the construct validity of three fixed-distance run tests, the research team of Kranenbuhl, Pangrazi, Peterson, Burkett, and Schneider (1978) found, on a second trial, test-retest reliability coefficients on the 1600 meter run ranging from a low of .840 for first-grade girls to a high of .918 for third-grade boys. Rowe (1992) urges caution when generalizing these findings of reliability to the elementary school-aged population, noting that the subjects selected for the Kranenbuhl et al., (1978) study included individuals who were more highly motivated and experienced than would be expected of the average elementary school-aged child.

Because body mass index (BMI) provides an indication of the appropriateness of a child's weight relative to his/her height, it is widely used for epidemiological research. However, it is possible that two individuals of equal weight and height may have differing amounts of body fat and lean tissue. Therefore, BMI is not the preferred index

of body composition, because it does not provide an estimate of percent of fat. BMI simply provides information relative to the appropriateness of weight as related to height. (Institute of Aerobic Research, 1987; AAHPERD, 1988). This study included measures of BMI merely as a correlation to the skinfold test.

Robertson and Magnusdottir (1987) established the test-retest reliability of the curl-up with a group of volunteer kinesiology students. An analysis of the data revealed coefficients of .93 for male students and .94 for female students. While the nature and size of the population tended to prove to be confounding factors, this study does provide evidence of an attempt to establish measures of reliability for the curl-up.

An investigation of the research relative to the curl-up revealed that, on a modified curl-up, the reliability coefficient for college-level males was $r = .71$, with even lower reliability coefficients reported for elementary school-aged children. A modified curl-up required that the subject curl the neck and back, then hold the curled position for a predetermined length of time. These relatively low reliability scores led the researchers to conclude that, while the sit-up was marginally acceptable, it remained the only reliable measure of abdominal strength available. (Vincent & Britten, 1980). In the protocol for the Fitnessgram (1987), a modified curl-up was specified.

Due to the preponderance of scores of "zero" on the pull-up subroutine of the Fitnessgram (1987), as well as the paucity of reliability, the flexed-arm hang was used in the present study as a measure of upper body strength to corroborate the findings. The flexed-arm hang is reported by the Institute of Aerobic Research as being reliable within a range of .64 to .85 (personal communication, 1997).

Physical Best

The test items on the Physical Best (AAHPERD, 1988) are listed below with the reliability of each obtained from the AAHPERD Technical Manual (AAHPERD, 1985).

1. Sit and reach = 0.84 reliability

2. Sit-up test = 0.68 reliability

3. Skin-fold test = 0.95 reliability

The major emphasis of both the Physical Best (AAHPERD, 1988) and the Fitnessgram (Institute for Aerobic Research, 1987) is on health-related fitness. These components are listed and defined below:

1. Aerobic capacity: The ability to perform large muscle physical activity of moderate to high intensity over extended periods of time.

2. Body composition: The division of the total body weight into two components: fat weight and lean weight measured by skinfold testing through the sum of the triceps and calf measurements.

3. Body mass index: The indication of the appropriateness of the body weight relative to the height. Body mass index is determined by the following formula: Weight (kg) / Height $(m)^2$.

4. Flexibility: The ability to move muscles and joints through their full range of motion.

5. Muscular strength and endurance: The ability of muscles to produce force at high intensity over short intervals of time (strength) and to sustain repeated productions

of force at low to moderate intensities over extended intervals of time, or endurance (AAHPERD Physical Best Test Manual, 1988).

6. One mile walk/run: To walk/run one mile at the fastest pace that can be sustained throughout the distance.

7. Triceps and calf skinfold measurement: The measure of the degree of body fat by taking a sum of the measurements from the triceps and calf muscle region.

8. Sit and reach: To evaluate the flexibility of the lower back and hamstring muscles.

9. Curl-ups: To evaluate the abdominal muscular strength and endurance by performing repeated curl-ups (Fitnessgram Test).

Analysis of the Data

The fitness scores of all children in the investigation whose parents or parent returned a completed ATPA inventory (Kenyon, 1968) were compared with the mother's and with the father's six attitude scores, representing the six subdomains of the concept of physical activity.

Statistical analyses of the hypotheses of the study was accomplished by use of Pearson Product Moment correlations which provided an understanding of the relationship between each of the six attitude scores for mothers and fathers and each of the scores on the four components of physical fitness of their children. The .05 rejection level was utilized in all hypotheses tested.

There were a total of 48 correlation coefficients derived from (1) the intercorrelations of the six attitude scores for the mother; (2) the six attitude scores for the father; and (3) four physical fitness scores for each boy and girl. The relationships between the fitness scores of both boys and girls and the six attitude scores of the fathers and the mothers were examined individually.

The Statistical Package for the Social Sciences (SPSS 6.1.3 for Windows) was used to perform the statistical analyses for this study. The following descriptive data were collected: (1) frequencies, (2) percentages, (3) means, (4) medians, and (5) standard deviations.

CHAPTER IV

Analysis of Data

Introduction

The purpose of this study was to determine the relationship between parental attitude toward physical activity and the physical fitness scores of their sixth-grade children. Parental attitude was measured by Kenyon's Attitudes Toward Physical Activity Inventory (ATPA, Kenyon,1968). The children's physical fitness levels were measured by selected sub tests from the AAHPERD Physical Best (AAHPERD,1988) test and the Prudential Fitnessgram (Institute for Aerobic Research, 1987) test batteries.

This chapter delineates the (1) descriptive data; (2) tests of the hypotheses; (3) discussions; and (4) summary of the chapter.

Descriptive Data

From the original pool of 255 potential candidates, the subjects for this study were reduced through subject mortality to 194 students; 106 females and 88 males in the sixth-grade at Prescott Central Middle School in Cookeville, Tennessee, and their parents. One-hundred, twenty-two fathers and 183 mothers participated in the study. The reduction in the subject pool was due to several factors. The first of these was that 11 of the children moved out of town during the course of the survey; 34 of the children failed to return the survey information; and 16 of the parents declined to participate.

The demographic information for the participating fathers and mothers is shown in Table 1. The frequencies and percentages show that, of all of the parents participating in the study, 75 percent of the mothers and 91 percent of the fathers were married. Accordingly, 25 percent of the mothers and 9 percent of the fathers were not married.

The reported frequencies of exercise of the parents indicated that 37 percent of the fathers and 41 percent of the mothers exercised regularly, while 63 percent of the fathers and 59 percent of the mothers did not exercise regularly. Parents were asked if they exercised with their children on a regular basis. An examination of the data in Table 1 indicates that 37 percent of the fathers and 37 percent of the mothers exercised with their children, while 63 percent of fathers and 60 percent of mothers did not exercise with their children regularly.

The instrument used to measure the parents' attitude toward physical activity was the ATPA (Kenyon, 1968). Physical activity is classified into six independent dimensions or subdomains, which were defined in Chapter III. A semantic differential scale was employed, and tests were scored using Kenyon's a priori scoring system of recoding of specified items. Each item contained seven points on a line with bi-polar adjectives. There were 48 total items, eight on each subdomain. Each dimension was scored individually with a possible low score of eight and a possible high score of 56, with a score of 32 representing the median score.

Descriptive data illustrating the mothers' and fathers' attitude toward the six dimensions of the ATPA (Kenyon,1968) are shown in Tables 2 and 3. The implications that can be drawn from viewing the data in this manner will be discussed in Chapter V.

The means and standard deviations for the mothers and the fathers are presented on each of the six dimensions, respective of the gender of their child.

In Tables 2 and 3, the fathers had scores of 32 or above on all six dimensions of the inventory. The mothers scored 45 or above on all but two of the subdomains. An examination of Tables 2 and 3 suggests that, on four of the six subdomains, both groups of parents held favorable attitudes toward physical activity (indicated by a mean score above 32). The exceptions were the mothers when considering physical activity either as an Ascetic Experience or as the Pursuit of Vertigo, in which cases the mothers viewed physical activity as considerably less favorably than on the other dimensions. For the purpose of corroboration with Aycock's (1982), study of the effect of parental attitudes on children in the primary grades, the data of the mothers and fathers of sons have been analyzed for statistical significance separately from the mothers and fathers of daughters.

The mean score of the mothers of daughters on physical activity as an Aesthetic Experience (48.24) was the highest mean score among the four groups of parents. The lowest mean score of all four groups (27.02) was recorded for mothers of sons on the dimension of physical activity as the Pursuit of Vertigo. This finding is consistent with the body of research in which several investigators reported that the Aesthetic dimension received a relatively high ranking, and the Pursuit of Vertigo and Ascetic Dimensions received a relatively low ranking by women (Acord, 1977; Melcher, 1975; Staub, 1975; Aycock, 1982; Shackelford, 1989).

To investigate the differences between the mothers' and fathers' mean scores on the six dimensions of physical activity, a two-tailed t-test for equality of means of the

mothers' and fathers' scores was computed for each mean subscale score. Results of these tests are displayed in Table 4. The results showed that there was a significant difference ($p < .05$) between the mean scores of all of the mothers and all of the fathers on four of the six dimensions.

In studies using a similar format Aycock (1982) and Melcher (1975) reported that the mothers perceive activities involving some risk (the Vertigo dimension) and those that require long periods of strenuous training and self-sacrifice (the Ascetic dimension) to be less attractive than do fathers. The present study revealed similar findings. The fathers in this present study rated these two dimensions higher than did the mothers, a difference that was statistically significant at the $p < .05$ level.

A t-test calculated on the mean scores on the six dimensions revealed that the mean scores of all of the mothers were significantly ($p < .05$) higher than those of all of the fathers on the Social Experience and Aesthetic dimensions, and the fathers' mean scores were significantly higher ($p < .05$) on the dimensions of Pursuit of Vertigo and Ascetic Experiences. There was no significant difference on the dimensions of the Pursuit of Health and Fitness and Catharsis.

Components of the Physical Best (AAHPERD, 1988) and the Fitnessgram (Institute for Aerobic Research, 1987) test batteries were administered to each sixth-grade child who participated in the study. Physical Best (AAHPERD, 1988) battery items given were: Sit-up, Sum of Two Skinfolds (biceps and calf), and Sit and Reach. The test items were grouped according to the component of physical fitness (body composition, flexibility, aerobic endurance, muscle strength and endurance) measured by each. The

raw scores were converted to standardized z-scores, for the purpose of combining the scores in such a manner as to enable the researcher to draw comparisons between measures of differing metric properties.

The results of 2-tailed t-tests to compare the difference between all of the girls' and all of the boys' mean fitness scores using the raw scores on each of the test items are presented in Table 5. The findings show that there were significant ($p < .05$) differences between sixth-grade boys and girls on six of the nine measures. The three exceptions were measures of Body Composition, Percent Body Fat, and Curl-Up. This finding was unexpected at this age. After children reach the age of five or six years, the general literature suggested that girls have higher body fat than do boys (Malina & Bouchard, 1991). In terms of their body mass index, the scores were almost the same, while the percent of body fat measure indicated on the girls' scores were slightly higher than the boys' score,. which would be expected at this age. Subjectively, this investigator observed that the children who elected to participate in the study were relatively homogenous in terms of body fatness. More girls with high percent of body fat did not elect to participate in the present study than did the boys with a high percent of body fat. Boys and girls in this study were similar to each other, with regard to body composition.

On measures of strength (Flexed Arm Hang, Sit-up, and Pull-up), the boys' mean scores were significantly higher ($p < .05$) than the girls' scores.

On measures of flexibility (Backsaver Sit and Reach and Flexibility), the girls' mean scores were significantly higher ($p < .05$) than the scores for the boys. This finding

was consistent with the findings of other studies, which suggested that girls have greater flexibility than do boys at this age (Jackson & Langford, 1989).

On the measure of cardiovascular fitness, the One Mile Walk/Run, the boys' mean one mile run times were significantly lower ($p < .05$) than the mean for the girls. These results were not unexpected in children of this age group, as the mean scores for both males and females were found to be within the standard criterion measures established for both the Physical Best (AAHPERD, 1988) and Fitnessgram (Institute for Aerobic Research, 1987) test batteries. The standards for boys were set higher than for girls on measures of strength and cardiovascular fitness. The standards, as enumerated by the Physical Fitness protocols, were equivalent for boys and girls on measures of flexibility. For the Body Mass Index and Percent Body Fat, girls have a wider range of acceptability than do boys, with girls being expected to have a higher percent of body fat than boys (AAHPERD, 1988; Institute for Aerobic Research, 1987).

Tests of the Hypotheses

The purpose of this study was to determine the relationship between parental attitude toward physical activity and the physical fitness scores of sixth-grade children. The Physical Fitness test items utilized from the Fitnessgram Test were: the Curl-up, Flexed Arm Hang, Pull-up, Body Composition, One Mile Walk/Run, and the Back-Saver Sit and Reach. The statistical method used to analyze the data was the Pearson Product Moment correlation. Correlation coefficients for these relationships are presented in Tables 6 through 9. Standard z-scores were used to compute the Physical Fitness scores

for the boys and the girls for the components flexibility, body composition, muscular strength and endurance and aerobic endurance. The six research hypotheses addressed the possibility of a relationship between parental attitudes toward physical activity, expressed as six dimensions on the ATPA scale (Kenyon, 1968) and their sixth-grade childrens' physical fitness scores, as expressed as component scores on the Physical Best (AAHPERD, 1988) and Fitnessgram (Institute for Aerobic Research, 1987) test batteries. Only five of the 96 observed Pearson r correlation were statistically significantly at the $p < .05$ level, and no observed correlate greater than 0.31 was observed. Therefore, one may conclude that the null hypothesis of no relationship between parents' attitudes toward physical activity and childrens' physical fitness test scores is supported.

Discussion

The mean scores of the mothers and fathers on ATPA (Kenyon, 1968) suggested that both male and female parents held generally favorable attitudes toward physical activity. The t-tests for mean differences between the attitude scores for the mothers and the scores for the fathers on each of the six dimensions of physical activity yielded a significant difference on all except the dimensions for Health and Fitness and Catharsis.

Of the 96 possible correlations, there were 91 relationships that were not significant at the $p > .05$ level. These results suggested that there is no relationship between the attitude of the parents toward physical activity and physical fitness scores of their children. These findings were in agreement with those of Aycock (1982).

Should a relationship exist between the child's overall physical fitness level and parental attitude toward physical activity, this would be reflected in several correlations between one or more activity dimensions and one or more of the physical fitness component scores (Aycock, 1982). The negligible correlations that were reported in this present study refuted the notion of a positive effect of the attitude of parents on physical fitness scores of their children.

These findings were in partial conflict with the findings of Melcher (1975) and with Aycock (1982). Melcher's (1975) investigation reported a significant difference between the mother's and the fathers' scores on all dimensions except the Health and Fitness and Aesthetic Experience, while Aycock's (1982) study reported that statistical differences at the $p < .01$ level existed on all six dimensions of the ATPA (Kenyon, 1968). A comparison of the mean scores for fathers and mothers in the studies of Melcher (1975), Aycock (1982) and the present study revealed very similar results.

Summary

This study examined attitudes of parents toward physical activity to determine whether a relationship existed between their attitudes and their sixth-grade children's physical fitness scores. The scores revealed that the mothers and fathers held generally positive attitudes toward physical activity. This finding was not unanticipated, considering the high esteem to which most Americans hold sports and recreational activities.

A comparison may be made to the related studies by Shackelford (1989), Aycock (1982), and Melcher (1975) that reveal a similarity of results with regard to the generally positive attitude scores of the parents toward physical activity. Exceptions to these positive attitudes recorded on certain dimensions occurred in those instances in which mothers viewed physical activity as Pursuit of Vertigo or as an Aesthetic Experience. Possibly, this inferred a protective attitude by the mother upon considering activities that involve risk, danger or strenuous training for their children.

In addition, the findings of this study agreed with those of Melcher (1975) for the existence of the relationship of the fathers' attitude toward physical activity as an Ascetic Experience and the child's physical fitness level. Melcher (1975) made the suggestion that physical activity may provide the medium through which the daughter is able to satisfy some of her father's intrinsic values of self-discipline and strenuous training. Aycock's (1985) findings did not support this possibility.

The present study suggested a relationship between the physical fitness scores of daughters and the mothers' attitude scores of the dimensions of physical activity as a Social Experience and on the dimension of physical activity as an Aesthetic Activity. This finding was not repeated for the sons of the mothers on these two dimensions. Although the highest mean score for the mothers occurred on the dimension of physical activity as an Aesthetic Experience, a closer inspection of the data revealed that the mothers did not score physical activity either as a Social Experience, or as an Aesthetic Experience as highly for their sons as for their daughters. This was considered a meaningful finding because it demonstrated that mothers were more concerned for their

sons' physical fitness levels than for the social or aesthetic implications of participation in physical activities. The stereotype of "beauty and parties" for the daughters and "physical prowess" for the sons was the choice of the mothers. The ranking and scoring of the six dimensions by the parents in the Melcher (1975), Aycock (1982), and Shackelford (1989) studies, as well as this present study, were found to be in parallel. The Aesthetic dimension was ranked either first or second in all of the above-mentioned studies while the Ascetic and Vertigo dimensions were ranked the lowest. The results are thought to have been an indication that a large percentage of the parents participating in these studies of attitudes toward physical activity looked upon physical activity favorably, as activities that are perceived to be possessed of beauty or other artistic qualities. Further, the fathers in all of these studies ranked physical activities for health and fitness as the most important. Implications for the physical educator would be to include not only those activities which are designed to promote physical fitness, but also to embrace the gymnastic, dance, and movement themes which develop the creative beauty of movement.

An examination of the results of the survey of parents' exercise habits disclosed that 60 percent of the parents do not exercise regularly, either alone or with their children. However, the parents did hold a positive attitude toward physical activity, whether they were active or not. There appeared to have been a disparity of authenticity in the relationship of attitude-to-actions on the part of the parents. If sixth-grade children were perceptive to this disparity, the effect would be a weakening of the attitude that the parents held on the children.

The findings in the current study corroborated the findings in the more recent study (Aycock, 1982) which suggested that a significant relationship do not exist between parent attitude and physical fitness levels of elementary school children. Although significant correlations were found on five different pairs of variables, there were not sufficient significant correlations to suggest the existence of a relationship, a finding which replicates the results of Aycock's (1982) study. There were 96 possible relationships, 48 relationships examined for girls and 48 relationships for boys, respectively. For each of these relationships, either the mothers' or fathers' attitude score on a particular aspect of physical activity was compared with the score of the child on one of four components of physical fitness as determined by the Prudential Fitnessgram and the AAHPERD Physical Best test batteries. Should a significant relationship ($p < .05$) have been shown to exist between the parental attitude scores and the children's physical fitness levels, a much higher number of significant correlations or the emergence of some pattern of significance should have been evident. The investigator found no such pattern in the analysis of the data. That only five out of the 96 possible relationships were shown to be significant at the $p < .05$ revealed a level of occurrence that would have occurred by chance. However, a non-significant finding remains a finding. That there is no correlation between the attitude of parents toward physical activity and the physical fitness levels of the sixth-grade children serves to confirm the notion that children, either purposefully or unintentionally, seek to be as different from their caregivers as possible. Parental attitude may not be considered to be a motivating factor for improving the healthful lifestyle of

children. Other factors must be considered, such as Pursuit of Vertigo and social involvement with peers.

The findings and conclusions of this investigation support the null hypothesis that no strong relationship exists between parental attitude toward physical activity and the sixth-grade children's physical fitness. Children of this age may be more concerned with individuating from their parents than they are influenced by their parent's attitudes. Therefore, the hypothesis that there is no relationship between parental attitude toward physical activity and their sixth-grade child's level of physical fitness was supported.

The results of the indicated research suggested that parental attitude toward physical activity should not be a primary factor in the process of curriculum development of physical fitness programs for sixth-grade children. In absence of a parental-influence explanation for children's fitness levels, the researcher suggests rather that the role of genetics may play a more powerful role in the development of childrens' physical fitness proclivities. However, the physical fitness level of children continues to be a source for national concern. Physical educators must focus attention on the factors that do influence the physical exercise habits in children.

The significant and non-significant relationships reported in this investigation can be added to the literature and used as a basis for further research.

Chapter V

SUMMARY

Introduction

The purpose of this study was to determine the relationship between the physical fitness scores of sixth-grade students and the attitude toward physical activity of their parents. The study also examined the relationship of the students' physical fitness scores and the parents' exercise habits. A side-bar observation was the effect of parental exercise with their child and the childrens' physical fitness scores. An added value of this study was to provide knowledge that can be embraced by educators to enhance the physical fitness levels of their elementary students, thereby promoting healthful lifestyles among children. This chapter presents (1) Summary of Procedures, (2) Summary of Major Findings, (3) Conclusions, (4) Recommendations.

Summary of Procedures

Subjects and Setting

The subjects for this study were sixth-grade males and females at Prescott Central Middle School in Cookeville, Tennessee and their parents.

Data Collection and Analysis

Each male and female sixth-grade student who was a subject of this study was administered physical fitness tests from the test battery of the AAHPERD Physical Best Test and the Prudential Fitnessgram Physical Fitness Test. The data relating to attitudes toward physical activity were collected from the fathers and mothers through Kenyon's Attitude Toward Physical Activity Inventory, ATPA (1968).

The relationship between physical fitness scores and attitudes was determined by the statistical technique Pearson Product Moment correlation. The rejection level of $p < .05$ was used for all tests of the hypotheses.

Summary of Major Findings

The results of tested hypotheses were as follows:

Hypothesis 1

There was no significant relationship between the physical fitness scores of sixth-grade boys and girls and the mothers' and/or fathers' attitude scores on the dimension of physical activity as a Social Experience. The null hypothesis of no relationship between the childrens' scores and parental attitudes was supported.

Hypothesis 2

There was no significant relationship between the physical fitness scores of sixth-grade boys and girls and the mothers' and/or fathers' attitude scores on the dimension of physical activity as health and fitness. The null hypothesis of no relationship between the childrens' scores and parental attitudes was supported.

Hypothesis 3

There was no significant relationship between the physical fitness scores of sixth-grade boys and girls and the mothers' and/or fathers' attitude scores on the dimension of physical activity as a thrill but involving some risk. The null hypothesis of no relationship between the childrens' scores and parental attitudes was supported.

Hypothesis 4

There was no significant relationship between the physical fitness scores of sixth-grade boys and girls and the mothers' and/or fathers' attitude scores on the dimension of physical activity as beauty in human movement. The null hypothesis of no relationship between the childrens' scores and parental attitudes was supported.

Hypothesis 5

There was no significant relationship between the physical fitness scores of sixth-grade boys and girls and the mothers' and/or fathers' attitude scores on the dimension of physical activity for the release of tension. The null hypothesis of no relationship between the childrens' scores and parental attitudes was supported.

Hypothesis 6

There was no significant relationship between the physical fitness scores of sixth-grade boys and girls and the mothers' and/or fathers' attitude scores on the dimension of physical activity as prolonged and strenuous training. The null hypothesis of no relationship between the childrens' scores and parental attitudes was supported.

Conclusions

Within the limitations of this study, the following conclusions were made:

1. The fathers' attitudes toward physical activity as a Social Experience were not related to the physical fitness scores of the sixth-grade sons or daughters.

2. The mothers' attitudes toward physical activity as a Social Experience were not related to the physical fitness scores of the sixth-grade sons. There was one significant relationship ($p < .05$) found between the mothers' attitudes toward physical activity as a Social Experience and the daughters' physical fitness scores on the component of flexibility.

3. The attitude of the mother and the father toward physical activity as health and fitness showed no relationship to the sixth-grade childrens' physical fitness scores.

4. No relationship was found between the sixth-grade childrens' physical fitness scores and the parents' attitude toward physical activity as a thrill but involving some risk.

5. There was no relationship found between the fathers' attitude toward physical activity as beauty in human movement and the sixth-grade sons or daughters physical fitness scores.

6. There was one significant relationship ($p < .05$) between the mothers' attitude toward physical activity of beauty in human movement and the sixth-grade daughters' physical fitness scores on the component of cardiovascular endurance. No other significant relationships were found between the mothers' attitude scores on the

dimension of beauty in human movement and the sixth-grade daughters' or sons' physical fitness scores.

7. Two components of the physical fitness scores' of the sixth-grade boys, muscle strength and flexibility, showed significant relationships ($p < .05$) to the fathers' attitude scores on the dimension of physical activity for the release of tension. None of the physical fitness scores for the sixth-grade girls and either the mothers' or fathers' scores on this dimension showed significant relationships.

8. A significant relationship ($p < .05$) was found between the cardiovascular component of the physical fitness scores of the sixth-grade boys and the fathers' scores on the attitude toward physical activity as prolonged and strenuous training. However, the mothers' attitude toward physical activity as prolonged and strenuous training did not show a relationship with either the sixth-grade sons or daughters.

Recommendations

Based on the findings of this study, the following recommendations are made to guide future research:

1. This investigation should be replicated using a similar population, but should compare the activity level of parents with the activity level of the children.

2. A similar study should be conducted comparing the activity level of the sixth-grade students with their attitude toward physical education.

3. An investigation should be conducted to study the correlation between the physical activity level of middle school age children and their participation with their parents in physical activity.

4. A study should be conducted to determine the correlation between the score on the body mass index component of physical fitness scores of sixth-grade children, and the body mass index of their parents.

TABLES

Table 1.

Demographic Information of Mothers and Fathers

	Mother		Father	
	Frequency	**Percent**	**Frequency**	**Percent**
Marital Status				
Married	138	75	111	90
Single	45	25	11	9
Exercise Patterns				
Regular	74	41	45	37
No Exercise	106	59	77	63
(frequency missing = 3)				
Exercise with Children				
Yes	72	40	45	37
No	109	60	77	63
(frequency missing = 2)			(frequency missing = 2)	

(Note: n = fathers, 122; mothers, 183)

Table 2.

Mean scores and Standard Deviations of Mothers' and Fathers' of Sons Attitude Toward Physical Activity

Subdomains	Mothers			Fathers		
	Mean	**S.D.**	**Rank**	**Mean**	**S.D.**	**Rank**
Social	47.72	7.67	3	44.54	7.13	4
Fitness	46.41	7.81	1	46.01	7.02	1
Vertigo	27.02	11.05	6	32.37	12.35	6
Aesthetic	45.67	9.82	2	45.07	8.25	2
Catharsis	44.37	9.95	4	44.89	11.00	3
Ascetic	28.18	10.17	5	32.38	10.84	5

(Note: n = fathers, 122; mothers, 183)

Table 3.

Mean scores and Standard Deviations of Mothers' and Fathers' of Daughters Attitude Toward Physical Activity

Subdomains	Mothers			Fathers		
	Mean	S.D.	Rank	Mean	S.D.	Rank
Social	46.08	7.83	4	42.56	9.32	3
Fitness	46.36	7.05	3	44.18	7.82	1
Vertigo	28.07	12.33	6	33.40	12.29	5
Aesthetic	48.24	7.36	1	42.20	9.81	4
Catharsis	46.70	9.11	2	42.66	10.61	2
Ascetic	29.81	10.28	5	33.23	9.84	6

(Note: n = fathers, 65; mothers, 81)

Table 4.

The difference between mothers' and father's scores on six dimensions of physical activity.

	Fathers		Mothers		
	Mean	**S.D.**	**Mean**	**S.D.**	**t- score**
Social	43.49	8.39	45.48	7.77	-2.12*
Health and Fitness	45.04	7.48	46.38	7.37	-1.53
Vertigo	32.92	12.28	27.6	11.76	3.78*
Aesthetic	43.55	9.19	47.10	8.60	-3.43*
Catharsis	43.70	10.81	45.67	9.53	-1.67
Ascetic	32.83	10.29	29.08	10.24	3.12*

(Note: n = 122, fathers; 183, mothers)

Note: * denotes significance at $p < .05$ level.

Table 5.

The difference between girls' and boys' scores on physical fitness test items using raw scores.

	Boys		Girls		
Test Items	**Mean**	**S.D.**	**Mean**	**S.D.**	**t-value**
BKSVR	26.09	5.61	29.03	5.44	-3.68*
BMI	20.36	4.66	20.11	4.99	.36
CURLUP	30.85	9.79	27.69	9.53	2.26
FLEXHANG	10.97	13.76	6.54	8.34	2.64*
FLEXIB	24.78	6.60	27.82	6.40	-3.24*
MILES	9.25	2.4	10.33	2.7	-2.91*
MODSIT	39.31	11.34	35.48	11.63	2.31*
PCFT	16.25	5.53	17.32	6.27	-1.25
PULLUP	1.78	2.75	.528	1.24	3.95*

Note: BKSVR= Backsaver Sit-and-Reach
BMI= Body Mass Index
CURLUP= Curl-up
FLEXHANG= Flexed-Arm Hang
FLEXIB= Flexibility (sit and reach)
MILES= Mile Walk/Run
MODSIT= Modified Sit-up
PCFT= Sum of Skinfolds
PULLUP= Pull-up
Note: * denotes significance at $p < .05$

Table 6.

Correlations Between Physical Fitness Scores and Parental Attitudes: Fathers and Sons

Subdomains	Cardiovascular	Muscle Strength	Flexibility	Body Composition
Social	-0.04	-0.20	0.02	0.11
Health and Fitness	-0.07	0.03	-0.02	-0.09
Vertigo	-0.03	0.14	0.10	0.08
Aesthetic	-0.08	-0.01	-0.02	-0.11
Catharsis	-0.10	0.11	0.17	-0.13
Ascetic	-0.28*	0.07	0.09	-0.00

(Note: n = 57)

Note: * denotes significance at $p < .05$ level

Table 7.

Correlations Between Physical Fitness Scores and Parental Attitudes: Fathers and Daughters

Subdomains	Aerobic Endurance	Muscle Strength	Flexibility	Body Composition
Social	0.05	0.12	0.07	0.12
Health and Fitness	-0.04	0.02	0.07	0.08
Vertigo	-0.04	-0.01	-0.13	0.03
Aesthetic	-0.00	0.07	0.11	0.11
Catharsis	-0.14	0.25*	0.31*	0.02
Ascetic	0.00	0.04	-0.11	0.05

(Note: n = 65)

Note: * denotes significance at $p < .05$ level

Table 8.

Correlations Between Physical Fitness Scores and Parental Attitudes: Mothers and Sons

Subdomains	Aerobic Endurance	Muscle Strength	Flexibility	Body Composition
Social	-0.14	0.07	0.09	0.09
Health and Fitness	-0.01	-0.01	-0.06	0.00
Vertigo	0.04	0.13	0.09	0.00
Aesthetic	-0.17	-0.05	0.11	-0.04
Catharsis	-0.17	0.16	0.18	-0.12
Ascetic	-0.02	0.09	0.07	0.06

(Note: n = 81)

Table 9.

Correlations Between Physical Fitness Scores and Parental Attitudes; Mothers and Daughters

Subdomains	Aerobic Endurance	Muscle Strength	Flexibility	Body Composition
Social	-0.14	0.01	0.20*	0.02
Health and Fitness	-0.08	-0.11	0.11	0.08
Vertigo	0.10	0.00	-0.03	-0.02
Aesthetic	-0.22*	0.03	0.17	0.05
Catharsis	0.14	0.01	0.15	-0.06
Ascetic	-0.05	0.11	-0.04	0.01

(Note: n = 102)

Note: * denotes significance at $p < .05$ level

APPENDICES

APPENDIX A

LETTER TO SUPERINTENDENT OF SCHOOLS

AND

RESPONSE FROM SUPERINTENDENT

January 4, 1997

Mrs. Eulene Locke, Superintendent
Putnam County Schools
1400 East Spring Street
Cookeville, Tennessee 38506

Dear Mrs. Locke:

As a final step in completion of the requirements of my doctoral program, I am required to do original research in the field of physical education. We are planning a study in which children in the sixth grade and their parents will be involved. The attitudes of the parents toward physical activity will be determined by survey and compared with their child's physical fitness scores. The aim of the study is to make a contribution to the body of literature designed to assist the school-based physical educator to better meet the needs of their students with regard to promoting and providing assistance toward the achievement of each student's optimal level of physical fitness.

In order to study the selected sixth-grade children, may I have your permission to include children attending Prescott Central Middle School in my study? With your written permission to proceed, we will generate the necessary forms for obtaining informed parental consent as children are identified for inclusion in the study.

Thank you for your help and encouragement as I embark on this project. I look forward to hearing from you.

Sincerely,

Pat

Pat Jordan, Physical Educator
Prescott Central Middle School

cc: Dr. Teri Anderson

Department of Education
Putnam County

EULENE LOCKE, Superintendent of Schools

Board of Education

Terry Randolph, Chairman
Tim Huddleston, Vice-Chairman

1400 East Spring Street
Cookeville, Tennessee 38506-4313
Phone # (615) 526-9777
Fax # (615) 372-0391
Board Fax # (615) 528-6942

Board Members

Maxine Frasier
Jennie Ivey
Kevin Rose
Roger Williams

January 15, 1997

Ms. Pat Jordan
Prescott Central Middle School
242 East Tenth Street
Cookeville, Tn 38501

Dear Pat:

In regards to your request to conduct the study for your doctoral program with the help of parents and students at Prescott Central Middle School, you have my permission to proceed as long as you have the proper signed parental consent forms on file for this study.

I am happy to see you are this close to completing your degree.

If I can be of further assistance, please feel free to call.

Sincerely,

Eulene Locke
Superintendent

EL/mm

APPENDIX B

LETTER TO PRINCIPAL

AND

RESPONSE FROM PRINCIPAL

January 4, 1997

Mr. David Little, Principal
Prescott Central Middle School
242 East 10th Street
Cookeville, Tennessee 38501

Dear Mr. Little:

As a final step in completion of the requirements of my doctoral program, I am required to do original research in the field of physical education. We are planning a study in which children in the sixth grade and their parents will be involved. The attitudes of the parents toward physical activity will be determined by survey and compared with their child's physical fitness scores. The aim of the study is to make a contribution to the body of literature designed to assist the school-based physical educator to better meet the needs of their students with regard to promoting and providing assistance toward the achievement of each student's optimal level of physical fitness.

In order to study the selected sixth-grade children, may I have your permission to include children attending Prescott Central Middle School in my study? With your written permission to proceed, we will generate the necessary forms for obtaining informed parental consent as children are identified for inclusion in the study.

Thank you for your help and encouragement as I embark on this project. I look forward to hearing from you.

Sincerely,

Pat

Pat Jordan, Physical Educator
Prescott Central Middle School

Prescott Central Middle School

242 East Tenth Street
Cookeville, Tennessee 38501
615-528-3647

David Little
Principal

Mary Higdon
Assistant Principal

Kim Stringer
Assistant Principal

January 15, 1997

Ms. Pat Jordan
Prescott Central Middle School
242 East 10th Street
Cookeville, TN 38501

Dear Ms. Jordan:

In response to your letter dated January 13, 1997, requesting the use of Prescott Central Middle School students and parents to complete your requirements for your doctoral program. Yes, you have permission to use the 6th grade students and parents to complete your study. We encourage teachers at Prescott Central to continue their education, which in turn will be a valuable tool to improve our curriculum.

The administration, teachers, and staff will co-operate in your project in any way we can.

Sincerely,

David Little

David Little
Principal
Prescott Central Middle School

DL/mf

APPENDIX C

LETTERS TO PARENTS

Prescott Central Middle School

242 East Tenth Street
Cookeville, Tennessee 38501
615-528-3647

David Little
Principal

Mary Higdon
Assistant Principal

Kim Stringer
Assistant Principal

January 13, 1997

Dear Parents,

During the past year I have been working on a research project for my doctoral degree at Middle Tennessee State University in Murfreesboro. As a part of this project, I need your help not only in determining your opinion regarding physical activity, but also in giving your permission for me to use your sixth grade child's physical fitness scores in the study.

The information gained from this survey will hopefully help us to strengthen and improve our physical education program at Prescott Central Middle School. The entire questionnaire will take only about fifteen minutes to complete and your responses will be kept confidential. Your participation is voluntary. Please sign below indicating your willingness to participate and have your child return this letter to me within a week.

Thank you very much for your help. Your participation is very important to the success of this study, and to me personally.

Sincerely,

Pat Jordan

Pat Jordan
Physical Educator
Prescott Central Middle School

I agree to participate in this study and give my permission for you to use my sixth-grade child's fitness scores in correlation with my answers to the survey.

_____(Mother) Date_____

_____(Father) Child's Name_____

Prescott Central Middle School

242 East Tenth Street
Cookeville, Tennessee 38501
615-528-3647

David Little
Principal

Mary Higdon
Assistant Principal

Kim Stringer
Assistant Principal

February 3, 1997

Dear Parents,

Thank you for agreeing to participate in this study. You will be asked to consider six different aspects of physical activity and to check the meanings each concept has for you as an individual. There are no right or wrong answers. I simply want your personal opinions, so please do not discuss your responses. Your responses will be kept confidential and your participation is entirely voluntary.

Please answer the enclosed questionnaire individually. Mothers, use the white copy. Fathers answer on the blue sheets. If you are a single parent, fill out one of the questionnaire in the appropriate color and have your son or daughter return it to me within a week. An identifying number has been placed on each questionnaire so that it can be checked off the list of parents when it is returned.

Thank you again for your cooperation in this project. Hopefully the information gained from this study will be beneficial in the development of the physical education program at Prescott.

Sincerely,

Pat Jordan

Pat Jordan
Physical Educator
Prescott Central Middle School

APPENDIX D

PARENT QUESTIONNAIRE

Personal Data

You are being asked to participate in a research project that is being conducted at Prescott Central Middle School. Please complete the following general information and then move on to the attitude inventory. Place the number of your choice on the line provided.

_____ Number of children you have: (1) (2) (3) (4) (5+)
_____ Marital Status: (1) Single (2) Married
_____ Years of education: (1) Elementary (2) High School (3) Technical School (4) Junior College (5) College Graduate (6) Grad/Prof.
_____ Your age category: (1) 20-30 (2) 31-40 (3) 41-50 (4) above 50
_____ Your income level? (yearly) (1)under $25,000 (2)over $25,000
_____ In comparison with others your age and sex, how would you rate your physical health? (1) Excellent (2) Good (3) Fair (4) Poor
_____ Do you exercise regularly? (1) Yes (2) No
_____ If yes, how long have you been doing this? (1)Less than one year (2)More than one year
_____ Can you walk a mile without stopping? (1)Yes (2)No
_____ Can you walk three miles briskly without fatigue? (1)Yes (2)No
_____ Can you jog three miles continuously at a moderate pace without discomfort? (1)Yes (2) No
_____ Do you exercise with your children? (1)Yes (2)No

The questionnaire and inventory have been numbered and color coded.

Father's copy--blue
Mother's copy--white

APPENDIX E

KENYON'S ATTITUDE TOWARD PHYSICAL ACTIVITY INVENTORY

Father's Copy

PHYSICAL ACTIVITY INVENTOR

The purpose of this inventory is to measure the meaning for you of certain concepts of physical activity by judging them against a series of descriptive scales. In taking this test, please make your judgements on the basis of what these things mean to you. On each page of the booklet you will find a different idea or concept to be judged and beneath it a set of scales. You are to rate the concept on each of these scales in the order in which they are given.

Here is how you are to use these scales:

If you feel that the concept in the box at the top of the page, for example, "REFEREE," is very closely related to one end of the scale, you should place your check-mark as follows:

REFEREE

fair x : ___ : ___ : ___ : ___ : ___ : ___ : unfair
1 2 3 4 5 6 7

or

fair ___ : ___ : ___ : ___ : ___ : ___ : x : unfair
1 2 3 4 5 6 7

If you feel that the concept is quite closely related to one or the other end of the scale (but not extremely), you should place your check-mark as follows:

fair ___ : x : ___ : ___ : ___ : ___ : ___ : unfair
1 2 3 4 5 6 7

or

fair ___ : ___ : ___ : ___ : ___ : x : ___ : unfair
1 2 3 4 5 6 7

If the concept seems only slightly related to one side as opposed to the other side (but is not neutral), then you should check as follows:

fair ___ : ___ : x : ___ : ___ : ___ : ___ : unfair
1 2 3 4 5 6 7

or

fair ___ : ___ : ___ : ___ : x : ___ : ___ : unfair
1 2 3 4 5 6 7

Father's Copy

Instructions (Cont'd)

The direction toward which you check, of course, depends upon which of the two ends of the scale seem most characteristic of the thing you are judging. If you consider the concept to be neutral on the scale (that is, both sides of the scale seem equally associated with the concept), or if the scale makes no sense, (that is, it is unrelated to the concept) then you should place your check-mark in the middle space:

	1	2	3	4	5	6	7	
safe	___	___	___	x	___	___	___	dangerous

IMPORTANT: (1) Place your check-mark in the middle of spaces, not on the boundaries:

	THIS	NOT THIS		
		x		
___ :	___ :	x :	___ :	___ :

(2) Be sure you check every scale for every concept--do not omit any.

(3) Never put more than one check-mark on a single scale.

(4) The numbers under each scale are merely to assist in the analysis of the data by computers. You do not need to pay any attention to them.

Sometimes you may feel as though you've had the same item before on the test. This will not be the case, so do not look back and forth through the items. Do not try to remember how you checked similar items earlier in the test. Make each item a separate and independent judgement. Work at a fairly high speed through the test. Do not worry or puzzle over individual items. It is your first impressions, the immediate "feelings" about the items, that we want. On the other hand, please do not be careless because we want your true impressions.

Father's Copy

Using Check-Marks, Express on Each Scale Below What the Concept in the Box Means to You: Do Not Omit Any.

PHYSICAL ACTIVITY AS A SOCIAL EXPERIENCE

Sports, games, and other forms of physical recreation whose primary purpose is to provide opportunities for social participation: that is, to meet new people and continue personal friendships.

As you proceed, always be thinking about the idea or concept in the box.

1.	good	___	___	___	___	___	___	___	bad
		1	2	3	4	5	6	7	
2.	worthless	___	___	___	___	___	___	___	worthwhile
		1	2	3	4	5	6	7	
3.	pleasant	___	___	___	___	___	___	___	unpleasant
		1	2	3	4	5	6	7	
4.	sour	___	___	___	___	___	___	___	sweet
		1	2	3	4	5	6	7	
5.	nice	___	___	___	___	___	___	___	awful
		1	2	3	4	5	6	7	
6.	sad	___	___	___	___	___	___	___	happy
		1	2	3	4	5	6	7	
7.	clean	___	___	___	___	___	___	___	dirty
		1	2	3	4	5	6	7	
8.	relaxed	___	___	___	___	___	___	___	tense
		1	2	3	4	5	6	7	

Father's Copy

Using Check-Marks, Express on Each Scale Below What the Concept in the Box Means to You: Do Not Omit Any.

PHYSICAL ACTIVITY FOR HEALTH AND FITNESS
Participating in physical activity primarily to improve one's health and physical fitness.

As you proceed, always be thinking about the idea or concept in the box.

9.	good	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	bad
10.	worthless	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	worthwhile
11.	pleasant	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	unpleasant
12.	sour	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	sweet
13.	nice	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	awful
14.	sad	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	happy
15.	clean	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	dirty
16.	relaxed	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	tense

Father's Copy

Using Check-Marks, Express on Each Scale Below What the Concept in the Box Means to You: Do Not Omit Any.

PHYSICAL ACTIVITY AS A THRILL BUT INVOLVING SOME RISK
Physical activities providing, at some risk to the participant, thrills and excitement through speed, acceleration, sudden change of direction, and exposure to dangerous situations.

As you proceed, always be thinking about the idea or concept in the box.

17. good ___:___:___:___:___:___:___: bad
1 2 3 4 5 6 7

18. worthless ___:___:___:___:___:___:___: worthwhile
1 2 3 4 5 6 7

19. pleasant ___:___:___:___:___:___:___: unpleasant
1 2 3 4 5 6 7

20. sour ___:___:___:___:___:___:___: sweet
1 2 3 4 5 6 7

21. nice ___:___:___:___:___:___:___: awful
1 2 3 4 5 6 7

22. sad ___:___:___:___:___:___:___: happy
1 2 3 4 5 6 7

23. clean ___:___:___:___:___:___:___: dirty
1 2 3 4 5 6 7

24. relaxed ___:___:___:___:___:___:___: tense
1 2 3 4 5 6 7

Father's Copy

Using Check-Marks, Express on Each Scale Below What the Concept in the Box Means to You: Do Not Omit Any.

PHYSICAL ACTIVITY AS THE BEAUTY IN HUMAN MOVEMENT
Physical activities which are thought of as possessing beauty or certain artistic qualities such as ballet, gymnastics or figure skating.

As you proceed, always be thinking about the idea or concept in the box.

25. good ___:___:___:___:___:___:___: bad
1 2 3 4 5 6 7

26. worthless ___:___:___:___:___:___:___: worthwhile
1 2 3 4 5 6 7

27. pleasant ___:___:___:___:___:___:___: unpleasant
1 2 3 4 5 6 7

28. sour ___:___:___:___:___:___:___: sweet
1 2 3 4 5 6 7

29. nice ___:___:___:___:___:___:___: awful
1 2 3 4 5 6 7

30. sad ___:___:___:___:___:___:___: happy
1 2 3 4 5 6 7

31. clean ___:___:___:___:___:___:___: dirty
1 2 3 4 5 6 7

32. relaxed ___:___:___:___:___:___:___: tense
1 2 3 4 5 6 7

Father's Copy

Using Check-Marks, Express on Each Scale Below What the Concept in the Box Means to You: Do Not Think of Relationship

PHYSICAL ACTIVITY FOR THE RELEASE OF TENSION
The participation (or watching others participate) in physical activities to get away from the problems of modern living; to provide a release from "pent up emotions."

As you proceed, always be thinking about the idea or concept in the box.

33.	good	___	___	___	___	___	___	___	bad
		1	2	3	4	5	6	7	
34.	worthless	___	___	___	___	___	___	___	worthwhile
		1	2	3	4	5	6	7	
35.	pleasant	___	___	___	___	___	___	___	unpleasant
		1	2	3	4	5	6	7	
36.	sour	___	___	___	___	___	___	___	sweet
		1	2	3	4	5	6	7	
37.	nice	___	___	___	___	___	___	___	awful
		1	2	3	4	5	6	7	
38.	sad	___	___	___	___	___	___	___	happy
		1	2	3	4	5	6	7	
39.	clean	___	___	___	___	___	___	___	dirty
		1	2	3	4	5	6	7	
40.	relaxed	___	___	___	___	___	___	___	tense
		1	2	3	4	5	6	7	

Using Check-Marks, Express on Each Scale Below What the Concept in the Box Means to You: Do Not Omit Any.

PHYSICAL ACTIVITY AS PROLONGED AND STRENUOUS TRAINING
Physical activities which require long periods of strenuous and often painful training; which involve stiff competition and demands that the individual give up a number of pleasures for a period of time.

As you proceed, always be thinking about the idea or concept in the box.

41. good ___:___:___:___:___:___:___: bad
(1 2 3 4 5 6 7)

42. worthless ___:___:___:___:___:___:___: worthwhile
(1 2 3 4 5 6 7)

43. pleasant ___:___:___:___:___:___:___: unpleasant
(1 2 3 4 5 6 7)

44. sour ___:___:___:___:___:___:___: sweet
(1 2 3 4 5 6 7)

45. nice ___:___:___:___:___:___:___: awful
(1 2 3 4 5 6 7)

46. sad ___:___:___:___:___:___:___: happy
(1 2 3 4 5 6 7)

47. clean ___:___:___:___:___:___:___: dirty
(1 2 3 4 5 6 7)

48. relaxed ___:___:___:___:___:___:___: tense
(1 2 3 4 5 6 7)

APPENDIX F

PHYSICAL FITNESS TESTS

PHYSICAL BEST TEST ITEMS

Component: Muscular Strength and Endurance

Test Item: Sit-ups

Test Objective: To evaluate abdominal muscle strength and endurance.

Testing area: Gym floor.

Equipment: Digital stopwatch, score sheet, pencil, clipboard.

Instructions: Students lie on their backs with knees bent, feet on the floor, heels 12-18 inches from the buttocks. Arms are crossed and held against the chest with the hands on the opposite shoulders and the chin tucked to the chest. Feet are held by a partner who is instructed to keep the student' s feet in contact with the testing surface. On the command, "ready, go", the student curls to a sitting position, keeping the arms in contact with the chest. A sit-up is completed each time the elbows touch the thighs. The student returns to the down position by "uncurling" until the midback makes contact with the testing surface.

Scoring: The number completed correctly in 60 seconds.

Component: Flexibility

Test: Sit-and-Reach

Test Objective: To evaluate the flexibility of the lower back and hamstring muscles.

Testing area: Gym

Equipment: Sit-and-Reach Box, score sheet, pencil, clipboard.

Instructions: Students remove shoes and sit with knees fully extended, heels approximately shoulder width apart, and feet flat against the end board. The students slide the arms forward with palms down and one hand on top of the other. The student should reach forward, sliding the fingertips as far forward along the ruler as possible and holding that position momentarily. Each student is allowed four trials. The fourth trial should be held for at least one second.

Scoring: The score is the most distant point reached on the fourth trial measured to the nearest centimeter.

Component: Body composition

Item: Sum of skinfolds (tricep and calf)

Test Objective: To measure the degree of body fatness.

Testing Area: Cardiovascular Room

Equipment: Skinfold calipers, score sheet, pencil, clipboard, bench.

Instructions: The triceps skinfold is measured on the back of the right arm, midway between the elbow and shoulder, directly over the tricep muscle. The student should stand with the arm relaxed, palm facing the right leg. Grasp the skinfold vertically between the thumb and index finger. Gently lift the skinfold with the thumb and index finger about 1/2 " (1cm) above the midpoint of the back of the arm. While holding the skinfold, place the caliper jaws about 1/2" below the thumb and index finger (at the midpoint of the back of the arm) and allow the caliper jaws to exert their full tension for 2 seconds before taking the reading. Read the scale to the nearest 1.0 mm.

The calf skinfold is measured on each inside of the right lower leg at the level of greatest calf girth. Have the student place the right foot on a bench with the knee flexed to 90 degrees. Grasp and gently lift a vertical skinfold with the thumb and index finger at a site about 1/2" (1cm) above the largest part of the calf girth. Read the scale to the nearest 1.0 mm.

For each of the skinfold sites (tricep and calf), three separate measurements should be made. Record the median of the three scores for each site.

Scoring: Add the median score of the three tricep measurements to the median score of the three calf measurements to obtain the student's final score.

Fitnessgram Test Items

Component: Body Composition

Test Item: Body Mass Index

Objective: To evaluate the appropriateness of a child's weight relative to height.

Testing area: Cardiovascular room

Equipment: Physician's scale which measures weight in kilograms and height in meters.

Instructions: Child's weight and height are taken.

Scoring: Computation of weight divided by height squared.

Component: Cardiovascular Endurance

Test Item: One mile walk/run test

Test Objective: To complete the one/mile distance in the shortest amount of time possible.

Equipment/Facilities: A flat running course, stopwatch, pencil, and scoresheets.

Testing area: The outdoor activity field, measured and marked with cones to designate the course.

Test Information: Students begin on the signal.

Scoring: The one mile walk/run is scored in minutes and seconds.

Component: Flexibility

Test Item: Back Saver Sit-and-Reach

Test Objective: The objective is to be able to reach the specified distance on the right and left sides of the body.

Equipment/Facilities: A sturdy box 12 inches high. A measuring scale is placed on top of the box with the 9 inch mark even with the near edge of the box. The "zero" end of the ruler is nearest the student.

Test Description: The student removes his/her shoes and sits down at the test apparatus. One leg is fully extended with the foot flat against the end of the box. The other knee is bent with the sole of the foot flat on the floor and 2-3 inches to the side of the straight knee. The arms are extended forward over the measuring scale with the hands placed one on top of the other. With palms down, the student reaches directly forward with both hands along the scale four times and holds the position of the fourth reach for at least one second. After measuring one side, the student switches the position of the legs and reaches again. If necessary, the student may allow the bent knee to move to the side as the body moves forward.

Scoring: The number of inches on each side to the last whole inch reached is recorded. Maximum score is 12 inches.

Component: Muscle Strength

Test Item: Flexed Arm Hang

Test Objective: To hang with the chin above the bar as long as possible.

Equipment/Facilities: A horizontal bar, stopwatch, scoresheet, pencil.

Test Instructions: The student grasps the bar with an overhand grip. With assistance the student raises to a position where the chin is above the bar, the elbows are flexed, and the chest is close to the bar. A stopwatch is started as soon as the student takes this position. The position is held as long as possible. The watch is stopped when the student's chin touches the bar, or the head tilts backward to keep the chin above the bar, or the student's chin falls below the level of the bar.

Scoring: The score is the number of seconds the student is able to maintain the correct hanging position.

Component: Muscle Strength

Test Item: Pull-ups

Test Objective:To correctly complete as many pull-ups as possible.

Equipment/Facilities: A horizontal bar placed at a height allowing the student to hang with arms fully extended and feet clear of the floor.

Test Instructions: The student assumes a hanging position on the bar with an overhand grasp. Student uses the arms to pull the body up until the chin is above the bar and then lowers the body again into the full hanging position.

Scoring: The score is the number of complete pull-ups performed.

Component: Muscle endurance

Test Item: Curl-ups

Test Objective: To complete as many curl-ups as possible up to a maximum of 75 at a specified pace.

Equipment/Facilities: Gym mats and a cardboard measuring strip, scoresheet and pencil.

Test Instruction: Students form groups of three. One student will perform the curl-up, another will place hands under the head of student doing curl-ups,and the third will secure the measuring strip so that it does not move.

The student being tested lies in a supine position on the mat, knees bent at an angle of approximately 1400, feet flat on the floor, legs slightly apart, arms straight and parallel to the trunk with palms of hands resting on the mat. The fingers are stretched out and the head is in contact with the partner's hand, resting on the mat.

After the student has assumed the correct position on the mat, place measuring strip under the knees on the mat so that fingertips are just resting on the edge of the measuring strip.

The third student in each group should stand astride the one being tested securing the ends of the measuring strip with the feet.

Keeping heels in contact with the mat, the student curls up slowly sliding fingers across the measuring card until fingertips reach the other side, then curl back down until the head touches the partner's hand. Movement should be slow and controlled to the specified cadence which is about 20 curl-ups per minute. The teacher should call the cadence. The student continues without pausing until he can no longer continue, has

completed a maximum number of 75 curl-ups, or two corrections have been made.

Scoring: The score is the number of correctly performed curl-ups. Count should be made when the student's head returns to contact the partner's hand on the mat.

APPENDIX G

I.R.B. APPROVAL FORM

Health, Physical Education, Recreation, and Safety

P.O. Box 96
Middle Tennessee State University
Murfreesboro, Tennessee 37132
(615) 898-2811

100

MEMO

To: Pat Jordan and Dr. Doug Winborn
Department of HPERS
Box 96, MTSU

From: Timothy J. Michael
College of Education Representative,
Institutional Review Board- Chair

Re: "The Relationship Between Parental Attitude Toward Physical Activity and the Physical Fitness Scores of their Sixth-Grade Children"
(IRB Protocol Number: 97-100)

Date: February 4, 1997

The above named human subjects research proposal has been reviewed and approved. This approval is for one year only. Should the project extend beyond one year or should you decide to change the research protocol in any way you must submit a memo describing the proposed changes or reasons for extension to your college's IRB representative for review. Best of luck in the successful completion of your research.

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