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# The Effect of Participating in a Fitness and Lifetime Skills Program on Attitude Toward Physical Activity

BY

Paul C. Konrad

A thesis submitted
in partial fulfillment of the requirements for the
degree of Master of Science
Major in Health, Physical Education, and Recreation
South Dakota State University

1988

HILTON M. ERICOS LICRARY Ser th Data to the Librarity Enclosed to the Lutz-1093 The Effect of Participation in a Fitness and Lifetime Skills Program on Attitude Toward Physical Activity

This thesis is approved as a creditable and independent investigation by a candidate for the degree, Master of Science, and is acceptable for meeting the requirements for this degree. Acceptance of this thesis does not imply that the conclusions reached by the candidate are necessarily the conclusions of the department.

Date

Dr. James E. Lidstone, Associate Professor, Thesis Advisor and HPER Research Coordinator

Date

Dr. Jack Ewing, Associate Professor and Graduate Coordinator in HPER

Date

Dr. Harry Forsyth, Professor and Head, Department of HPER and Athletics Konrad, Paul C. The Effect of Participating in a Fitness and Lifetime Skills Program on Attitude Toward Physical Activity. Master of Science, 1988, 130 p. (J. E. Lidstone).

The purpose of this investigation was to determine if student attitude toward physical activity changed following exposure to one semester of fitness and lifetime skills instruction. The study specifically examined attitude difference and change by gender and class level for 343 college aged males and females. Subjects for the study were selected via a stratified random sample of courses offered within the Physical Education 100 Fitness and Lifetime Skills Program. Attitude measurements were obtained utilizing Kenyon's multi-dimensional Attitude Toward Physical Activity and Body Image Inventory (1968c) administered in a test-retest procedure. A two-way analysis of variance (ANOVA) revealed significant pretest differences for gender and class level (p < .05). Males and females differed significantly on the variables (a) pursuit of vertigo, (b) aesthetic experience, (c) catharsis, and (d) ideal body image. Freshmen/sophomores held significantly different attitudes toward physical activity (ATPA) than juniors/seniors for the dimensions of (a) social experience, (b) pursuit of vertigo, (c) catharsis, and (d) overall ATPA. Repeated measures ANOVA's were performed to determine if attitudes changed significantly from pretest to posttest. Findings indicated a significant increase in ATPA as a social experience, health and fitness, aesthetic experience, and catharsis. Also significant class level interactions were observed on the ascetic, catharsis, and

perceived body image dimensions. It was concluded that attitudes toward certain dimensions of physical activity can change following participation in one semester of fitness and lifetime skills instruction.

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#### CHAPTER I

#### INTRODUCTION

Many physical education departments develop and offer activity programs that have, as a goal, the enhancement of student participation in physical activity. This objective is not only a concern during one's academic years, but throughout one's active lifetime (Bain, 1980). According to Fox and Biddle (1988), a departmental emphasis toward a lifetime fitness program induces a favorable psychological orientation toward physical activity. "Regular exercise eventually becomes a choice behavior and the individual who has the desire, confidence, and expertise to maintain exercise will be better equipped to make healthy lifestyle decisions" (p. 48). According to Kenyon and Loy (1965), physical activity is a major contribution to one's socio-psychological foundation. Paffenbarger, Hyde, Wing and Hsieh (1986) support physical activity as a major factor in increasing functional capabilities which positively enhance personal well-being.

The above convictions provide a solid rationale for physical education to be required within our educational institutions. While political bodies debate the importance of physical activity as a regular requirement, physical educators fear program cuts, departmental setbacks, and loss of employment. Furthermore the number of colleges, high schools, and elementary schools requiring physical activity is declining (Oxerdine, 1978).

Kenyon (1966) concluded that, as people age, their actual participation in physical activity declines, however, their interest as

a spectator increases. It has been reported that our nation has an obesity problem that contributes to major health diseases (Angel, 1978). According to Chirico and Stunkard (1976), a lack of physical activity may be highly related to this problem.

why do some people have favorable attitudes toward participation in physical activity and others do not? Why is physical activity so important to some, while others neglect or actively avoid it? What determines whether physical education is a requirement or simply an elective? Is physical education a necessary means to enhance our national, state, community, and individual physical and socio-psychological wellness? These and many other questions are continually evaluated by physical educators across the country.

As mentioned above, many investigators have demonstrated the value of regular physical activity and its contribution to the socio-psychological development and well-being of an individual. The affective domain has always been of interest to physical educators. This area of behavior includes attitudes, values, interests, psychological traits, and emotional states of the individual (Safrit, 1986). The experience of physical education exposes the student to physical activity, teaching methods, facilities, equipment, and teacher student relations. Through these experiences students form attitudes that may determine the degree to which one engages in physical activity (Bain, 1980).

Developing favorable attitudes toward learning is a universal objective of instruction and certainly one that finds a place in the

goals of most subject areas. The rationale most often given is that students with positive attitudes are more likely to achieve in the content area (Figley, 1985). The study at hand was an attempt to obtain information concerning attitude change due to instruction in fitness and lifetime activities. Attitude was assessed utilizing a previously developed assessment tool known as Kenyon's Attitude Toward Physical Activity and Body Image Inventory (ATPA-I).

#### Statement of the Problem

The purpose of this investigation was to determine if student attitudes toward physical activity changed as a result of exposure to one semester of fitness and lifetime skills instruction. More specifically, the study examined attitude difference and change by gender and class level of selected students at South Dakota State University. Attitude measurements were obtained utilizing Kenyon's (1968c) ATPA-I Inventory in a test-retest procedure the fall semester of 1987.

## Hypotheses

- 1. Males and females will differ significantly on attitude toward physical activity.
- Freshmen/Sophomores will have more favorable attitudes toward physical activity than Juniors/Seniors.
- 3. There will be a change in student attitude as a result of participating in one semester of the P.E. 100 fitness and lifetime skills program.

#### Definition of Terms

Attitude. A latent, complex, but relatively stable behavioral disposition reflecting both direction and intensity of feeling toward a particular object whether it be concrete or abstract (Kenyon, 1968b, p. 567).

Fitness and Lifetime Skills Program. A mandatory physical education program for students at South Dakota State University. All students must take two credits of physical education to graduate but they may elect to take as many as four.

Physical Activity. Gross human movement resulting from active games, dance, or sport (Kenyon & Loy, 1965).

Kenyon's Attitude Toward Physical Activity and Body Image Inventory

(ATPA-I). An inventory designed to assess attitudes toward seven

unidimensional sub-domains of physical activity and two dimensions of
body image (Kenyon, 1968c).

Seven sub-domains of Physical Activity (Kenyon, 1968c):

<u>Social Experience</u> - A domain of physical activity which measures the opportunity to make friends, meet new people and strengthen existing relationships.

<u>Health and Fitness</u> - A domain of physical activity which measures the contribution to the improvement of health and fitness.

<u>Pursuit of Vertigo</u> - The domain of physical activity which measures the importance of thrill and risk in activities for the participant.

<u>Aesthetic Experience</u> - A domain of physical activity which measures the importance of beauty and movement.

<u>Catharsis</u> - A domain of physical activity which measures the importance of activity as a vehicle for the release of tension.

<u>Ascetic Experience</u> - A domain of physical activity which measures the importance of strenuous and painful training resulting in satisfaction or pleasure.

<u>Chance</u> - The domain of physical activity which measures the importance of chance or luck as an element of satisfaction toward physical activity.

### Two Dimensions of Body Image (Kenyon, 1968c):

<u>Ideal Body Image</u> - The perception of how one would like to look and feel physically.

<u>Perceived Body Image</u> - The perception of how one actually looks and feels physically.

### <u>Assumptions</u>

For the purpose of this investigation, the following are assumed to be true and therefore are not subject to validation as part of this study. It is assumed that:

- Something as abstract as attitude toward physical activity can be measured using a paper and pencil instrument.
- All subjects responded honestly to the items on Kenyon's Attitude Toward Physical Activity and Body Image Inventory.
- 3. The subjects selected their PE 100 activities by choice and preference rather than because of scheduling convenience.

- 4. The testing schedule and procedures had no effect on the subjects' attitude toward physical activity.
- 5. Attitude toward physical activity can change as a result of experience.

#### Limitations

This study was limited to data obtained from a stratified random sample of male and female students enrolled in the Fitness and Lifetime Skills Program at South Dakota State University during the fall semester of 1987. It is limited to a discussion of attitude toward physical activity as defined and measured by Kenyon's ATPA-I Inventory. The study did not include a control group. Therefore observed pretest to posttest changes may be due to factors other than the independent variable.

# Scope of the Study

This study was conducted in the fall semester of 1987 at South Dakota State University. Subjects for the study were selected via a stratified random sample of Fitness and Lifetime Skills courses offered within the Physical Education 100 Program. Approximately 25% of the sections offered were selected. This process resulted in a sample of 343 males and females from 25 activity sections. Subjects ranged from freshman to senior in class level.

A pretest and a posttest was administered to each subject.

Data collection took place the 2nd, 8th, and 16th weeks of the

semester. Kenyon's (1968c) ATPA-I Inventory was the instrument used to

collect the data. During each session, subjects responded to a series

of semantic differential scales designed to assess seven aspects of physical activity and two dimensions of body image. Physical activity dimensions included (a) social experience, (b) health and fitness, (c) pursuit of vertigo, (d) aesthetic experience, (e) catharsis, (f) ascetic experience, and (g) chance. The two dimensions of body image were ideal body image and perceived body image.

The study examined attitude difference and change for two independent variables, (a) gender, and (b) class level. A series of 2x2 factorial analyses of variance and repeated measures analyses of variance were carried out utilizing the General Linear Models Procedure of the Statistical Analysis System (SAS).

#### Significance of the Study

Attitudes are ideas or feelings that one may have about something as a result of past experiences. Therefore, attitude may change continuously due to new perceptions. When conditions or changes in the environment occur, changes in attitude may happen also. In physical education we are concerned with the attitude of students toward physical education as well as individual attitudes toward physical activity as influenced by this program. Therefore, it seems important to measure attitude toward physical activity to see what effect activity, and the accompanying administrative procedures, have upon student feelings. Gladys Scott's article, "The Contributions of Physical Activity to Psychological Development," summarizes why constant review and investigation is recommended for physical educators and administrators (Scott, 1960):

There is perhaps no area of our professional background that offers more challenge to us than psychological development. The challenge is multiple. We need a better background in general psychology, personality development, social psychology, and cultural anthropology. We need to develop research competencies in these areas and pursue our understandings of prophylactic and therapeutic contributions of experience in motor skills. As teachers and administrators, we must be ready to modify our practice in line with new evidence (p. 317).

It is generally thought that attitudes are favorable toward physical activity, however, distinct differences have been identified in the literature between male and female participants. Hopefully a better socio-psychological understanding of the attitudes that predispose one to favorable physical activity behavior may be obtained through this investigation.

This investigation concerns the measurement of attitude change toward physical activity due to student participation in the Fitness and Lifetime Skills Program at South Dakota State University. When such measurement is conducted without bias, avenues may be opened so that desirable changes may be made. Hopefully this study will add information to the current body of knowledge concerning attitudes toward physical activity.

#### CHAPTER II

#### REVIEW OF THE LITERATURE

According to Bain (1980), the goal of physical educators is to "socialize the student into the role of participant, to provide the opportunity to learn the skills, strategies, customs, expectations, and folklore surrounding specific movement activities he or she finds enjoyable" (p. 48). Students with positive attitude toward physical activity are more apt to exercise on a regular basis, which in turn gives personal satisfaction and enrichment of functional capabilities (Bain, 1980). Therefore, developing favorable attitudes toward physical activity is an objective most physical education departments strive to attain.

Attitudes, values, interests, psychological traits, and emotional states are attributes used to help physical educators formulate affective objectives (Safrit, 1986). In the past sixty years, numerous attitude scales have been developed concerning the affective domain of physical education (e.g. Wear, 1955; Drinkwater, 1960; Kenyon, 1968a,b,c; Simon & Smoll, 1974). This study sought to determine whether or not participation in the Fitness and Lifetime Activity Program at South Dakota State University had any effect on student attitude toward physical activity.

For organizational purposes the review of related literature is divided into four parts: (a) measuring attitudes toward physical activity, (b) attitudes toward physical activity, and (c) behavior

change due to physical activity. A brief summary follows these sub-sections.

### Measuring Attitudes Toward Physical Activity

Prior to the 1930's the term attitude had as many definitions as there were authors or investigators. A reason for confusion regarding the definition lay in the context in which the word was used. Attitudes are personal values which, many times, hold different interpretations. Another factor pertains to the difficulty in differentiating between the abstract constructs called attitudes, values, and opinions. Early attitude definitions were mere statements of opinion regarding an area of interest (Bain, 1928). In an effort to find some way to operationalize attitudes Bain (1928) stated, "the best method to measure attitude is the statistical treatment of indirect evidences of overt behavior in a controlled experimental situation" (p. 955).

#### Definition of Attitude

Some of the early definitions of attitude are testimony to the abstract nature of the concept. Thurstone (1929) defined attitude as "the sum-total of a persons inclinations and feelings, prejudice or bias, preconceived notions, ideas, fears, threats, and convictions about a specific topic" (pp. 6-7). Campbell (1968) defined attitudes as "emotionalized feelings that are characterized by a quality of intensity ranging in all degrees from strongly for to strongly against" (p. 456). According to Scott (1960), "attitudes are feelings or moods related to action" (p. 308). Therefore, positive attitudes toward an

activity are more likely to foster frequent, habitual participation in that activity.

Kenyon (1968) concluded that the study of attitude had two closely related problems: definition and measurement. He indicated that many have defined the term attitude and that most investigators suggest that attitude contains cognitive, affective, or action components. Taking the many definitions into account, Kenyon defined attitude as "a latent or nonobservable, complex, but relatively stable behavioral disposition reflecting both direction and intensity of feeling toward a particular object, whether it be concrete or abstract" (p. 567). He also states, "however latent attitudes may be, their measurement depends upon some overt behavior, that is a response elicited by some stimulus" (p. 567). This latter statement implies that the driving force may be interpreted as a multi-dimensional response toward physical activity. Therefore, an attitude measurement toward a specified activity may carry varied meaning for different individuals.

During the late 1920's and 1930's, attitude measurement for program evaluation became popular. Researchers were developing checklists, life histories, interviews and questionnaires to survey student attitudes. The following are descriptions of the evolution of some of the more relevant and popular measures.

# The Thurstone/Chave Technique

In 1929 Thurstone and Chave constructed a scale to measure attitudes toward the church. Although this does not apply directly to

physical activity, numerous investigators modeled their instrumentation after the Thurstone and Chave technique. The scale originally consisted of 130 statements regarding opinion and value toward the church. Judges were required to evaluate the statements and then place them into 11 categories. Statements appearing in multiple categories were eliminated. The statements which remained were those representing unified agreement from the judges. These statements represented varying aspects of attitude toward the church. Subjects responding to the survey were asked to check only those statements with which they agreed. A low score was associated with a favorable attitude and a high score with an unfavorable attitude. The inventory was administered to 1390 subjects at the University of Chicago, with a very high test-retest reliability (r = .94) resulting.

Carr, in 1945, employed the Thurstone and Chave technique to develop a questionnaire applicable to physical education. This research constituted an early effort to apply appropriate principles of test construction to the development of an instrument to assess attitudes toward physical education and activity. Ninety-four statements were constructed to evaluate social, personal, and activity attitudes. Fifty-eight physical educators were selected to serve as judges to rate the statements. Ten questions were discarded, leaving 84 to be administered to 335 subjects. Carr found that factors affecting success in physical education were motor abilities, intelligence, and attitudes. Since motor ability and intelligence are more or less inherent qualities she stated, "teachers should make

themselves aware of student attitudes and try to remove reasons for undesirable reactions" (p. 187).

Another study utilizing the Thurstone technique was conducted by Nemson (1949). He believed this method offered the most practical way to obtain desired data. His purpose was to develop an attitude questionnaire investigating annoyances of high school boys toward physical education. A scale of 121 items was constructed through an evaluation jury. The questionnaire was administered to 323 subjects. He concluded the study saying, "many annoyances could be removed but most involved the personality or behavior of other students or the instructor" (p. 346).

#### The Likert Technique

In an attempt to shorten this complicated procedure, Likert (1932) presented a technique which eliminated the evaluating judges. He obtained personal responses from subjects which indicated individual attitudes. Likert assigned arbitrary values such as 1-2-3-4-5, to the degrees of agreement and disagreement. The statements described either a favorable or an unfavorable attitude toward a particular subject. The total score for an individual was the sum of all scores for the separate items. A certain percent of scores of the upper and lower groups were compared to determine whether the individual items differentiated between the two groups. The means for the upper and lower groups for each item were computed. The items reflecting the greatest mean difference between the two groups were retained for the final scale.

The Thurstone—Chave and Likert techniques measure individual attitudes only. In 1951, Wear developed an attitude inventory to measure both individual and group attitudes toward a required physical education program. His design utilized the Likert method to assess 472 college age men. The inventory consisted of three parts: (a) a list of 120 inventory statements, (b) a nine point graphic rating scale, and (c) a short questionnaire concerning past experiences with physical education. These last two items were included to validate the inventory. The test-retest reliability was computed to be .96 and the Pearson Product Moment correlation between inventory scores and the graphic rating scale was .80. Conclusions were that the inventory was reliable and valid for the evaluation of attitude concerning college physical education as an activity course. With the establishment of norms, meaningful interpretations may be made of scores relative to the status of an individual or group.

A second study by Wear (1955) created two equivalent inventory forms measuring attitude toward physical education. The purpose was to evaluate attitude before and after an activity class. The two forms were created from Wear's original list of 120 statements. The statements of the two forms (A and B) were categorized into physiological-physical, mental-emotional, social, and general outcomes to be expected from physical education. The two forms were administered to 100 male subjects with a short questionnaire and graphic self-rating scale (Wear, 1955). According to the Spearman-Brown formula, the reliability for Forms A and B were .94 and

.96 respectively. Thus, both forms were found to be very reliable. The author concluded that the forms, "should be very useful in measuring pre and posttest attitude changes" (p.117).

Drinkwater (1960) developed an attitude inventory to determine attitudes of high school girls toward physical education as a career for women. The Likert technique was used to construct and score the attitude statements. Eighty-eight statements were constructed and administered to 208 subjects. The top 27% of the distribution was compared to the bottom 27%. Using the critical ratio method, the two groups were found to be significantly different at the .01 level. The reliability of the inventory was .96. Utilizing Thurstone's method of testing for ambiguity, 16 statements were eliminated. This left 72 statements which were divided into two test forms (A and B). When comparing the reliability between forms, the product moment correlation was computed to be .87. The evidence indicated that both forms differentiate between favorable and unfavorable attitudes toward physical education as a career for women. In conclusion, the similarity between the two forms allows for pre and posttesting.

Ferguson (1941) conducted a comparison study between the Likert and Thurstone-Chave methods of attitude scale construction. For this comparison, he selected statements developed by Rundquist and Sletto (1936) who utilized the Likert method to construct their Minnesota Scale for the Survey of Opinions. Ferguson administered these statements to 100 subjects. After completion, he rated each statement on a scaled continuum similar to the one used in the Thurstone and

Chave study. It was concluded that the Likert technique does not always eliminate the need for a panel of judges. However, Ferguson stated, "the Likert method seems to be more practical due to much less labor and an equal amount of validity as compared to the more complicated Thurstone procedure" (p. 51). Both techniques were sufficiently valid.

Kenyon (1968a) attempted three times to construct a model characterizing physical activity as a socio-psychological phenomenon. He based his work upon the assumptions that physical activity can be subdivided into more specific components, in other words, physical activity may have different meanings to different individuals. In his third attempt, Kenyon developed an instrument to measure attitude toward physical activity as a multi-dimensional characteristic. The Attitude Toward Physical Activity Inventory (ATPA) was formulated using six dimensions of physical activity:

- For "social experience" where physical activity is engaged by two or more people resulting in social value.
- 2. For "health and fitness" where physical activity contributes to the improvement of one's health and fitness.
- 3. For "pursuit of vertigo" where physical experiences require risk, but provide an element of thrill through speed, acceleration, changes of direction, or expresure to dangerous situations.

- 4. For "aesthetic experience" where physical activity is conceived of as possessing beauty or certain artistic qualities.
  - 5. For "catharis" where physical activity acts as a means to relieve tension created by frustration through exposure to daily stimuli.
  - 6. For "ascetic experience" where physical activity involves long, strenuous, and sometimes painful training. It provides stiff competition and requires personal sacrifice to attain goals.

To develop such a model, two conditions needed clarification;

(a) each subdimension had to be internally consistent, and (b) the subdomains had to be independent of one another. To accomplish these objectives, 353 men and 215 women responded to a Likert-type attitude inventory. The inventory consisted of statements evaluated by experts, then categorized to represent each particular subdomain. Reliability was measured using Hoyt's analysis of variance approach (1941). Based upon item analysis of each subdomain, the category "social experience" was lowest (.72), while "pursuit of vertigo" was highest (.89) in reliability.

Independence of each subdomain was considered through factor analysis and an oblique rotation of the first six factors. The analysis produced clusters of items corresponding to each of the six domains. The social and aesthetic dimensions revealed the greatest independence, while catharis, health and fitness, and ascetic experience appeared to have the strongest relationship. No two factors

shared more than 32% of the variance, indicating that the six domains were relatively independent. Kenyon concluded that "the six dimensions of physical activity have some validity, and that although some success was met in developing a model to characterize physical activity as a sociopsychological phenomenon, the work was no more than a crude beginning" (p. 104).

Based upon his multi-dimensional model to characterize physical activity, Kenyon (1968b) constructed two forms of attitude measurement toward physical activity; one for men (Form DM; 59 items) and one for women (Form DW; 54 items). His purpose was to construct a model characterizing physical activity through independent subdimensions to determine attitudes toward physical activity. The ATPA-Inventory consisted of the six dimensions described in his previous study. A seven point Likert scale was used for scoring the inventory. The point value from very strongly agree to very strongly disagree was 7-6-5-4-3-2-1, respectively. Negative statements were scored the opposite of positive statements. Six separate scores (one for each subdimension) were attained by adding the point values for respective questions. The construct validity was confirmed by factor analysis for all dimensions except "catharsis". The reliabilities for the six scales were similar to those obtained in his previous study (Kenyon, 1968a). This attitude inventory has been described by Safrit (1986) as "an excellent inventory" (p. 382).

#### The Critical Incidence Report

Flanagan (1954) described the development, principles, and status of a measurement tool known as the Critical Incidence Report.

As with the Thurstone/Chave Technique (1929), Flanagan's Critical Incidence Report originally did not apply directly to physical activity, however, several investigators utilized this reporting technique in deriving determinants of attitude toward physical activity. It is a technique designed to gather information concerning behavior in a defined situation. The technique consists of a flexible set of principles which must be modified and adapted to meet the specific situation at hand. This technique grew from studies carried out by aviation psychologists of the Army Airforce during World War II. The Critical Incidence Report according to Flanagan has two basic principles:

- Reporting facts regarding behavior are classified into categories, rated, and then evaluated according to expert opinion.
- 2. Reporting should be limited to those behaviors which make a significant contribution to the activity in concern.

In conclusion, the author states that this technique obtains information about specific behaviors categorized by qualified professionals. These behaviors provide a basis for making inferences regarding curriculum improvement. However, as pointed out by Flanagan, a few problems exist with this method of incident reporting.

1. Obtaining a large sample size is tedious and often impossible.

- Recalling an incident from memory often gives inaccurate and vague meaning.
- 3. Analyzing and categorizing the incident reports are subjectively done by the investigator.

### The Semantic Differential Technique

The Likert method of measuring attitude toward a particular subject is arguably the most popular method in the literature. However, Osgood, Suci, and Tannenbaum (1957) revealed a more expeditious means of retrieving similar information. This method, known as the semantic differential technique, was found to be an exceptional tool for reproducible and consistent measurement. Semantic differential is a generalized technique of measurement which must be adapted to the requirement of each research problem to which it is applied. There are no standard concepts and no standard scales, rather the concepts and scales used depend upon the purpose of the research in question. When utilizing the semantic differential technique, adjectives of polar meaning are separated by a seven point scale reflecting a positive (7) to neutral (4), or negative (1) reaction to a specific concept or stimulus. For negative statements the values would be reversed. The purpose is to measure attitude toward a specific concept. Subjects rate their feelings about selected adjectives. Totaling the score indicates one's degree of attitude toward the particular concept of concern.

When utilizing the semantic differential technique there are three areas of concern (Baumgartner & Jackson, 1982). First, the

adjectives must be precisely paired in all factors of concern.

Secondly, to measure all three factors at least nine adjectives are needed. Third, the reading comprehension level of the subjects must relate logically to the concept of concern.

In Kenyon's 1968c investigation, he utilized semantic differential to measure attitude toward physical activity. Kenyon added the dimension of chance to the six subscales of physical activity he had developed earlier. Definitions were provided for each of the seven dimensions and required that the subjects evaluate the concept against eight descriptive scales, for example, good/bad, worthless/worthwhile, and pleasant/umpleasant (see Appendix B for complete list).

The inventories reviewed thus far have all been constructed for use with college level subjects, although many authors believe they could be utilized at the high school level as well. Simon and Smoll (1974) were interested in using the semantic differential scale developed by Kenyon 1968c for assessing attitude toward physical activity in children. They altered the wording in order to make it comprehensible to children in grades 4 to 6. The descriptor adjectives were selected on the basis of frequency of constructe at the third grade level. Reliability coefficients ranged from .80 to .89 for the seven domains. The validity had previously been established by Kenyon.

### Attitudes Toward Physical Activity

Wiedamann and Howe in 1933 developed a questionnaire including 14 factors that might influence favorable attitudes toward physical activity. The intent of the investigation was to measure students' attitudes toward a selection of physical education activity classes. The questionnaire was submitted to 1359 college females, of whom 823 responded (60.6%). Activity preferences (checklists of 17 indoor and 16 sport activities) were ranked on the basis of total votes, weight percentages, and first, second, and third choices, respectively. The authors' findings were that females had a high value for rhythmic and individual sport activities. Specific areas yielding favorable attitudes were gymnastics and body training. The authors favored a curriculum from which students may select a wide variety of activity classes because their investigation revealed diverse preferred activity rankings among individual students.

It seems that departmental program evaluation has always been of concern to physical educators. Bell and Walters (1953) devised a study to determine attitudes of college females in an attempt to evaluate the physical education program. The subjects included 684 freshmen taking physical education and 173 seniors who had already taken required physical education at the university. A three part questionnaire was administered including, (a) background information, (b) questions based on physical education objectives, and (c) the Wear Attitude Scale. The responses were categorized and compared between the two groups of subjects. The findings indicated that students'

attitudes were favorable toward all required activity courses. They also revealed favorable attitude scores toward the contribution of physical education to social, physical, and mental health. Freshmen were found to be more active than seniors. As activity involvement increased, attitude toward physical education also increased. Positive relationships existed between attitude and the following:

- 1. The importance of sport and dance.
  - 2. The instructor's interest in each individual.
- 3. The extent to which the individual enjoyed physical education class.
  - 4. The student's motivation level to continue physical activities outside the classroom.

Areas targeted for improvement were knowledge of health principles, responsibility, development of leadership, self-confidence, self-expression, and aesthetic value (Bell & Walters, 1953).

Brambach and Cross (1965) investigated 938 male students entering the University of Oregon. Their purpose was to determine attitude toward physical education. The Wear Attitude Inventory (Short Form A) was the instrument used for measurement. When group means were compared, students from smaller populated schools revealed better attitude scores. Also, athletes had better attitude scores than non-athletes. Furthermore, the more exposure to physical education and activity, the higher the subject scored. Generally, the findings indicated that these students had favorable attitudes toward physical education.

Campbell (1968) also utilized the Wear Attitude Inventory (Form A) to measure the attitudes of 199 college students toward physical education. To determine these attitudes Campbell compared four sub-dimensional categories of physical education to high school size, college major, and the physical education class the subjects were attending. The sub-dimensional categories of physical education consisted of social, mental-emotional, physiological, and general statements. The findings revealed little variation among mean scores, however, the physiological and sociological category responses were significantly more favorable than the mental-emotional or general statement categories. The findings indicated these categories to be more precedul classifications in determining highly favorable attitude toward physical education.

It has been reported that the Wear Attitude Inventory has satisfactorily measured attitude toward physical education, however, according to Williams and Nelson (1983) "few investigators have actually provided a definition of the subdimensions of physical education within a particular pedagogical framework. Few have tested reliability or internal consistency for the total test and for each separate subdimension. Iastly, few have measured Wear's relative independence of the subdimensions" (p. 19). These investigators examined attitudes toward physical education as a function of sex, age, and class. Secondly, they worked to broaden the scope of attitudinal research by including behavioral components of attitude. Third, they attempted to analyze the Wear Inventory for internal consistency and independence of each subdimension. The subjects consisted of 814 boys

and girls from three New Zealand high schools. Wear's Attitude Inventory measured attitudes toward physical education, while Guttman's 4-point self-esteem scale utilizing statements developed by Rosenberg (1965) measured self-esteem and body-esteem. A split-plot analysis of variance was employed using sex, age, class, self-esteem, body-esteem and attitude toward physical education as the treatment variables. Factor analysis verified the internal consistency and independence of the Wear Inventory subdimensions. Conclusions indicated students have favorable attitudes toward physical education. However, the younger students achieved higher scores than their older counterparts. According to the authors, this may suggest a difference in physical education curriculum. The self-esteem and body-esteem measures differed according to sex and class level, however, both reflected a favorable disposition. These positive measurements were small in magnitude providing support that the components should be considered in harmony. Finally, in examining the qualities of the Wear Inventory, internal consistency was rated as high, while the subdimensions were rated as complex and differed by class and sex. Consequently, the authors believed it unwise to compare scores based on a given set of subdimensions. Intergroup comparisons should be limited to individual items or overall total score.

Sex, age, education, and socioeconomic status were independent variables used by Kenyon (1966) to evaluate the degree to which adults were involved with physical activity and sport. The dependent variables were physical activity encountered "directly" as a

participant, or "indirectly" as a spectator. An inventory containing 152 items was constructed, evaluated, and mailed to 875 adults. Of these subjects selected, 86.6% replied. The statistical procedures included response frequencies, cross tabulations, chi-square, Pearson correlation and associated significance tests. The results indicated that adults generally lead inactive lives, however, sporting events on television and radio are significant life interests. Participation in physical activity was inversely proportional to age. There were no sex differences, however, men were exposed to sport through attendance and aired broadcasts more than women. Physical activity and socioeconomic status were non-significant but those of low socioeconomics status did not attend sporting events as frequently. Family resources were positively associated with amount of participation and attendance in certain physical activity. It seems that the attitudes of these subjects were positive toward the observation of sport and negative toward participation in physical activity.

An interesting investigation was carried out by Goc-Karp, Kim, and Skinner (1985). They attempted to determine whether pre-service majors and their professors held similar beliefs about physical education. The investigators interviewed 56 physical education majors and 10 faculty instructing physical education major courses. These interviews were audio-taped and transcribed for analysis. Answers were summatively ranked by percentage of common responses. The findings indicated that both instructors and students became involved in physical education because of the influence of physical education

teachers whom they viewed as personable people. Another reason was the enjoyment of activity, but not necessarily because they wanted to become teachers. Other findings indicated that students tended to be negative in their opinions about the image of physical education blaming the teachers for failing to present better programs. This viewpoint was held by their professors as well. They indicated a possible deterioration of self-esteem through these negative perceptions. The students placed more emphasis on fitness and less on skill and lifetime sports, whereas their professors emphasized the opposite. These findings provoked questions by these authors, such as "what can the college program do to reduce the negative perceptions about physical education and its teachers?", and "what can be done before, during and after the student preparation period to prevent the teachers' loss of self-esteem?" (p. 119).

A study that may help to address the concerns of the above study was conducted by Figley (1985). The investigator directed her attention to the determinants of attitude toward physical education. As indicated previously, a long time goal of physical educators has been to develop positive attitudes toward the activity program. Figley, in her work, attempted to identify these determinants. The instrument she used to gather data was the "Critical Incidence Report" (Flanagen, 1954). Subjects were 100 college students enrolled in separate physical education classes. Determinants of attitude toward physical activity were categorized and ranked according to subject responses:

- 1. Teacher
- 2. Curriculum
- 3. Atmosphere
- 4. Peer behavior
- 5. Perceptions of self

The investigator concluded that, "perhaps the attitudes of students toward the physical education experience evolve due to complex interaction among students, teacher, content, and instruction" (p. 239).

Many researchers involved with the psycho-social aspects of sport consider Kenyon's work in 1968 to be a valuable contribution to the study of attitude toward physical activity. The 1968c study was an international research endeavor measuring student values toward physical activity in four countries. The purposes of the study were to:

- Determine attitudes toward physical activity of urban secondary school students as a function of country, gender, and level of education.
- Determine the nature and degree of involvement in physical activity among urban secondary school students measured as a function of country, gender, and level of education.
- 3. Determine the significance of certain behavior disposition, and situational attitude toward physical activity and degree of variables to explain involvement.

4. Provide data from which theoretical statements could emerge (p. 2).

Subjects were 4000 male and female students from the United States, England, Canada, and Australia. Three inventories were administerel;

(a) a general information questionnaire, (b) Kenyon's (1968c) ATPA-I semantic differential scale, and (c) a measurement of self-esteem, need for approval, relationship with father, and sport classification data. Kenyon's findings indicated that:

- Certain dimensions of physical activity carried positive attitudes toward physical activity. Social experience, health and fitness, aesthetic experience, and catharsis were dimensions of physical activity Kenyon identified as positive. Females scored higher than males in these categories.
- 2. The dimensions of pursuit of vertigo, ascetic experience, and chance were less positive than the former, however they were still viewed positively. Generally, males scored higher than females on these sub-domains.
- 3. Older students favored activity as an ascetic experience and as catharsis more than younger students.
- 4. Younger students expressed a more positive attitude toward physical activity as chance than their older counterparts.
  - 5. Attitudes were directly related to the degree of involvement in physical activity.

6. To some extent attitude toward physical activity was found to be a function of body-esteem, self-esteem, need for approval, social values, and relationships with father.

In another investigation to determine attitude toward physical activity, Aldermann (1970) selected a group of 81 male and 55 female championship athletes from different sports. He utilized Kenyon's multi-dimensional sub-domain concept (1968c) to gather the data. The subjects represented 10 different sporting events. Specific finlings were:

- Males and females held similar positive attitudes toward physical activity.
- 2. The athletes' strongest attitude toward physical activity was as an aesthetic experience.
- 3. The dimension "ascetic experience" toward physical activity held the least meaning to the total group.

According to Alderman this latter statement was ironic in that to become a championship athlete, long, strenuous training is necessary in most sports.

Dotson and Stanley (1972) conducted an investigation relating attitudes to the size of high school attended, records of achievement in athletic and nonathletic activities and the physical activity course elected. Kenyon's Attitude Toward Physical Activity Inventory (1968b) was completed by 699 male students. The results indicated that students of gymnastics expressed the highest favorable attitude, while students of badminton, archery, and bowling expressed the lowest.

Physical activity as a pursuit of vertigo and catharsis were expressed as the most favorable values, while an aesthetic experience was the most negative expression. Achievement in athletics was favorably related to physical activity as an ascetic experience. The size of high school and achievement in non-athletic activity was generally unrelated to the student's perceived values.

In another study Staub (1975) assessed and compared the attitudes toward physical activity of senior high students between a lifetime sports program and a traditional classroom approach. Subjects were 173 boys and 167 girls enrolled in three different schools. sources of data consisted of (a) information about the physical education program at each school, (b) student attitudes toward physical activity, and (c) their athletic experience and family background. An interview, Kenyon's Attitude Toward Physical Activity Inventory (Form D), and a questionnaire were used to obtain the above information. The results generally showed males and females from all three schools to have positive attitudes toward physical activity. Females from the traditional program had more positive attitudes toward physical activity than females from the lifetime sports program. The opposite was true for males. Males and females participating in organized sports scored significantly higher in attitude toward physical activity. Females from the three schools expressed positive attitudes toward physical activity in all six subdimensions of Kenyon's ATPA, while males revealed positive attitudes toward a pursuit of vertigo and catharsis.

Accord (1977) examined both coeducational and segregated physical education programs to determine whether differences existed in the attitudes of students toward physical activity. Subjects included 160 students from segregated programs and 320 subjects from coed physical education programs. Kenyon's Attitude Toward Physical Activity Inventory was employed to assess attitudes from a multi-dimensional perspective. Results indicated that there were no differences in attitude between students in co-educational and segregated programs. On the health and fitness measure segregated students had a significantly more positive attitude than students in co-educational programs. On four of the six measures there were significant differences in ATPA between boys and girls. Boys scored higher on the social experience, vertigo, and ascetic scales, while girls scored higher than boys on the health and fitness scale.

Mize, in 1979, investigated sex-role orientation (androgynous, masculine, feminine, and undifferentiated) of 267 college students and their attitude toward physical activity. Data were collected by the Bem Sex-Role Inventory (BSRI) and Kenyon's Attitude Toward Physical Activity Inventory (ATPA). Significant intercorrelations for all ATPA dimensions except chance and aesthetic experience were found for both male and female subjects. Mize compared her sex-role orientation medians against those of Bem's. Attitudes toward physical activity, based on Bem medians, were found to be a function of sex-role orientation on all variables of the ATPA except chance. ATPA, based on

Mize medians, were similar among various sex-role categories for all variables of ATPA but vertigo.

The contingency coefficient was .83 for males and .82 for females which indicated a high relationship between both methods of categorizing subjects regardless of sex. When comparing Bem medians to her own, Mize stated, "it appears that the sex-role orientation is changing and becoming less predictive of ATPA for males and females who are sex-oriented as masculine or feminine, and not at all predictive of androgynous or undifferentiated groups" (p. 111).

Attitude toward physical activity was found to be a function of gender for the dimensions of vertigo and aesthetic experience. Males held a more favorable attitude than females toward a pursuit of vertigo, while females held a more positive attitude for physical activity as an aesthetic experience.

In an investigation that measured the relationship among attitude, behavior, and belief about physical activity Onifade (1985) tested 133 female and 217 male Nigerian students enrolled in American universities. Attitude was assessed using Kenyon's Attitude Toward Physical Activity Inventory (1968b). Physical activity behavior was assessed by Zaichkowsky's (1979) five point Likert scale and the subject's physical activity belief was assessed using a scale developed by the researcher. Generally, the results indicated a low and non-significant relationship among attitude, physical activity behavior, and physical activity belief of the subjects. However, there were several significant relationships noted between some specific

aspects of attitude and physical activity behavior and belief.

Positive and significant correlations in vertigo and ascetic subdimensions were found between attitude and physical activity behavior for males. For the females, the aesthetic and catharsis dimensions were found to be positive and significantly correlated. Significant correlations between physical activity belief and attitude were noted on the social and aesthetic dimensions for females, while the males had no significant correlations. The subjects in this study preferred individual over dual or team activities.

Blair (1984) conducted an investigation concerning student values toward physical activity and to determine if gender differences existed. A 16 statement attitude test designed by Corbin et al. (1981) was administered to prospective teachers of physical education classes at West Texas State University. Subjects for this study included 84 males and 54 females. The inventory classified values of physical activity into four sub-domains: (a) health and fitness, (b) social experience, (c) recreational relaxation, emotional release, and (d) general well-being. Results were similar to those of Kenyon (1968c) and Staub (1975):

- Men and women were different in the way they valued physical activity.
- Overall, females were more positive than males in expressing values toward physical activity.
- 3. Both males and females rated health-fitness, and general well being values as excellent.

# Behavior Change due to Physical Activity

Developing attitudes toward physical activity involves a number of factors that influence one's habitual behavior. Age, instructor, curriculum, and the environment are just a few of the relevant factors (Figley, 1985). Justifiably, physical educators should continuously investigate the factors that contribute to a positive attitude so that students leave school with a desire to continue physical activity.

Syer and Connolly (1984) believe two elements are important in the formation of an attitude; (a) previous experience, and (b) decisions made about those experiences. When observing something "new," your past experience combined with your disposition govern your response. Thus, according to Kenyon (1968c), this response is a form of overt behavior elicited by a stimulus.

Freischlag (1973) acknowledges the importance of these perceptions, saying, "interests must be aroused, attention sustained, and learning judged as worthwhile if the physical education class is to have a positive impact on the student" (p. 19). He noted several considerations in fostering changes in attitude toward physical education:

- Changing attitude involves the perceived <u>credibility</u> of the teacher. This includes the teacher's appearance and verbal "tones." Student attitudes about physical activity will not improve until the instructors "do as they teach."
- 2. When objections exist, provide the <u>positive consequences</u> first, then the negative. Provide the student with

- information about (a) the biological need for exercise,
- (b) their peer's regard for physical prowess, and
- (c) personal satisfaction through physical activity.
- 3. Provide some opportunity for success for <u>all</u> students.
- 4. Whenever possible, direct the student toward self-discovery, instilling positive attitudes toward physical activity.

In conclusion, Freischlag felt that the burden of attitudinal change (positive/negative) lies squarely on the shoulders of instructors of physical education.

To support Freischlag's views of modifying attitudes, Hall (1978) believed physical educators should be more concerned with behavior change rather than attitude change, suggesting that people tend to modify their attitudes to validate their behavior. Therefore, individuals taught to modify their sedentary behavior will most likely improve attitudes, triggering physical activity when formal education is over. In doing so, she suggested a behavioral self-management approach to resolve this problem. The student must identify and control both positive and negative forces that impact on behavior. According to Hall, students can systematically change behavior with the assistance of the instructor by means of:

1. Keeping accurate records of personal data on charts, to provide students with immediate feedback.

- 2. Scheduling activity on an unconditional basis. In other words, physical activity must rank high on the students daily list of "things to do."
- 3. Detecting and eliminating troublesome environmental factors.
- Establishing reinforcement contingencies that provide for,
   (a) positive self statements, (b) group support, and
   (c) self-awareness (recognizing the benefits of physical activity).

For students to continue physical activity throughout life, Hall emphasizes the importance of students experiencing successful encounters with physical activity. Control of their own behavior and learning how to engineer the correct environment are key to behavior change.

Corbin and Chevrette (1974) were interested to see if attitude toward physical education changed due to participation in a lecture/laboratory physical education course. They administered the Wear Attitude Inventory (Form A) to 596 male subjects during the first and last laboratory periods. All subjects attended one lecture and one lab each week. The lectures focused on the relationship of exercise to cardiovascular endurance, strength, skill learning, body composition, and general values of activity. Iaboratory periods consisted primarily of assessing physical fitness levels and constructing an individualized exercise program. The subjects scored significantly higher on the posttest than on the pretest for the subscales "general" and

"mental-emotional". The "social" and "physiological-physical" subscales showed no change over the semester. From these results it was determined that a lecture/laboratory class in physical education may play a significant role in positive attitudinal change. However, problems with the research design make this conclusion suspect. First, the lack of a control group does not technically allow one to say that attitude change was a result of the treatment. Secondly, even though attitude differences were significant from pre- to posttest, it was possible the Wear Inventory was more sensitive to changes in certain sub-areas than others.

In another lecture/laboratory survey, Laurie (1981) investigated knowledge, self-confidence, and exercise behavior as independent variables related to physical activity focusing on the health benefits of exercise. The subjects consisted of 260 male and female college students enrolled in the course, "Concepts in Physical Education." A knowledge pre- and posttest assessed the subjects' comprehension of physical activity. A six item confidence index, given before and after, measured the subjects' ability to plan a personal exercise program. Comparisons between high, medium, and low self-confidence and knowledge levels were made. The pretest revealed a low level of knowledge as compared to the self-confidence index. The posttest indicated a large improvement in knowledge along with significant self-confidence improvement. The subjects with the highest self-confidence score also scored highest on both knowledge tests. The reliability for the knowledge test exceeded .80 in all cases. The

confidence index was reported as having a reliability of .82. It was concluded that the subjects with less confidence about exercise prescription abilities reported less active behavior than those who were more confident. It was demonstrated that the lecture/laboratory class facilitated an increase in knowledge, attitude, and self-confidence in planning a personal exercise program.

Slava, Laurie, and Corbin (1984) evaluated attitudes, knowledge, and activity behavior among post-graduates who completed a lecture/laboratory course in physical education. Three groups were tested: (a) a group who had taken a lecture/laboratory concepts course, (b) a group that transferred and received credit for traditional physical education, and (c) a group that "tested out" rather than enrolling in either type of class. The first two groups were compared to the latter. There were 100 subjects in each of the three groups. A mailed questionnaire was used to measure the above variables. The response rate was 59%. The results showed the concepts group scoring higher than the other two. The investigators concluded that the conceptual lecture/laboratory course in physical education was effective in meeting objectives. The authors indicated that attitudes are relatively set by college age. They had hypothesized that an improvement in attitude, knowledge and activity behavior was possible if lecture/laboratory instruction were given prior to adulthood. In general, the results suggested that a college conceptual physical education class can have positive long-term effects.

A study conducted by Kidd (1971) examined the effectiveness of the Foundations of Physical Activity course to: (a) improve attitude toward physical activity, (b) increase self-directed physical activity, (c) improve student knowledge about course content, and (d) improve the students' self assessment of physical ability. Students were randomly assigned to either an experimental group (64 males) or a control group (64 males). Both groups were incoming college freshmen. The experimental subjects were enrolled in the foundations course and the control group consisted of students enrolled in selected physical education service courses (lifetime fitness). Kenyon's Attitude Toward Physical Activity Inventory (Form DM) was utilized to assess pre- and posttest attitude for both groups. A questionnaire developed by the investigator was administered weekly to record volunteer physical activity occurring outside of class. Volunteer activity time for the first three weeks was compared to activity time for the last three weeks to indicate behavior change. A departmentally developed knowledge test was also given to both groups in a test-retest manner. In assessing self-evaluation, a questionnaire was designed by the author and administered to the experimental group the first and tenth week of class. Physical fitness tests were given the second and eleventh week. The latter measurements were compared with self assessment measures to determine the difference between perceived and actual physical ability. Kidd's conclusions were:

Attitude toward physical activity dropped significantly.
 In the experimental group, the subdimensions that decreased

- were "health and fitness" and "ascetic experience" when compared to the control group.
- 2. Voluntary physical activity dropped for both groups, however, there were no significant differences.
- Participation in the Foundations of Physical Activity
  course was effective in improving the students' knowledge
  and self-assessment capabilities.

This study showed that the objectives of the Foundations of Physical Activity course were only partially achieved. The author suggested several reasons for the negative results.

- Instructors failed to cultivate attitudes toward physical activity among students.
- 2. The foundations class discouraged students.
- 3. The students tired of being part of the experiment.
- 4. Poor weather conditions, such as snow and rain prevented outdoor activity.
- 5. Studies took precedence over physical activity.

In a similar study, Zaichkowsky (1975) determined attitudinal differences in two types of physical education programs. She selected two different service programs at the college level; a foundations curriculum and a lifetime sports program. Kenyon's Attitude Toward Physical Activity Inventory (ATPA) was used to collect data. Pre- and posttest measurements were analyzed for affective, behavior and cognitive components. The affective and behavior components were

measured utilizing Kenyon's seven multi-dimensional scales while the cognitive component was measured by a 15 question objective test.

A random sample of 185 women and 118 men was drawn from the lifetime sports program. From the foundations program all students were assessed, 87 women and 129 men. A 2x2 multivariate analysis of covariance was utilized to evaluate the different responses. The independent variables, gender and type of program were analyzed. The results indicated:

- There were distinct attitudinal differences between men and women regardless of the program in which they were enrolled.
- 2. Women in the foundations program viewed physical activity differently than the other subjects in this study.
- 3. A lifetime sports program may be more effective than a foundations program in affecting favorable attitude toward physical activity.

Zaichkowsky stated, "in regard to fostering positive attitudes toward physical activity, it seems quite clear that men and women are different in the way they see physical activity, and that the type of program that one participates in may have an effect on how a person behaves in relation to physical activity" (pp. 367-368).

Tolson and Chevrette (1974) were interested in measuring attitude changes due to an individual exercise prescription. Their purpose was to determine if a daily individualized program of exercise would alter attitude toward physical activity as a sociopsychological

phenomenon. The subjects were male college freshmen (n = 193) assigned at random into eight groups. All subjects were required to participate in intramural activity one hour a day, six days a week for six weeks. Kenyon's Attitude Toward Physical Activity Inventory (ATPA Form D) and individual profiles were developed and given the first and sixth week. The results indicated significant change on the dimensions of catharsis, ascetic, vertigo, and health and fitness. The aesthetic and social experience dimensions did not change significantly. The investigators listed several possible causes for these positive attitude gains. First, the instructors participated with the students in the workouts. This supports one of Freischlag's (1973) suggestions for fostering favorable attitude toward physical activity. Secondly, examination of individual pretest profiles indicated that those subjects below an average T-score of 50 were the ones showing the most gain.

An interesting and thorough investigation by Sidney and Shephard (1976) examined men and women 60 years of age and older. Attitude toward physical activity and body image (Kenyon's ATPA-I), perceived health, anxiety, and life satisfaction were assessed in a pre- and posttest fashion. The 43 subjects tested were divided into four exercising groups (a) high frequency/high intensity (HFHI), (b) high frequency/low intensity (HFLI), (c) low frequency/high intensity (LFHI), and (d) low frequency/low intensity (LFLI). After 14 weeks of conditioning the results indicated:

1. An improved well-being.

- A high value for physical activity as an aesthetic experience and for health and fitness.
- Relative to studies involving younger subjects, the elderly showed less interest in physical activity as pursuit of vertigo.
- 4. A high regard for physical activity as a relief of tension (catharsis).

Changes were seen mostly in the HFHI group. They revealed significantly more improved attitudes toward physical activity as a social experience, health and fitness, aesthetic, catharsis, and as an ascetic experience at the .05 level of significance. In contrast, the LFLI group showed a more negative attitude towards activity as a means to health and fitness (p < .05). Mean changes on three of Kenyon's scales (social, health and fitness, and aesthetic) differed significantly for the subgroups indicating high, moderate, and low gains in VO<sub>2</sub> max. For each of these scales, the group indicating the least VO<sub>2</sub> max improvement (LFLI) exhibited a slightly more negative attitude. The high frequency/high intensity group showed improvements on five of Kenyon's attitude scales (all but chance and vertigo) and also body image. It was interesting to note that non-participants and drop-outs perceived their current fitness level as satisfactory.

Seven years later Sidney, Niinimaa, and Sheppard (1983)

re-examined senior citizen attitudes toward physical activity. The

subjects were exercise volunteers aged 60 years and older. The group

contained 32 males and 46 females. These investigators were especially

interested in the relationship between expressed attitude and activity participation. Kenyon's ATPA-I (1968c) was again used to determine the attitudes toward physical activity. Similar to the previous study, the subjects were divided into four groups differing in frequency and intensity of training. Pretest and posttest measures were acquired before and after training. Fourteen weeks of progressive endurance training improved all subjects' attitude toward physical activity as a release of tension (catharsis). Persons selecting a high frequency/intensity training regimen revealed improvements on five of Kenyon's attitude scales. In contrast, persons who trained the least indicated a decrease in attitude toward activity as a means for health and fitness.

The overall results indicate that the subjects had positive attitudes toward physical activity as an aesthetic experience, a means to health and fitness, a social experience and as catharsis. Less positive attitudes were toward physical activity as a pursuit of vertigo and as an ascetic experience. A negative attitude was held toward physical activity as chance. Female subjects valued the aesthetic experience, health and fitness, and release of tension more than males. Kenyon's ATPA scores revealed no relationship toward (a) reported participation in physical activity, (b) passive participation, (c) diary records of activity, or (d) measurements of maximum oxygen uptake. The findings indicated that little changed from the 1976 study.

In a longitudinal effort to see if attitudes changed during a course of teacher education, Barrell and Holdt (1982) utilized Kenyon's

Attitude Toward Physical Activity Inventory. The inventory was administered to the first, second, and third year students of a 3-year teacher training course. The first and second year students were retested two years later. Mean scores and standard errors for each subdomain were calculated for each group of students. An initial comparison between the first, second, and third year students using a multivariate analysis of variance revealed first year students as significantly different, scoring higher on the "ascetic," "social," and "catharis" dimensions. According to the authors, the three groups of students were representative of three separate college classes, thus, the results may be due to students' individual differences rather than the instruction in a teacher-training course.

The first and second year students were retested two years later. This enabled the investigators to compare all three groups as third year students completing the three year course. Results indicated no significant differences between these groups. To determine if attitude change was actually taking place, pretest and posttest scores were compared for the first and second year students. Significant differences were found for both groups (p < .01).

# Summary

Various types of attitude studies have been conducted concerning physical education and/or physical activity in the past 60 years. Instruments utilized to assess attitude have consisted of questionnaires incorporating both Thurstone/Chave type scales and Likert type inventories. Other assessment tools have been based on the

Critical Incidence Report and Semantic Differential Scaling. The majority of investigations prior to 1970 utilized Wear's Attitude Toward Physical Education Inventory. More recent research has employed Kenyon's Attitude Toward Physical Activity Inventories (Likert type and Semantic Differential). Both assess attitude according to six or seven perceived functions of physical activity.

Regardless of the measurement tool used, it is evident that the majority of subjects exhibit favorable attitude toward physical activity. However, attitude appears to be a function of gender. It was found in most studies that females were more disposed toward physical activity as an aesthetic experience, social experience, catharsis, and as health and fitness. The physical activity dimensions of vertigo, ascetic experience, and chance were generally higher for men. Overall, females revealed a more favorable attitude toward physical activity than males. The categories ascetic experience and chance were commonly ranked last for both genders.

Iack of physical activity participation is commonly attributed to negative attitudes. Conversely, positive attitude is associated with participation in physical activity. The majority of the studies reviewed showed that favorable attitudes were positively related to level of physical activity, however, several investigations indicated that low levels of activity could be present even though attitudes were favorable.

The studies reviewed comparatively agree regarding change in attitude toward physical activity. To change attitude toward physical

education/activity, the literature agrees that previous experiences are critical. Major factors affecting a favorable experience included:

- 1. the instructor's interest in the student.
- 2. the opportunity for the student to experience success.
- 3. self-discovery of physical attributes.
- 4. the motivation level of the student.
- 5. the ability to self-manage physical activity.

Teaching specific techniques to enable the student to control behavior and engineer a correct environment may foster increased participation (Hall, 1978).

Studies concerning attitude toward physical education and/or physical activity have taken many forms. The list of independent variables examined includes:

- 1. the instructor's overall effect
- 2. student motivation levels
- 3. gender differences
- 4. the subject's class level and level of education
- 5. different physical activities
- 6. rural vs. metropolitian populations
- 7. how subjects perceive themselves (self-image)
- 8. traditional vs. fitness and lifetime teaching methods
- 9. the subject's socioeconomic status
- 10. the subject's physical education background
- 11. athletes vs. non-athletes.

To summarize, attitudes toward physical activity can be determined using a number of testing instruments, however the methodological differences from one study to the next makes comparison difficult if not impossible. Findings vary greatly depending upon the instrument used and the independent and dependent variables examined. What is clear is that our knowledge is still incomplete as to how attitudes toward physical activity are formed, how they are affected by age, and to what extent they may be modified. It is hoped that this investigation will provide information as to whether or not participation in a college lifetime skills class can affect attitudes held toward physical activity.

#### CHAPTER III

#### METHODS AND PROCEDURES

The data for this study were obtained through the administration of a multi-dimensional attitude survey to students enrolled in the Fitness and Lifetime Skills Program at South Dakota State University during the fall semester of 1987. The objective of this investigation was to determine if participation in selected lifetime activity courses modified attitudes toward physical activity. General procedures, inventory selection, collection of the data, pretesting procedures, posttesting procedures, and analysis of the data are described in this chapter.

# General Procedures

To discover if attitudes toward physical activity change during a semester of fitness and lifetime activity classes, data were acquired from 343 male and female students enrolled at South Dakota State University. To measure attitudes the semantic differential scales of Kenyon's Attitude Toward Physical Activity and Body Image Inventory (ATPA-I) were administered (Kenyon, 1968c). These scales were administered as a pretest and posttest to all students enrolled in selected courses. The pretest was administered the second week of classes and the posttest occurred the last week of classes.

To determine the selected classes a stratified random sample was drawn from the Fitness and Lifetime Skills courses taught in the Health, Physical Education, and Recreation Department at South Dakota

State University. Approximately 25% of the 89 activity classes were selected utilizing a table of random numbers (Jaccard, 1983). Of the 378 students pretested only 343 (91%) were useable due to several factors:

- Student attendance on the days when the pretest and posttest were given.
- 2. Failure to complete all information on the ATPA-I Inventory.
- 3. Several students dropped the course during the university drop and add period.

Classroom instructors for the selected courses were notified in advance and tentatively assigned a day and time for their class to complete the inventory. The approximate time needed to complete the inventory was 20 minutes. Care was taken to ensure that both pretest and posttest instructions and conditions in which the inventories were completed were identical for each class. Final confirmation of both day and time were always communicated to the instructors.

Instructions were administered (Appendix A) and testing was completed in a classroom setting whenever possible. In instances when a classroom facility was unavailable, the inventory was administered in the facility where the classes ordinarily met. Pencils were supplied along with the inventories and answer forms. Instructions given to subjects emphasized the need to complete every item and mark only one response per question or scale.

## Inventory Selection

The measurement of attitudes toward physical activity has been the objective of numerous activity questionnaires and scales (Figley, 1985; Wear, 1955; Drinkwater, 1960; Kenyon, 1968c; Sonstroem, 1974).

After careful consideration the investigator chose Kenyon's ATPA-I Inventory (Kenyon, 1968c). This inventory utilizes a semantic differential scale to determine attitudes toward physical activity and body image. The investigator was attracted to this inventory for the following reasons:

- It subdivides the multi-dimensional construct of attitude toward physical activity into seven dimensions: (a) social experience, (b) health and fitness, (c) pursuit of vertigo, (d) aesthetic experience, (e) catharsis, (f) ascetic experience, and (g) chance (Appendix B).
- The test construction met appropriate reliability and validity criteria to test large samples (Kenyon, 1968b).
- 3. It measured personal "body image" ideally, "as one would like to see it" and perceived, "as one really is" (Appendix B).
- 4. The semantic differential scaling method was preferred over the Likert method to (a) acquire a quicker, more efficient student response, and (b) yield high reliability coefficients (Kenyon, 1968c, p. 13).

According to Kenyon (1968a,b) questionnaires and scales developed by other investigators were inadequate. They were lacking appropriate construction procedures or the developed instrument had dealt with the multi-dimensional concept in a uni-dimensional way.

The APTA-I inventory reliability was measured by Kenyon (1968c) utilizing the test-retest method with a group of undergraduate students. The scale consistency was identified through Hoyt's reliability coefficients ranging from .759 for physical activity as a "social experience" to .868 for physical activity as "chance" when a priori weights were utilized in the analysis (Table 1). In regard to Kenyon's Body Image Scale, the reported reliability was .72 (Kenyon, 1968c, p. 42).

Table 1
Hoyt's Reliability for Seven ATPA Scales

Sub-domain	Reliability		
Social	.759		
Health and Fitness	.778		
Pursuit of Vertigo	.847		
Aesthetic	.857		
Catharsis	.839		
Ascetic	.853		
Chance	.868		

Since attitude is a non-observable disposition, Kenyon (1968b) inferred that the validity of the instrument could be determined by strong and weak performance groups which scored high and low respectively. This was true for all sub-domains except catharsis. Catharsis may share elements of other sub-areas such as health and fitness, social experience, and ascetic experience. Kenyon stated, "the validity of

this scale has not been established" and interjects his concern for further research concerning this variable (Kenyon, 1968b, p. 572).

## Collection of Data

At South Dakota State University fitness and lifetime activity courses are offered in three scheduling configurations:

- One activity taught twice a week for a full semester (16 weeks).
- One activity taught four times a week for a half semester (8 weeks).
- 3. One activity taught twice a week for 8 weeks followed by a different activity taught twice a week for the remaining 8 weeks.

Prior to data gathering, a stratified random sample was selected from activity classes offered in the Physical Education Fitness and Lifetime Skills program. Approximately 25% of the 89 activities offered were selected for the study.

### Pretest Procedures

Selected activity sections were tested the second week of class during the fall semester of 1987 (Appendix C). The instructors cooperation was solicited for the particular activity sections chosen. An explanation of the purpose of the study was given and a day and time for the testing was agreed upon. Prior to testing, a written reminder was distributed to the instructors (Appendix D). This reminder served to finalize the inventory administration date, time, and location.

All classes met on Monday-Wednesday, Thursday, or Monday, Tuesday, Wednesday, Thursday (8 week classes). Class periods were of 50 minute duration. The first class meeting was a mass lecture orienting the students to the facilities and intramural programs offered at South Dakota State University. The second class consisted of introduction to the course, procedures, instructor objectives, and course requirements. On the third class meeting, Monday, September 14, 1987, or Tuesday, September 15, 1987, the ATPA-I inventory was administered. Those classes meeting Monday through Thursday for eight weeks were tested on Monday.

### Posttest Procedures

Kenyon's ATPA-I inventory was administered as a posttest during the last week of the instructional unit. Two posttest sessions were needed, one at mid-semester for the eight week courses and the other at the end of the semester. Of the 25 class sections selected, 5 were classes meeting four days a week for eight weeks. The remaining 20 sections met the entire semester. Of these 20 sections, 6 consisted of the two-part activity courses involving new instructors and new course content for the final eight weeks.

Prior to posttesting the 8 week classes, personal contact was made with the instructors to establish a testing date. Thursday, October, 22, their last class meeting, was the scheduled date. The inventory was administered during their normal class period. Due to the small number of eight week classes requiring early posttesting, the investigator verbally finalized the date, time, and location with the

section instructor (Appendix E). The final posttesting session took place during the last class meeting of the fall semester, Monday, December 4 or Tuesday, December 5, 1987. Before the final data collection at the end of the full 16 week session, the instructors of the remaining 20 sections were personally contacted to confirm the testing date. A memo outlining the testing schedule was distributed (Appendix F). Procedures were carried out as scheduled.

## Analysis of Data

The data were gathered using Kenyon's ATPA-I Inventory. The inventory consists of seven dimensions related to physical activity, and a two-part self-assessment inventory measuring body image. All subjects were required to supply an identification number, sex, and class status on the answer forms. Responses to the seven attitudinal dimensions of physical activity were recorded on the first answer form and the body image responses were recorded on a second answer form (Appendix G).

The seven dimensions of physical activity were assessed using eight semantic differential scales. The eight scales contain identical bi-polar adjectives for all seven dimensions. The two dimensions of body image each contain 24 semantic differential scales. Only the first eight items for both dimensions were utilized. The eight scales used to score body image contained the same bi-polar adjectives for both the perceived and ideal dimensions (Appendix B). Each scale represented a continuum of response from 1 to 7. If the scale was positively weighted the scoring was 7-6-5-4-3-2-1. If the scale was

priori weights for individual scaled items are found in Appendix H.

The eight scales under each dimension were totalled, yielding seven

ATPA sub-scores and two body image scores.

Sex and class level were the independent variables, while the seven dimensions of attitude toward physical activity and body image were the dependent variables. To determine if attitude differences existed by gender and class level 2x2 factorial ANOVAs were performed on the pretest variables utilizing the General Linear Models Procedure (PROC GIM) of the Statistical Analysis System (SAS). To determine if attitude changed significantly from pretest to posttest repeated measures ANOVA's were computed. For all comparisons the .05 level of significance was used as the criterion.

#### CHAPTER IV

#### RESULTS AND DISCUSSION

The purpose of this investigation was to determine student attitude change when exposed to one semester of a fitness and lifetime skills program. More specifically, the study looked at change in attitude by gender and class level in selected students at South Dakota State University. Attitudes were assessed utilizing Kenyon's 1968c ATPA-I Inventory in a test-retest procedure during the fall semester of 1987.

The data were analyzed using 2x2 factorial analysis of variance procedures and repeated measures ANOVA's. These techniques examined the main effects of time, class levels, and gender as well as the corresponding interactions.

Each variable measured by Kenyon's ATPA-I Inventory will be discussed separately. The nine dependent variables are (a) social experience, (b) health and fitness, (c) pursuit of vertigo, (d) aesthetic experience, (e) catharsis, (f) ascetic experience, (g) chance, (h) ideal body image, and (i) perceived body image.

In order to better interpret these scores, one must understand that Kenyon used the scoring method described by Likert (1932) incorporating semantic differential scaling by Osgood, Suci, and Tannenbaum (1957). With this method the poorest possible score for any given variable would be 8, while a student with an extremely favorable attitude could score 56 points, the maximum. A completely neutral position would result in a score of 32. A score of 40 is classified as

a favorable attitude while 48 is considered to be highly favorable. Conversely, an unfavorable and a highly unfavorable attitude would result in scores of 24 and 16 respectively.

## Subjects

Subjects participating in this study were 343 male and female students from the PE 100 Fitness and Lifetime Skills Program at South Dakota State University. A breakdown of the subjects by gender and class level is presented in Table 2.

Table 2
Subjects by Gender and Class Level

Class Level Freshmen/Sophomores Juniors/Seniors Total	Male	Female	Total	
	153 (44.6)* 37 (10.8) 190 (55.4)	121 (35.3) 32 (9.3) 153 (44.6)	274 (79.9) 69 (20.1) 343 (100.0)	

<sup>\*</sup>Numbers in parentheses represents row and column percentages.

Since most of the students who enroll in the fitness and lifetime skills program are freshmen and sophomores, it was necessary to collapse the categories into freshman/sophomore and junior/senior groups to ensure adequate numbers for the ANOVA procedures. The fact that freshmen and sophomores are more likely to be enrolled in PE 100 activities than juniors and seniors is indicated in the frequencies and percentages. Preshmen/sophomores comprised 79.9% of the 343 subjects while juniors/seniors constituted the remaining 20.1%. Approximately 55% of the subjects were male and 44% were female.

### Results

For the pretest variables, 2x2 factorial analyses of variance were performed to determine the main effects and interactions for the independent variables gender and class level with the nine dependent variables from Kenyon's ATPA-I Inventory (1968c). To determine if a significant change in attitude occurred between pretest and posttest, repeated measures analysis of variance procedures were employed. The findings and discussion follow.

### Analysis of the Pretest Scores

Summing each subject's responses to the seven ATPA scales results in the subject's overall attitude toward physical activity. A  $2\times2$  ANOVA was performed on the pretest scores to determine if gender or class level differences existed. As Table 3 shows, there was a significant class level main effect (F = 5.09, df = 1,339, p = .0246) but no gender differences (p = .4671) or class by gender interaction (p = .8612).

Table 3

2x2 ANOVA for Overall Attitude Toward Physical Activity

Source	Type III SS	df	F	р
Class	5038.81	1	5.09	.0246*
Gender	207.65	1	0.21	.4671
Class x Gender	30.30	1	0.03	.8612
Error	335266.19	339		

Examination of the least squares means reveals that freshmen/squamores (IS  $\overline{X}$  = 281.22) hold a significantly higher overall attitude toward physical activity than juniors/seniors (IS  $\overline{X}$  = 271.63). These values classify both groups as having "favorable" attitudes toward physical activity (Figure 1).

Figure 1

Overall Attitude Toward Physical Activity by Class Level

85 \_

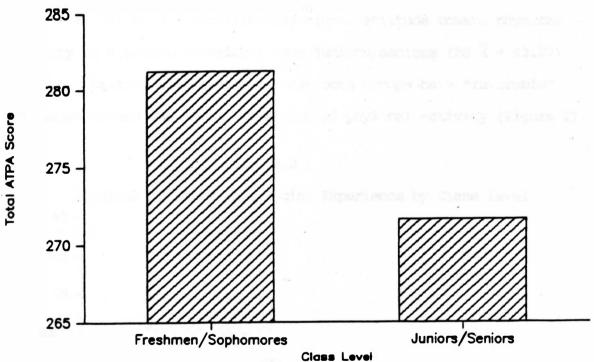


Table 4 summarizes the 2x2 ANOVA computed for physical activity as a social experience. Once again comparisons reveal a significant main effect for class level at the .05 level of significance (F = 4.20, df = 1,339, p = .0411). There was no main effect for gender and no significant class by gender interaction.

Table 4

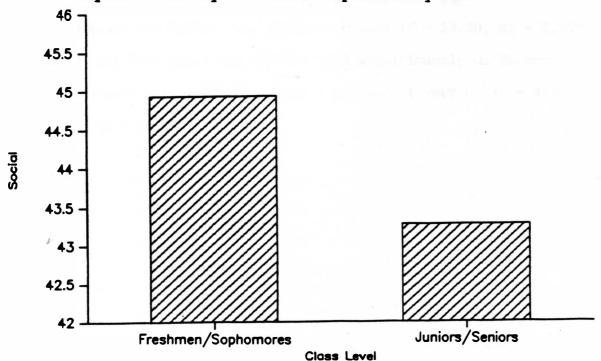
2x2 ANOVA for Physical Activity as a Social Experience

Source	Type III SS	df	F	p
Class	151.23	1	4.20	.0411*
Class	10.06	1	0.28	.5972
Class x Gender	0.58	1	0.02	.8994
Error	12193.50	339		

Scrutiny of the adjusted means indicates that freshmen/sophomores (IS  $\overline{X}$  = 44.93) hold a significantly higher attitude toward physical activity as a social experience than juniors/seniors (IS  $\overline{X}$  = 43.27). The least squares means indicate that both groups have "favorable" attitudes toward the social dimension of physical activity (Figure 2).

Figure 2

Physical Activity as a Social Experience by Class Level



In Table 5, the 2x2 factorial ANOVA for class levels and gender reveals no significant differences in attitude toward physical activity for health and fitness. Once again scores for all subgroups indicate that these students hold "favorable" attitudes toward physical activity for health and fitness.

Table 5

2x2 ANOVA for Physical Activity as Health and Fitness

Source	Type III SS	df	F	p	
Class	23.34	1	0.52	.4726	
Gender	0.68	1	0.02	.9023	
Class x Gender	3.58	1	0.08	.7783	
Error	15302.21	339			

Table 6 presents the summary analysis for physical activity as a pursuit of vertigo. Comparisons reveal two significant main effects at the .05 level of significance. Findings indicate that freshmen/sophomores differ from juniors/seniors (F = 23.30, df = 1,339, p = .0001) and that males and females hold significantly different attitudes toward physical activity as a pursuit of vertigo (F = 4.77, df = 1,339, p = .0297).

Table 6

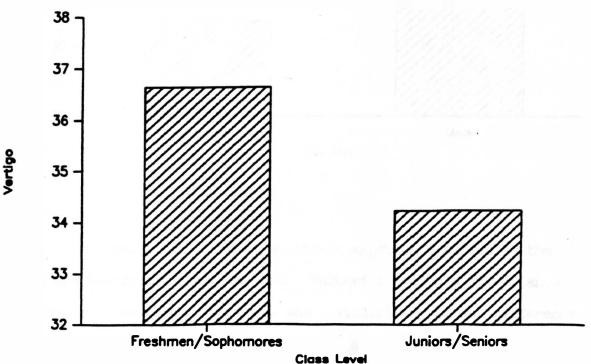
2x2 ANOVA for Physical Activity as Pursuit of Vertigo

Source	Type III SS	df	F	p	
Class	319.89	1	4.77	.0297*	
Gender	1562.92	1	23.30	.0001*	
Class x Gender	54.67	1	0.82	.3673	
Error	22737.23	339			

Figure 3 presents a graphic illustration of the least squares means for the freshmen/sophomore and junior/senior subclasses. As is apparent both groups are slightly above neutral in their attitude toward physical activity for thrill and risk (vertigo) however freshmen and sophomores are significantly higher than their upper level counterparts.

Figure 3

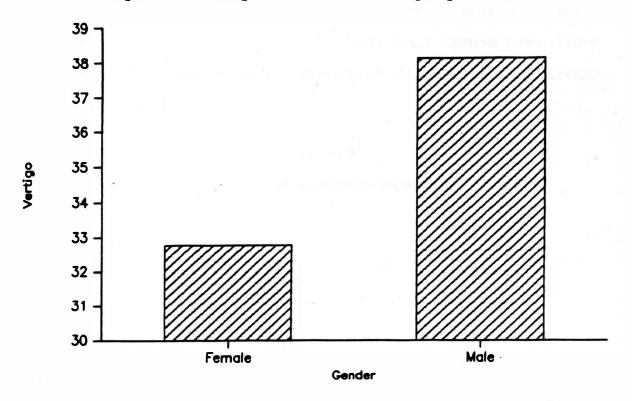
Physical Activity for Pursuit of Vertigo by Class Level



In Figure 4 it can be seen that males hold a relatively favorable attitude while females have a more neutral attitude toward this subdimension of physical activity. Males (IS  $\overline{X} = 38.11$ ) appear to value physical activity as a thrill that involves some risk (vertigo) moreso than the female subjects (IS  $\overline{X} = 32.77$ ).

Figure 4

Physical Activity as Pursuit of Vertigo by Gender



Physical activity as an aesthetic experience refers to the grace and beauty of human movement. Factorial analysis of variance (see Table 7) revealed that there was a significant gender difference on this dimension (F = 34.74, df = 1,339, p = .0001).

Table 7

202 ANOVA for Physical Activity as an Aesthetic Experience

Source	Type III SS	đf	F	P
Class	17.91	1	0.37	.5448
Gender	1693.58	1	34.74	.0001*
Class x Gender	3.31	1	0.07	.7946
Error	16525.35			

As can be seen in Figure 5, the females (IS  $\overline{X}$  = 47.94) have a significantly higher attitude toward the aesthetic value of physical activity than males (IS  $\overline{X}$  = 42.38). These least squares mean values classify both groups as having "favorable" attitudes on this dimension of physical activity.

Figure 5

Physical Activity as an Aesthetic Experience by Gender

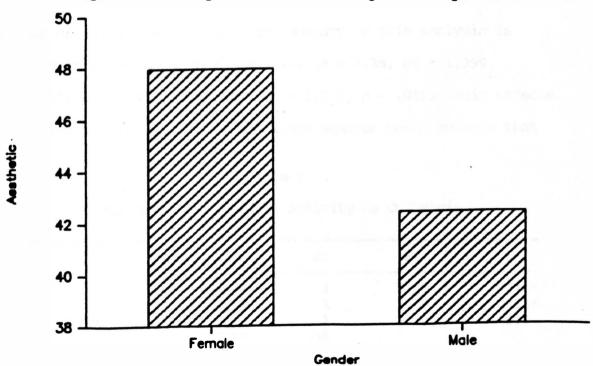


Table 8 presents the summary of the analysis for physical activity as an ascetic experience. Ascetic experience refers to the discipline, pain and self-denial necessary to achieve excellence. No significant differences were observed between class levels or gender at the .05 level of significance.

Table 8

2x2 ANOVA for Physical Activity as an Ascetic Experience

Source	Type III SS	df	F	р
Class	0.14	1	0.00	.9617
Gender	1.20	, 1	0.02	.8867
Class x Gender	69.92	1	1.19	.2770
Error	19991.96	339		

A 2x2 factorial design was employed to look for class level and gender differences in attitude toward physical activity as catharsis or release of energy and tension. The summary of this analysis is reported in Table 9. Both class level (F = 5.35, df = 1,399, p = .0213) and gender (F = 6.49, df = 1,330, p = .0113) main effects were evident. Examination of the least squares means reveals that

Table 9

2x2 ANOVA for Physical Activity as Catharsis

Source	Type III SS	df	F	р
Class	412.64	1	5.35	.0213*
Gender	500.53	1	6.49	.0113*
Class x Gender	159.38	1	2.07	.1514
Error	26128.90	339		

freshmen/sophomores (IS  $\overline{X}$  = 31.65) hold a significantly higher attitude toward physical activity as catharsis than juniors/seniors (IS  $\overline{X}$  = 28.91). However, neither group exhibits a very strong attitude on this dimension. Freshmen/sophomores have a relatively neutral attitude while juniors/seniors express an unfavorable attitude toward the cathartic value of physical activity (Figure 6).

Figure 6

Physical Activity as Catharsis by Class Level

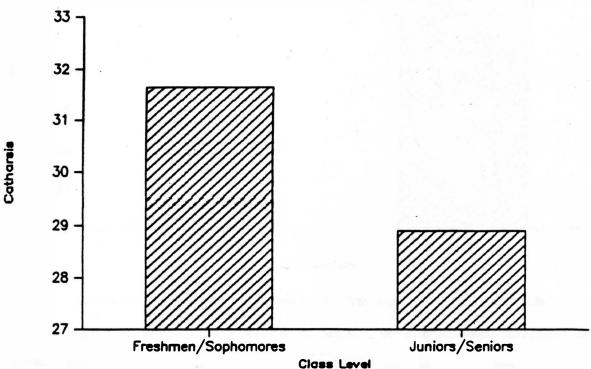


Figure 7 illustrates the gender difference between males and females regarding physical activity as catharsis. Males (IS  $\overline{X}$  =31.79) have a significantly more favorable attitude toward physical activity as a release of tension (catharsis) than their female counterparts (IS  $\overline{X}$  = 28.77). Based upon the criteria mentioned earlier, it is

apparent that males have a neutral attitude while females have an unfavorable attitude toward physical activity as a vehicle for catharsis.

Figure 7

Physical Activity as Catharsis by Gender

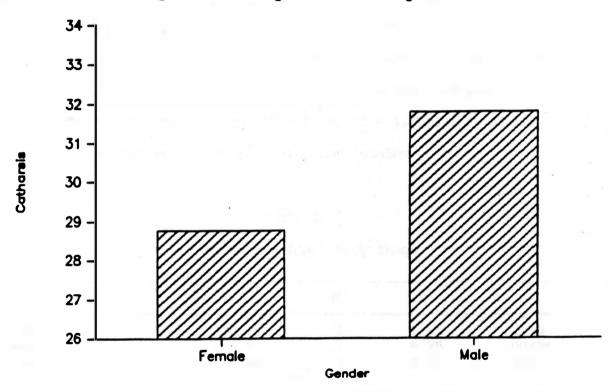


Table 10 presents the summary of the analysis of attitude toward physical activity as chance or luck. No significant differences were observed between class levels or genders at the .05 level. Least squares means classify all groups as having "neutral" attitudes toward physical activity as chance.

Table 10

2x2 ANOVA for Physical Activity as Chance

Source	Type III SS	df	F	, , <b>p</b>	
Class	139.11	1	1.82	.1781	
Gender	8.42	1	0.11	.7401	
Class x Gender	9.35	1	0.12	.7267	
Error	25896.55	339			

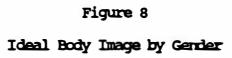
In the following table the summary of the factorial ANOVA for ideal body image is presented (Table 11). The analysis produced a significant gender main effect (F = 8.75, df = 1,339, p = .0033) indicating a difference between males and females.

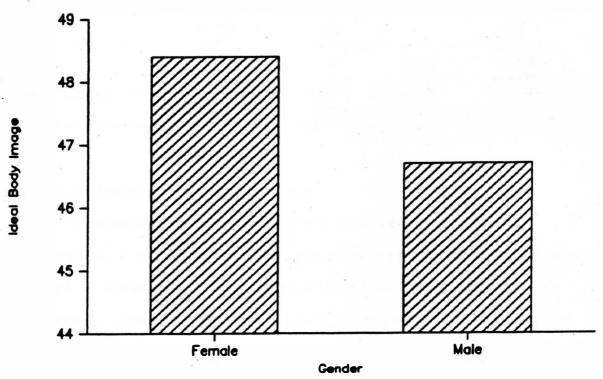
Table 11

2x2 ANOVA for Ideal Body Image

Source	Type III SS	đ£	F	р
Class	26.44	1	1.45	.2290
Gender	159.21	1	8.75	.0033*
Class x Gender	18.68	1	1.03	.3117
Error	6171.11	339		

As can be seen in Figure 8 females (IS  $\overline{X}$  = 48.40) have a significantly higher ideal body image than do males (IS  $\overline{X}$  = 46.69). Based upon the Likert classifications both genders have a highly favorable image of their bodies as they would ideally like them to be (Figure 8).





Perceived body image is a reflection of an individual's concept of their body as it actually is. Table 12 presents the summary of the 2x2 ANOVA for this variable. Examining the probability values associated with the F statistics it can be seen that there are no significant class level or gender differences. Least squares means classify all groups as having a "favorable" perceived body image.

Table 12

2x2 ANOVA for Perceived Body Image

Source	Type III SS	df	F.	, p
Class	5.99	1	0.20	.6558
Gender	22.47	1	0.75	.3883
Class x Gender	2.84	1	0.09	.7590
Error	10209.08	339		

## Analysis of Pretest to Posttest Change

To determine if attitude changed as a result of PE 100 participation, a series of repeated measures analyses of variance were performed to determine if the subjects' posttest responses were significantly different from their pretest responses. This factor is labeled "time" in the ANOVA summaries to follow. Additionally, comparisons were made by class level within time, gender within time, and the time by class by gender interaction. Descriptive statistics and summaries of the ANOVA procedures will be presented separately for each of the nine dependent variables.

Table 13 presents the least squares means for the subjects' overall attitude toward physical activity. As is evident from the values there are slight differences between males and females on overall attitude toward physical activity. It is also apparent that there is an increase from pretest to posttest (time) for all

Table 13

Overall Attitude Toward Physical Activity

Gender		Class	Level				
	Freshmen	'Sophomores	Juniors/Seniors				
	Pretest	Posttest	Pretest	Posttest			
Males Females	281.82 280.62	288.14 287.26	272.97 270.28	279.05 275.28			

subclasses. This is borne out by the repeated measures analysis of variance procedure summarized in Table 14. The time factor was significant (F = 23.37, df = 1,682, p = .0001) indicating that, as a group, the subjects improved their attitude toward physical activity.

Table 14

Repeated Measures ANOVA for Change in Overall Attitude Toward
Physical Activity

Source	Type III SS	df	F	p
Time	7907.97	1	23.37	.0001*
Time x Class	48.22	1	0.14	.7059
Time x Gender	7.70	1	0.02	.8801
Time x Class x Gender	27.28	1	0.08	.7766
Error	230811.42	682		

None of the interactions were significant indicating no differences in the amount of change that occurred between and among subclasses.

Table 15 presents the least squares means for the subjects' attitude toward physical activity as a social experience. As indicated from the values there is little difference between males and females on attitude toward physical activity as a social encounter. The table

Table 15

Attitude Toward Physical Activity as a Social Experience

		Class	s Level	
	Freshmen/	'Sophomores	Junior/S	Seniors
	Pretest	Posttest	Pretest	Posttest
Males	44.76	46.28	43.00	45.62
<b>Females</b>	45.09	47.44	43.53	45.41

also reveals an increase from pretest to posttest (time) for all subject classifications. This is supported by the repeated measures analysis of variance procedure summarized in Table 16. The main effect

Table 16

Repeated Measures ANOVA for Change in Attitude Toward
Physical Activity as a Social Experience

Source	Type III SS	df	F	р
Time	956.39	1	68.54	.0001*
Time x Class	5.49	1	0.39	.7059
Time x Gender	.10	1	0.01	.9336
Time x Class x Gend	er 34.05	1	2.44	.1187
Error	9515.83	682		

time factor was significant (F = 68.54, df = 1,682, p = .0001) revealing that all subject classifications increased their attitude toward physical activity as a social experience. None of the interactions were significant indicating that there were no class, gender, or class by gender differences within the time factor.

The least squares means indicating change in physical activity for health and fitness are presented in Table 17. As indicated from the values there are slight differences between males and females on attitude toward physical activity for this subdimension. The table

Table 17

Attitude Toward Physical Activity for Health and Fitness

Gender	Class Level					
	Freshmen	Freshmen/Sophomores		s/Seniors		
	Pretest	Posttest	Pretest	Posttest		
Males	44.05	44.18	43.64	43.97		
<b>Females</b>	44.19	45.48	43.48	44.59		

also reveals an increase from pretest to posttest (time) for all groups concerned. The repeated measures ANOVA for change in physical activity for health and fitness (Table 18) supports this observation. The time factor was significant (F = 7.36, df = 1,682, p = .0068) indicating that, as a group, subjects improved their attitude toward physical activity for the dimension of health and fitness.

Table 18

Repeated Measures ANOVA for Change in Attitude Toward
Physical Activity for Health and Fitness

Source	Type III SS	df	F	р
Time	127.86	1	7.36	.0068*
Time x Class	0.64	1	0.04	.8474
Time x Gender	63.06	1	3.63	.0571
Time x Class x Gen	der 0.40	1	0.02	.8798
Error	11845.24	682		

A nearly significant interaction for time by gender indicates that females exhibited more of an improvement in attitude on this dimension than males. Although it is not significant a trend may be evident which merits further investigation.

Table 19 presents the least squares means for the subjects' attitude toward physical activity as pursuit of vertigo. As is evident from the values presented, there are significant differences between males and females on this dimension of attitude.

Table 19
Attitude Toward Physical Activity as Pursuit of Vertigo

		Class Level				
	Freshmen	Freshmen/Sophomores		s/Seniors		
	Pretest	Posttest	Pretest	Posttest		
Males Females	38.82 34.48	39.65 35.22	37.41 31.06	37.81 30.47		

Significance was determined via the factorial ANOVA on the pretest measures (see table 6). However, there is little change from pretest to posttest (time) for all subclasses. This is supported by the repeated measures analysis of variance procedure summarized in Table 20. As indicated, neither the main effect nor the interactions were significant revealing no change among groups from pre- to posttest.

Table 20

Repeated Measures ANOVA for Change in Attitude Toward
Physical Activity as Pursuit of Vertigo

Source	Type III SS	df	F	р
Time	26.27	1	0.81	.3678
Time x Class	42.49	1	1.31	.2521
Time x Gender	16.12	1	0.50	.4804
Time x Class x Gender	11.40	1	0.35	.5528
Error	22055.28	682		

Least squares means for attitude toward physical activity as an aesthetic experience are presented in Table 21. Once again comparisons reveal significant differences between males and females on attitude toward physical activity as a graceful and beautiful experience (aesthetic). This was established previously (see Table 7).

Table 21

Attitude Toward Physical Activity for an Aesthetic Experience

		Class Level					
	Freshmen/	Sophomores	Junio	rs/Seniors			
	Pretest	Posttest	Pretest	Posttest			
Males	42.79	44.56	41.97	43.35			
Females	48.11	49.42	47.78	46.91			

Females appear to value this subdimension more than males. When examining the pretest to posttest change it can be seen that all groups except junior/senior females increased in attitude on this subdimension. Junior/senior females show a slight decrease in attitude

toward physical activity for an aesthetic experience. In Table 22 the repeated measures analysis of variance procedure summarizes the change

Table 22

Repeated Measures ANOVA for Change in Attitude Toward
Physical Activity as an Aesthetic Experience

Type III SS	df	F	p
176.23	1	6.70	.0098*
91.22	1	3.47	.0629
100.54	1	3.82	.0509
Gender 44.15	1	1.68	.1954
17927.26	682		
	176.23 91.22 100.54 Gender 44.15	176.23 1 91.22 1 100.54 1 Gender 44.15 1	176.23 1 6.70 91.22 1 3.47 100.54 1 3.82 Gender 44.15 1 1.68

effect between testing. The time factor was significant (F = 6.70, df = 1,682, p = .0098) which indicates that, overall, the subjects increased in attitude toward physical activity as an aesthetic experience. At the .05 level there was no difference in the amount of change that occurred between and among subclasses. Several interactions were nearly significant, however, due to the males increasing more than the females and the previously mentioned decrease by the junior/senior females.

As presented in Table 23 the least squares means for attitude toward physical activity as an ascetic experience (achieving excellence through discipline, pain and self-denial) indicate slight differences between males and females. It is also apparent that there are class differences between pretest and posttest measures. Preshmen/sophomores improved while juniors/seniors developed a less favorable attitude toward physical activity as an ascetic experience.

Table 23

Attitude Toward Physical Activity for an Ascetic Experience

Gender		Class Level				
	Freshmeny	Freshmen/Sophomores		s/Seniors		
	Pretest	Posttest	Pretest	Posttest		
Males	44.33	44.40	45.51	44.14		
Females	45.61	46.36	44.53	43.88		

This is revealed by the repeated measures analysis of variance procedure summarized in Table 24. The time by class interaction was significant (F = 4.40, df = 1,682, p = .0363). There was no

Table 24

Repeated Measures ANOVA for Change in Attitude Toward
Physical Activity as an Ascetic Experience

Source	Type III SS	df	F	p
Time	20.27	1	0.80	.3711
Time x Class	111.31	1	4.40	.0363*
Time x Gender	27.16	1	1.07	.3006
Time x Class x Gend	er 20.02	1	0.00	.9792
Error	17257.83	<b>682</b>		

significant time main effect indicating no overall change in attitude and the remaining interactions were non-significant indicating no differences in the amount of change that occurred between and among subclasses.

The following table presents least squares means for attitude toward physical activity as catharsis or relief of tension. As illustrated by the values, freshman/sophomore males exhibit "favorable" attitudes and females have "negative" attitudes toward physical activity as catharsis. In the previous factorial ANOVA on the pretest it was shown that there were significant class and gender differences

Table 25
Attitude Toward Physical Activity as Catharsis

	Class Level					
Gender	Freshmen/Sophomores		Juniors/Seniors			
	Pretest	Posttest	Pretest	Posttest		
Males Females	34.02 29.29	34.57 30.31	29.57 28.25	31.43 31.28		

on this variable. Males scored higher than females and freshmen/sophomores scored higher than juniors/seniors. Examining the means in Table 25 it is also apparent that there is a general improvement in attitude from pretest to posttest (time) for all subclasses. However, juniors/seniors improve more than freshmen/sophomores. These differences are substantiated by the repeated measures analysis of variance procedure summarized in Table 26.

Table 26

Repeated Measures ANOVA for Change in Attitude Toward
Physical Activity as Catharsis

Source	Type III SS	đf	F	p
Time	572.82	1	18.33	.0001*
Time x Class	151.04	1	4.83	.0283*
Time x Gender	36.90	1	1.18	.2776
Time x Class x Gen	der 6.53	1	0.21	.6479
Error	21318.10	682		

The time factor as well as the time by class interaction were both significant (F = 18.33, df = 1,682, p = .0001) and (F = 4.83, df = 1,682, p = .0283), respectively.

The least squares means presented in Table 27 indicate attitude toward physical activity as chance (luck). As is evident from these values there is little difference between males and females toward this dimension. It is also apparent that there are only slight increases

Table 27
Attitude Toward Physical Activity as Chance

		Class Level				
	Freshmen/	'Sophamores	Juniors	S/Seniors		
	Pretest	Posttest	Pretest	Posttest		
Males Females	33.05 33.85	34.50 33.02	31.86 31.84	32.73 32.75		

from pre- to posttest for all subgroups except freshman/sophomore females. Freshman/sophomore females reveal a slightly less favorable

attitude toward physical activity as chance. These descriptive results are supported by the repeated measures ANOVA summarized in Table 28.

Table 28

Repeated Measures ANOVA for Change in Attitude Toward

Physical Activity as Chance

Source	Type III SS	df	F	р
Time	78.53	1	2.10	.1478
Time x Class	17.99	1	0.48	.4882
Time x Gender	68.42	1	1.83	.1767
Time x Class x Gende	2 <b>r</b> 73.58	1	1.97	.1612
Error	25512.28	682		

As indicated neither the main effect time nor the interactions were significant revealing no attitudinal change toward physical activity as chance for all sub-groups.

Least squares means for subjects' ideal body image are presented in Table 29. As was previously established (Table 11) there are significant differences between males and females regarding attitude toward their bodies as they would like them to be. It is also

Table 29

Ideal Body Image

 Gender		Class Level				
	Freshmen/	'Sophomores	Juniors/Seniors			
	Pretest	Posttest	Pretest	Posttest		
Males	47.33	46.95	46.05	46.57		
Females	48.45	48.39	48.34	48.69		

evident that there are only slight variations in attitude from pretest to posttest (time) for all subclasses. These changes are non-significant according to the repeated measures ANOVA summarized in Table 30. Both the time main effect and all interactions indicate no change in ideal body image between and among subclasses.

Table 30

Repeated Measures ANOVA for Change in Ideal Body Image

Source	Type III SS	df	F	p	
Time	2.25	1	0.18	.6736	
Time x Class	23.45	1	1.85	.1741	
Time x Gender	0.31	1	0.02	.8764	
Time x Class x Gender	3.28	1	0.26	.6113	
Error	8640.18	682			

The last dependent variable analyzed was the subjects'

perceived body image. Least squares means are found in Table 31.

As is evident from the values there is little difference between males

Table 31
Perceived Body Image

Gender	Class Level				
	Freshmen/Sophomores		Juniors/Seniors		
	Pretest	Posttest	Pretest	Posttest	
Males Females	40.65 39.79	41.07 40.18	40.76 40.34	40.49 39.34	

and females regarding their image of their bodies as they actually believe them to be. Examining the change that occurred it is apparent that there is an increase from pretest to posttest (time) for freshmen/sophomores and a decrease for juniors/seniors. This is borne out by the repeated measures analysis of variance procedure summarized in Table 32.

Table 32

Repeated Measures ANOVA for Change in Perceived Body Image

Source	Type III SS	df	F	р
Time	2.92	1	0.22	.6393
Time x Class	59.13	1	4.45	.0352*
Time x Gender	7.59	1	0.57	.4498
Time x Class x Gender	6.99	1	0.53	.4684
Error	9055.31	682		

The time by class interaction was significant (F = 4.45, df = 1,682, p = .0352) indicating that freshmen/sophomores differed from juniors/seniors in the amount of change that occurred between pretest and posttest (time) toward perceived body image. The main effect of time and other interactions reveal no difference in change between and among the remaining subclasses from pre- to posttest.

## Discussion

The present study sought to determine student attitudes toward physical activity. Primarily, the investigation was designed to determine if student attitudes changed as a result of exposure to one semester of fitness and lifetime skills instruction. The research looked specifically at student attitudes and attitude change by gender and class level. For each variable the main effect and interactions were reported.

The instruments used to gather data were Kenyon's Attitude
Toward Physical Activity and Body Image Scales (1968c). This study
surveyed 343 male and female students who were enrolled in the PE 100
Fitness and Lifetime Skills program at South Dakota State University.

## Pretest Discussion

The least squares means for overall attitude toward physical activity indicate that these subjects hold a favorable attitude toward physical activity. The literature is in strong agreement with these findings (Kenyon, 1968b,c; Bell & Walters, 1953; Brumbach & Cross, 1965; Corbin & Chevrette, 1974; Mise, 1979; Williams & Nelson, 1983). When examining the main effects and interactions for class level and gender a significant class level difference was noted. According to the analysis (Figure 1), freshmen/sophomores (IS  $\overline{X} = 281.22$ ) hold a significantly higher attitude toward physical activity than juniors/seniors (IS  $\overline{X} = 271.63$ ). Students at South Dakota State University are required to take two semesters of physical education, but may elect to take as many as four during their program of study.

Most students elect to take required physical education courses their freshman/sophomore years in college. It may be that those who get their requirement out of the way early are not threatened or intimidated by physical education and, therefore, have a more positive attitude toward it. Conversely, those students putting off physical education class may be doing so because of unpleasant past experiences. These experiences may have resulted in a more negative attitude toward physical activity.

In an attempt to validate the above observation the literature provides some helpful evidence. Bell and Walters (1953) indicated that freshmen held a higher, or more favorable attitude toward physical activity than any other group studied. The primary explanation given was that freshmen participated in physical activity outside of class more than seniors. It was revealed that seniors were involved in more extra-curricular and work activities than freshmen. According to Bell and Walters (1953) these extra activities may detract from the development of a favorable attitude toward physical activity due to lack of participation. Kenyon (1968c) and Campbell (1968) agree with this contention. Both indicate that the more one participates in physical activity the higher their attitude will be. Of course it may also be that the more favorable one's attitude, the more they will seek out various forms of physical activity.

In another investigation, Williams and Nelson (1983) measured class differences among third and fifth form students in New Zealand. Their findings indicated that third form co-ed students held a more

favorable attitude toward physical activity than co-ed fifth formers. They concluded that, "this difference may exist due to differences in the physical education curriculum" (p. 23).

When examining the individual attitude dimensions of physical activity, several significant observations were made. Class level differences were found for physical activity as a social experience, pursuit of vertigo, and catharsis.

For physical activity as a social experience (Figure 2) freshmen/sophomores (IS X = 44.93) exhibited a more favorable attitude toward physical activity as a social encounter than juniors/seniors (IS  $\overline{X} = 43.27$ ). Even though little information supports this observation, it is not surprising that freshmen/sophomores value social experience more so than juniors/seniors. Newer students find themselves in a radically different environment as they begin their college experience. College freshmen/sophomores have been removed from a rather comfortable social unit (high school environment) where they had higher status and are introduced to a new fundamental social process (college) where they are, once again, at the lowest rung of the social ladder. This socio-psychological event may cause freshmen/sophomores to utilize physical activity to increase their social contacts and to make new friends. Kenyon (1965) believes that physical activity may affect the psychosociological processes among basic social units, primary social attributes, and fundamental socialization.

When examining physical activity as a pursuit of vertigo a significant class level difference was revealed (Figure 4). The freshmen/sophomores (IS  $\overline{X}$  = 36.65) held a higher value for physical activity as a thrilling and perhaps dangerous experience than juniors/seniors (IS  $\overline{X}$  = 34.23). It should be noted that those values classify both groups as having favorable to neutral attitudes toward this subdimension. Accord's (1977) investigation, using Kenyon's ATPA inventory, found similar results. Her research revealed that sophomores scored significantly higher on the vertigo dimension than freshmen, juniors, and seniors. The freshmen class was the group that scored second highest. Accord made the observation without offering any explanation.

This investigator believes an explanation may lie in the psychological maturation between groups. While no concrete evidence could be found to support this position it may be that freshmen/sophomores have a more inquisitive and daring personality as they sample from the wide range of experiences in their new environment. Maturation breeds conservatism and caution which dampers the adventuresome nature of youth. Perhaps we are seeing this in their attitudes toward the risk aspect of physical activity.

The last significant main effect for class level found freshmen/sophomores (LS  $\overline{X}$  = 31.65) favoring physical activity for the relief of tension (catharsis) more than juniors/seniors (LS  $\overline{X}$  = 28.90). Freshmen/sophomores exhibited neutral to unfavorable attitudes toward this dimension of physical activity (Figure 6). This finding is

somewhat puzzling. Sidney and Shephard (1976) and Sidney et al. (1983) found elderly subjects to consistently emphasize physical activity for catharsis or release of tension. Sidney and Shephard hypothesized that as an individual becomes older their value of catharsis through physical activity increases. When comparing means from the present study and those of Sidney's and Shephard's, it is obvious that elderly subjects value physical activity as catharsis more than young subjects. The explanation for freshmen/sophomores favoring physical activity for cathartic reasons more than juniors/seniors may be due to junior and seniors having more established patterns of activities for social and emotional outlets while the underclass students, not having an established social network as yet, rely on physical activity to vent energy and emotions.

It was not surprising that males scored higher than females on the vertigo scale (Figure 3), nor is it uncommon for females to favor physical activity as an aesthetic experience (Figure 5). These findings lend support to previous research (Kenyon, 1968c; Mize, 1979; Onifade, 1985; Zaichkowsky, 1977; Staub, 1975). According to Caillois (1961) males are usually socialized to participate in physical activity that favors danger and excitement. Resemberg and Sutton-Smith (1959) reported forceful physical contact, dramatization of conflict, throwing objects through space, and complex team organization as common behavior for boys. Females on the other hand have been sheltered, especially from dangerous, risky activities that could cause injury. They are socialized into activities epitomizing the feminine gender role

identity (Gilbert & Williamson, 1973). Typically, females appreciate the aesthetic qualities of physical activity more than males. The literature indicates that females at adolescence and adulthood participate in activities such as gymnastics, skating, and dancing (Kenyon, 1968c; Wiedamann & Howe, 1933). These activities epitomize the beauty and grace of movement.

The present study indicates that males hold a more favorable attitude than females toward physical activity for relief of tension or catharsis (Figure 6). Females held negative attitudes, while males were neutral as to the cathartic value of physical activity. This finding is in agreement with Dotson and Stanley (1972) and Tolson and Chevrette (1974), however, these studies measured male subjects only. Other studies (Kenyon, 1968c; Onifade, 1985; Blair, 1980) measuring both genders found females inclined to participate for cathartic reasons moreso than males.

As a possible explanation, males have emphasized the value of sport as a means of relaxation and getting away from the tensions of the day (Spreitzer & Snyder, 1975). Blair (1980) found that males scored very high on attitude toward physical activity as catharsis. This was not the case in the present study. Regarding gender differences Mize (1979) anticipated that male and female attitudes would become more alike over time. She stated, "while differences do exist, these differences will gradually decrease as a result of various non-traditional sex-role orientations" (p. 109).

This investigation also found significant gender differences for ideal body image. Both genders exhibit a highly favorable ideal body image. Females rate their ideal image significantly higher than males (Figure 8). In review of the literature few investigators utilize ideal body image in their investigations. Sidney and Shephard (1976) measured elderly subjects (> 60 years in age) on body image. Both male and female subjects indicated a favorable ideal body image. Males had higher scores than females although the differences were not significant. These results differ from the present study, however, considerable age differences exist. In addition to age differences, dramatic differences in the psychological makeup of college students as opposed to senior citizens make comparisons of questionable value.

In an attempt to explain gender differences in ideal image, this researcher provides a viewpoint supported by Fisher (1973). He states "the painter, the sculptor, the poet, and the movie-maker have lavished their admiration on the beautiful womanly body" (p. 42). Selected females have often been used as examples to explicitly portray a perfect body via television commercials, billboard pictures, and other sources of advertisement. We constantly get the message that society defines a woman's status according to her physical being. In light of this it is understandable why a female would value an ideal image more than a male.

## Pretest to Posttest Change

The development of positive attitudes toward physical activity is a desireable goal for a program of physical education. The primary

purpose of this investigation was to determine if student attitudes toward physical activity and body image changed as a result of exposure to one semester of PE 100 Fitness and Lifetime Skills instruction.

In this study, students show positive changes in attitudes toward physical activity. The repeated measures ANOVA reveal several pretest to posttest (time) changes at the .05 level of significance. All subclasses (males, females, freshmen/sophomores, and juniors/seniors) indicate a significant increase in overall attitude when exposed to one semester of physical activity (Table 14). The individual dimensions including social (Table 16), health and fitness (Table 18), aesthetic (Table 22), and catharsis (Table 26) account for this overall attitude improvement. These variables significantly increase from pretest to posttest (time). These findings are in agreement with the reviewed literature (Corbin & Chevrette, 1974; Tolson & Chevrette, 1974; Sidney & Shephard, 1976; Sidney, Niinimaa, & Shephard, 1983).

Corbin and Chevrette (1974) measured pre—and posttest attitudes for one semester of physical education. Two types of physical education programs were compared; a lifetime skills vs. a foundations program. Utilizing the Wear Attitude Inventory, the investigators found significant positive attitude change on the general and mental—emotional dimensions of physical education.

In other studies investigators use exercise prescription as a treatment to compare attitude change using Kenyon's ATPA-I (1968c) and ATPA (1968b) Inventories. Sidney and Shephard (1976) and Sidney et al. (1983) analyzed attitude changes toward physical activity as

measured among elderly subjects at the beginning and end of a physical training program. Four one hour periods of exercise were held each week for 14 weeks. Subjects were grouped retrospectively according to their pattern of training. Persons who attended at least two of the four sessions per week were classified as high frequency exercisers and those attending less than two sessions as low frequency exercisers. Intensity of participation was also rated as being high or low depending on reported heart rates. Both studies found subjects significantly improved in attitude toward physical activity as catharsis. Both studies also indicate that subjects improved their attitude for all other dimensions of physical activity although the changes were not significant.

Tolson and Chevrette (1974) measured the effect of exercise on attitude toward physical activity. The study revealed attitude change on four dimensions of Kenyon's ATPA. Freshmen males exercised for 80 minutes six days a week for six weeks. This program of exercise elicited significant increases in ATPA for the dimensions of catharsis, ascetic, vertigo, and health and fitness. Similar findings were found in the present study, however pretest to posttest change comparisons indicate more change in the Tolson and Chevrette study than the present findings. Differences may be attributed to activity participation time. Tolson and Chevrette's methods and procedures exposed their subjects to 1280 more minutes of physical activity, almost twice the amount experienced by students in the present investigation. According

to Kenyon (1968c) the more one participates in physical activity the higher their attitude scores more likely will be.

Another investigation that supports Kenyon's findings, was a longitudinal study measuring attitude change for male students of physical education toward physical activity. This investigation was conducted by Barrell and Holt (1982) using Kenyon's ATPA (1968b) inventory to assess change during a three year teacher training course. Conclusive evidence showed that students' attitudes positively changed during the three year course.

Contrary to the above evidence that attitudes increase through physical activity Kidd's results in 1971 failed to reveal positive attitude change toward physical activity. Kidd compared two types of physical education instruction, a foundations program and a lifetime fitness program. Neither group revealed significant change in attitude toward physical activity when exposed to one semester of instruction.

The present study also indicates several pretest to posttest class level differences. According to the findings a significant difference existed for the dimensions ascetic (Table 24), catharsis (Table 26), and perceived body image (Table 32). Throughout the search and review of literature little evidence was found to explain class level attitude differences. The present study found freshmen/sophomores significantly improving in attitude more than juniors/seniors for both ascetic (achieving excellence through discipline, pain, and self-denial) and perceived body image (as subjects actually believe their bodies to be). Both dimensions

indicate favorable to highly favorable attitude measures for an actual body image and an ascetic experience, respectively. Juniors/seniors initially scored higher on both dimensions. These differences may indicate younger students have more room to improve attitudinally before favorably "topping out."

To further explain the class level difference in attitude change toward physical activity as an ascetic experience consideration was given to the college environment. Perhaps it is the case that freshmen/sophomores exposed to a new environment may significantly increase and actually value physical activity for ascetic reasons more than juniors/seniors. Younger students may learn to like physical activity that requires a stremuous (ascetic) release of energy. To these students strenuous to painful physical activity may help them cope with new anxieties as compared to the more adjusted juniors/seniors. When Kenyon (1968b) introduced six dimensional scales of physical activity, he made note that interrelationships may exist among catharsis and other sub-areas such as health and fitness, social experience, and ascetic experience. This may very well be the case in this study. Freshmen/sophomores consider physical activity to be more important than juniors/seniors for both strenuous (ascetic) experience as well as catharsis (relief of tension).

As mentioned earlier juniors/seniors initially had a higher perceived body image than freshmen/sophomores. The significant change finds juniors/seniors decreasing and freshmen/sophomores increasing their perceived body image. The end result is that both groups have

magnitude of the values it may be that only the freshmen/sophomores have room to increase while the juniors/seniors have reached their upper limit. It may also be conceivable that the intermixing of the various class levels in a single course serves to facilitate a regression toward the mean. In other words, freshmen/sophomores and juniors/seniors become more alike in attitude due to their interaction with one another.

Finally, evidence suggests a time by class level difference for the dimension of catharsis (where physical activity is valued for the relief of tension). Freshmen/sophomores initially score higher than juniors/seniors, however juniors/seniors significantly increase in attitude scores from pre- to posttest. According to Snyder and Shephard (1976) as an individual becomes older their value of activity for catharsis increases. Their research utilized subjects older than 60 years of age. Results indicated a "favorable" to "highly favorable" response to the dimension of catharsis. As seen in the present study, freshmen/sophomores and juniors/seniors carry a relatively neutral to unfavorable attitude toward physical activity. Again, freshmen/sophomores may hold a higher value than juniors/seniors due to exposure to new environmental conditions. Both groups score relatively low as compared to elderly subjects in the Snyder and Shephard (1976) study. A possible reason for juniors/seniors to significantly change more than freshmen/sophomores may be self awareness through the exposure to physical activity. Initially juniors/seniors carry

significantly lower attitudes toward overall physical activity. This may be due to previous unfavorable experiences with physical activity, causing them to purposely delay taking the required physical education classes for graduation. A reacquaintance with physical activity at a later time in life may increase their attitude toward physical activity as a means to relieve daily frustration and tension.

Significant changes in attitude toward physical activity for this particular study may have occurred for similar reasons proposed by several previous investigators (Freischlag, 1973; Seyer & Connolly, 1984; Hall, 1978; Simon & Smoll, 1974; Bell & Walters, 1953; and Rosenberg, et al., 1960).

- Student attitudes are relatively set prior to college
  physical activity participation but not so well-defined
  that they cannot change.
- 2. Student motivation levels are adequate.
- 3. Students experience success in activity participation.
- 4. The students perceive their instructors credibility to be sufficient.
- 5. The instructors:
  - (a) give positive reinforcement.
  - (b) show interest in students.
  - (c) are actively participating with the students.
  - (d) give students visual and verbal feedback.

Although the research is in disagreement on the extent to which attitudes toward physical activity can change as a result of exposure

to instruction in physical education, the results of this investigation would indicate that it is possible. An overall conclusion reached was that both attitude toward physical activity and body image were "favorable" to "highly favorable" at pretest. Even though student attitudes were initially positive, significant improvements were revealed at posttest.

#### CHAPTER V

### SUMMARY AND CONCLUSIONS

### Summary

The purpose of this investigation was to determine if student attitude toward physical activity changed following exposure to one semester of fitness and lifetime skills instruction. More specifically, the study examined attitude differences and change by class level and gender. Subjects were 343 males and females selected via stratified random sample within the Physical Education 100 Program at South Dakota State University. Attitude measurements were obtained utilizing Kenyon's ATPA-I Inventory (1968c) in a test-retest procedure the fall semester of 1987.

The pretest data were obtained through the administration of the ATPA-I Inventory Monday, September 14 or Tuesday, September 15, 1987. Data for the posttest were gathered Thursday, October 22, Monday, December 4, or Tuesday, December 5, 1987. For both pre- and posttest, subjects responded to a series of semantic differential scale designed to assess attitudes about seven aspects of physical activity and two dimensions of body image. The seven aspects of physical activity included (a) social experience, (b) health and fitness, (c) pursuit of vertigo, (d) aesthetic experience, (e) catharsis, (f) ascetic experience, and (g) chance, while ideal and perceived body image were the other dependent variables utilized. The independent variables of concern were gender and class level.

To determine attitude differences, a two-way ANOVA was performed utilizing the PROC GIM function of the Statistical Analysis System (SAS). Data for attitude change were obtained by means of repeated measures ANOVA. For all comparisons the .05 level of significance was used as the criterion.

### Conclusions

The following conclusions are based upon data gathered from 343 male and female college students enrolled in the PE 100 Fitness and Lifetime Skills program at South Dakota State University during the fall semester of 1987. As such the reader is cautioned against generalizing the findings beyond this specific group of subjects. Male and female college students do not significantly differ on overall attitude toward physical activity. However, several subdimensions reveal significant gender differences.

- Males have a significantly more favorable attitude toward physical activity as a pursuit of vertigo and as catharsis than females.
- 2. Females have a significantly more favorable attitude toward physical activity as an aesthetic experience than males.
- 3. Females have a significantly more favorable ideal body image than their male counterparts.

In determining class differences conclusive evidence revealed that freshmen/sophomores have a more favorable overall attitude toward physical activity than juniors/seniors. Freshmen/sophomores have a significantly more favorable attitude toward physical activity as

(a) social experience, (b) pursuit of vertigo, and (c) catharsis more than junior/seniors.

Finally, the primary purpose of this investigation was to determine if student attitudes toward physical activity changed following exposure to one semester of PE 100 Fitness and Lifetime Skills instruction. It was found that, as a total group, the subjects significantly improved their overall attitude toward physical activity from pre- to posttest. In examining the subdimensions of attitude toward physical activity (a) social experience, (b) health and fitness, (c) aesthetic experience and (d) catharsis all showed significant positive increases. Therefore it can be concluded that attitudes toward certain dimensions of physical activity increase significantly following one semester of fitness and lifetime skills instruction.

### Recommendations for Further Study

The present study sought to provide information concerning attitude change due to instruction in fitness and lifetime activities. While some new knowledge has been provided, more information is needed as to how attitudes toward physical activity are formed, how they are affected by age, and to what extent they may be modified. During the course of this study several interesting ideas emerged.

It seems most important to the discipline of physical education to identify the determinants of an unfavorable attitude toward physical activity. People possessing negative attitudes toward physical activity may politically debate the unimportance of physical education. Like a contagious virus, poor attitudes, values, beliefs, and opinions

are passed on to and adopted by other individuals. The present study used Kenyon's ATPA-I Inventory (1968c) to gather the data. A similar study should be conducted singling out those with low attitude scores. To investigate the determinants of a poor attitude the implementation of a Critical Incidence Report would be illuminating. By isolating students with unfavorable attitudes toward physical activity and interviewing them, information could be obtained regarding the antendents of negative attitudes which could then be used to modify our existing instructional practices.

The study at hand measured randomly selected students from freshmen to senior classification. A similar study could be conducted comparing students who take four semesters of physical education to those who elect to take only two.

Finally, this study looked at gender and class level differences only. A similar study could be conducted using different activity classifications as an independent variable. It might be that students who enroll in fitness-type activities, for example, would exhibit different attitudes than those electing to take up more sedentary pursuits.

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### APPENDIX A

### Instructions To The Subjects

(Read the following to the subjects)

I am here today to administer a research survey to get to know more about school students and the P.E. lifetime fitness classes here at SDSU. We will be asking you to answer questions about subjects concerning physical activity and body image.

To do this, we have arranged questions into a booklet that we call an inventory. None of these questions are difficult. This is not a test with right or wrong answers. In most cases, you will only need to express your opinion about different subjects.

You are not asked to recall or solve mathematical problems. From time to time you will come across "physical activity"—for us, this refers to all types of active games, sports, and dance.

Simply read the instructions and answer the questions as asked. The instructions are on the first two pages. The inventory consists of the last nine. Please do not write or put any marks on the inventory or instruction sheets. Read the instructions carefully, but, do not begin until you are told to do so. (Distribute Inventory)

So that everyone understands exactly what is required, I would like to quickly go over the instructions to complete the Semantic Differential Scales of ATPA and BI.

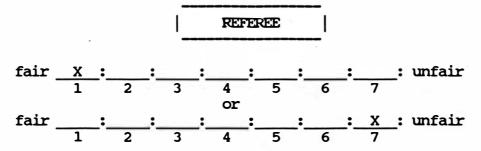
- 1. You should have an inventory containing 9 white pages (attached).
- 2. You should have 2 separate answer sheets.
- 3. Put <u>ALL</u> answers on the answer sheets. DO NOT WRITE ON THE INVENTORY.
- 4. Put your social security number, gender, section number, and class level on the answer sheet.
- 5. Read the following instructions carefully, keeping in mind that you will be answering on a special answer sheet.

### Instructions.

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. 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. In taking this test, please make your judgments on the basis of what these things mean to you.

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 would place your "X" as follows:



If you feel that the concept is <u>quite closely related</u> to one or the other end of the scale (but not extremely), you should place your "X" as follows:

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

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 <u>neutral</u> on the scale (that is, both sides of the scale seem <u>equally associated</u> with the concept), or if the scale makes no sense, (that is, it is unrelated to the concept) then you should place your "X" in the middle space:

safe 
$$\frac{1}{2}$$
:  $\frac{1}{3}$ :  $\frac{1}{4}$ :  $\frac{1}{5}$ :  $\frac{1}{6}$ : dangerous

### USING THE ANSWER SHEET

To express your feeling using the answer sheet, simply mark the box that corresponds with the same space on the scale you are answering. For example, on question 21, if you wanted to put an "X" in the third space on the scale, you would fill in with pencil the third box in the row of boxes marked "21".

On the inventory . . .

21. fair 
$$\frac{1}{2} : \frac{X}{3} : \frac{X}{4} : \frac{1}{5} : \frac{1}{6} : \frac{1}{7} : \text{ unfair}$$

would be on the answer sheet . . .

### 21. |1 |2 |3 |4 |5 |6 |7 | IMPORTANT

- 1. Always be sure the answer sheet number is the same as the question number on the inventory.
- 2. When you reach page 8 you must begin THE SECOND ANSWER SHEET.
- 3. Be sure you check every scale do not omit any.
- 4. Mark only one box on each scale.
- 5. The numbers under each scale are merely to assist in 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 judgment. 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.

Are there any questions?

Keep in mind to correlate your marks with the right question and answer sheet number. Check to see that you have answered all questions. You should work fairly quickly, but carefully. I would like to remind you that all information is held strictly confidential. It will only be seen by those who are connected with the research project. The success of the research depends heavily, of course, upon expressing how you feel about each idea or concept.

If you have any questions during the answer time, simply raise your hand and I'll be glad to answer them. When you finish, check to see that all questions have been answered on every page. Then sit quietly until the others finish.

Now begin.

#### APPENDIX B

### ATPA and BI Inventory

DO NOT MARK THESE SHEETS: USE ANSWER SHEET

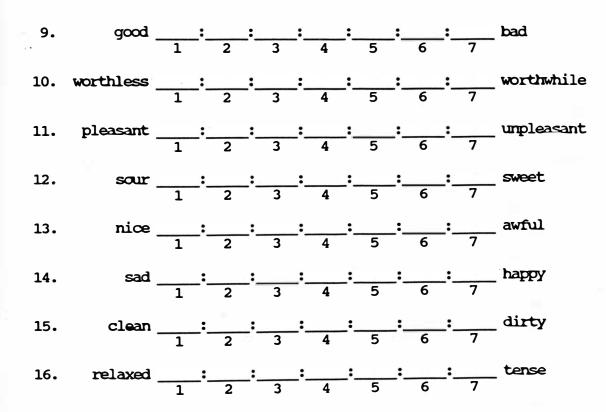
Using the Scales Below, Express on the Answer Sheet What the Concept in the Box Means to You.

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
- 2. worthless \_\_\_:\_\_:\_\_:\_\_\_:\_\_\_\_ worthwhile
- 3. pleasant \_\_\_:\_\_:\_\_:\_\_:\_\_:\_\_unpleasant
- 4. sour \_\_:\_\_:\_\_:\_\_:\_\_:\_\_:\_\_sweet
- 5. nice  $\frac{1}{2} = \frac{1}{3} = \frac{1}{4} = \frac{1}{5} = \frac{1}{6} = \frac{1}{7}$  awful
- 6. sad  $\frac{1}{1}$ :  $\frac{1}{2}$ :  $\frac{1}{3}$ :  $\frac{1}{4}$ :  $\frac{1}{5}$ :  $\frac{1}{6}$ :  $\frac{1}{7}$ : happy
- 7. clean \_\_:\_\_:\_\_:\_\_:\_\_:\_\_:\_\_:\_\_dirty
- 8. relaxed : : : : : : : : : : : tense

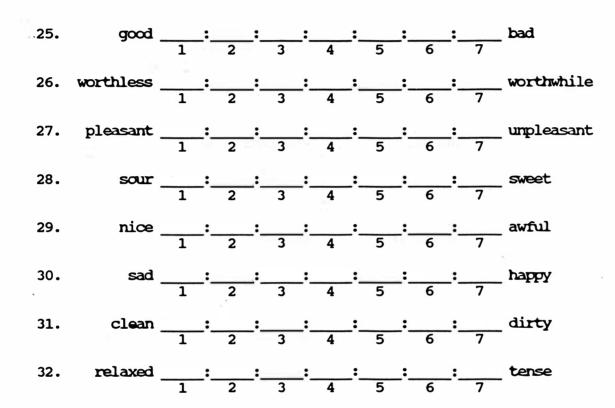
PHYSICAL ACTIVITY FOR HEALTH AND FITNESS
Participating in physical activity primarily to improve one's health and physical fitness.



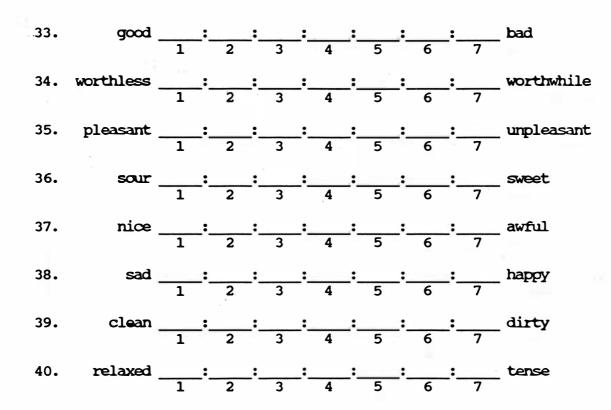
PHYSICAL ACTIVITY AS A THRILL BUT INVOLVING SOME RISK Physical activities providing, at some risk to the participant, thrills and excitement through speed, acceleration, sudden change of direction, and exposure to dangerous situations.

17.	good	1	_:_	2	_:_	3	_:_	4	_:_	5	_ <b>:</b> _	6	_:_	7	bad
18.	worthless	1	_ <b>:</b> _	2	_ <b>:</b> _	3	_:_	4	_:_	5	_ <b>:</b> _	6	_ <b>:</b> _	7	worthwhile
19.	pleasant	1	_:_	2	_ <b>:</b> _	3	_:_	4	_:_	5	_ <b>:</b> _	6	_:_	7	unpleasant
20.	sour	1	_ <b>:</b> _	2	_:_	3	_:_	4	_ <b>:</b> _	5	_ <b>:</b> _	6	_ <b>:</b> _	7	sweet
21.	niœ	1	_ <b>:</b> _	2	_ <b>:</b> _	3	_:_	4	_:_	5	_:_	6	_:_	7	awful
22.	sad	1	_ <b>:</b> _	2	_ <b>:</b> _	3	_ <b>:</b> _	4	_ <b>:</b> _	5	_ <b>:</b> _	6	_ <b>:</b> _	7	happy
23.	clean	1	_ <b>:</b> _	2	_ <b>:</b> _	3	_:_	4	_ <b>:</b> _	5	_ <b>:</b> _	6	_ <b>:</b> _	7	dirty
24.	relaxed		_:_	2	_ <b>:</b> _	3	_ <b>:</b> _	4	_ <b>:</b> _	5	_ <b>:</b> _	6	_ <b>:</b> _	7	tense

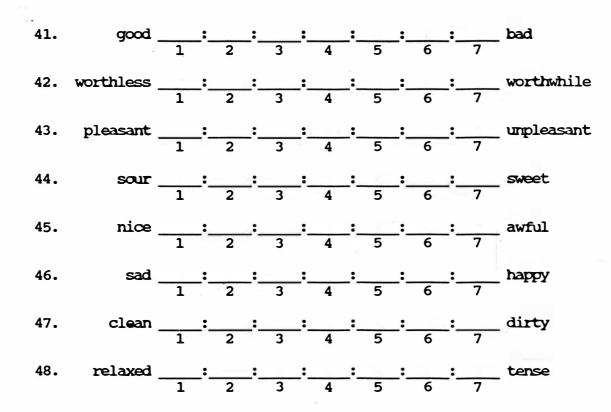
PHYSICAL ACTIVITY AS THE BEAUTY IN HUMAN MOVEMENT Physical activities which are thought of as possessing beauty or certain artistic qualities such as ballet, gymnastics, or figure skating.



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.



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.



PHYSICAL ACTIVITY AS GAMES OF CHANCE

Games and sports where chance and luck are more important
than skill in determining the winner, such as dice or horse
racing.

NOTE: Beginning with the next page, use the second answer sheet.

	l	MY BODY:	AS I	MOULD L	IKE T	O SEE	IT	I
1.		1 2 :	3		5 •		7	tense
2.						*		beautiful
3.		:						
4.	sick	:	_:	_:	:	_:	_:	healthy
5.	graceful		_:	_ <b>:</b>	:	_:	_:	awkward
6.	inadequate		_:	_:	:	_:	_:	adequate
7.	rugged	:	_:	<b>-:</b>	:	_:	_:	delicate
8.	clean	:	_:	_:	:	_:	_:	dirty
9.	hard	<b>:</b>	_:		<b>:</b>	_:	_ <b>:</b>	soft
10.	short	<b>:</b>	_:	_:	<u>:</u>	_:	_:	tall
11.	light	<b>:</b>	<b>_:</b>	_ <b>:</b>	:	_:	_:	heavy
12.	lar <del>g</del> e		_:	_ <b>:</b>	:	_:	_:	small
13.	masculine	:	_:	_ <b>:</b>	<b>:</b>	_:	_:	feminine
14.	feeble	:	_:	<u>:</u>	:	_:	_:	vigorous
15.	flexible	:	_:	-:	<u>:</u>	<u>:</u>	_:	rigid
16.	weak	<b>:</b>	_:	_:	:	_:	_:	strong
17.	free	:	_:	<b>-:</b>	:	_ <b>:</b>	_:	restricted
18.	persist	:_	_:	- <b>:</b>	:	_:	_:	letting up
19.	passive	<b>:</b>	_:	<b>-:</b>	<b>:</b> _	_:	_:	active
20.	hot	<b>:</b>	_ <b>:</b>	- <b>:</b>	:	_:	<b>_:</b>	_ ∞ld
21.	excitable	<b>:</b>	_:	- <b>:</b>	·	_:	_:	calm
22.	simple	:_	_:	<b>-:</b>	<b>:</b>	_:	- <b>:</b>	complex
23.	fast	<u> </u>	_:	<b>:</b>	<b>:</b>	_:	_:	slow
24.	permanent	1: 2	_:	:	<b>:</b> 5	_:6	_:7	changeable



		MY BODY: AS IT REALLY IS	
			. w. sity.
25.	relaxed	1 2 3 4 5 6 7 :::::	tense
26.	ugly	::::::	_ beautiful
27.	<u>usual</u>	::::::	_ unusual
28.	sick		_ healthy
29.	graceful	::::::	_ awkward
30.	inadequate		_ adequate
31.	rugged		_ delicate
32.	clean		_ dirty
33.	hard		_ soft
34.	short		_ tall
35.	light	:::::::::::::	_ heavy
36.	lar <del>g</del> e		_small
37.	masculine		_feminine
38.	feeble		_ vigorous
39.	flexible		_ rigid
40.	weak		_strong
41.	free		_ restricted
42.	persist		_ letting up
43.	passive	::::::	_ active
44.	hot	::::	_ ∞ld
45.	excitable	::::::	_ calm
46.	simple	;;;;;;	_ complex
47.	fast		_ slow
48.	permanent	1 2 3 4 5 6 7	_changeable



APPENDIX C
Activity Courses Offered at South Dakota State University

ACTIVITY	SECTION NUMBERS OFFERED
Aerobic Dance	4, 58,65
Archery	10, 18, <u>19, 29, 38, 46, 48, 60, 63</u>
Badminton	$1, 2, 6, 9, 14, \overline{19}, \overline{29}, 47$
Beginning Bow Hunting	<u>38</u> , 63
Beginning Swimming	8, 16, <u>28</u>
Billiards	78, <u>79</u> , 81
Bowling	44, 45, 46, 47, 48, 49, 60, 61
Fishing Techniques	66, 74
Golf	<u>24</u> , 35, 45, 49, 61, 72, 78
Individual Fitness	3, 15, 20, 37, 80
Intermediate Swimming	<del>4</del> 1, <u>54</u>
Jazz Dance	17
Jogging	<del>77</del> 40, 56
Karate	40, 56
Outdoor Adventures	<u>76</u>
Racquetball	1, 2, 6, 9, 11, <u>13</u> , 14, 18, 21, <u>27</u> , 31,
	32, 36, <u>39</u> , 53, 62, 67, 72, 73, <u>79</u>
Recreational Activities	10
Scuba Diving	84
Shooker	81
Social Dance (women)	22, 50, <u>70</u>
Social Dance (men)	23, 51, <u>71</u>
Softball	43 13, 73 75 87 12, 25, 36, 42, <u>59</u> , 69
Squash	<u>13</u> , 73
Swim Conditioning	<u>75</u>
Swimmers' Swimming	<u>87</u>
Tennis	12, 25, 36, 42, <u>59</u> , 69
Volleyball	12, 25, 36, 42, <u>59</u> , 69 33, <u>44</u> , 55 75
Water Exercise	75
Weight Training	<del>5,</del> 7, 26, 34, 52, 57, <u>64</u> , <u>68</u>

The <u>underlined</u> sections are those selected for the study.



### APPENDIX D

### First Memo to PE 100 Instructors

MEMO: Initial Pretesting Sessions

TO: PE 100 Class Instructors

FROM: Paul Konrad/GIA

The following classes were selected by a Stratified Random Sample to participate in an attitudinal survey. The inventory to be used measures attitudes toward physical activity in a multi-dimensional way.

The survey will take approximately 20 minutes of your class period. Your students will respond to seven categorized concepts as related to physical activity.

Hopefully, we, the PE 100 instructors and administration may benefit from the findings. The findings will be an attempt to measure attitude change in a test-retest procedure.

Your cooperation will be sincerely appreciated.

Note the day and time the survey will be administered.

## Monday, September 14

Time	Instructor	Section	Activity	RM
7:30	Marc Peterson	3	Individual Fitness	289
9:30	Brad Erickson	87	Svimmers Swimming	Pool
10:00	Mark Kool	19	Badminton/	Gym
10:00	Don Charleson	24	Golf	Gym
10:30	Cathy Wolff	33	Volleyball	Gym
11:30	Mark Ekeland	43	Softball	120
12:00	Wayne Haensel	44 & 46	Bowling/	Bowling
	-		_	Alley
12:55	Mary Jones	59	Tennis	120
1:30	Brent Dunford	70 & 71	Social Dance	Studio
2:00	Jim Egeberg	68	Weight Training	WT. RM.
2:30	Scott Underwood	77	Jogging	PEC track
	55555 3122	• •		

## Tuesday, September 15

Time	Instructor	Section	Activity	RM
8:30	Mark Kool	13	Racquetball/	PEC courts
9:30	Nancy Neiber	28	Beginning Swimming	Pool
10:00	Brian Dutcher	27	Racquetball	IM courts
10:30	Mike Engels	39	Racquetball	PEC courts
11:00	Scott Underwood	38	Archery/	IM Range
11:30	Stacey Schulz	54	Intermediate Swimming	Pool
12:30	Connie Kurtz	65	Aerobic Dance	Gym
12:30	Brad Pfeifle	64	Weight Training	Gym
12:30	Larry Ireland	66	Fishing Techniques	Gym
1:30	Stacey Schulz	75	Swim Conditioning/	Pool
2:00	Linda Olson	76	Outdoor Adventures	120
2:30	Paul Wieland	79	Billards	120



### APPENDIX E

### Post-testing Schedule for 8 Week Classes

This schedule was verbally finalized to determine the date, time, and location to administer the posttest. The following is the schedule for the initial posttest sessions (8 week classes).

## Thursday, October 22

Time	Instructor	Section	Activity	RM
10:00	Don Charleson	24	Golf	120
11:30	Mark Ekeland	43	Softball	120
12:30	Larry Ireland	66	Fishing Techniques	Conference Rm
1:00	Mary Jones	59	Tennis	120
2:00	Linda Olson	76	Outdoor Adventures	120



#### APPENDIX F

### Second Memo to PE 100 Instructors

MEMO: Final Post-testing Sessions

TO: PE 100 Class Instructors

(Sections selected by Stratified Random Sample)

FROM: Paul Konrad/GIA

The following PE 100 sections were selected by stratified random sample to participate in an attitudinal survey at the beginning of this fall semester. The survey measures attitude toward physical activity.

A pretest was administered at the beginning of the semester. The posttest will be given Monday the 14th or Tuesday the 15th of this month.

The survey will take approximately 20 minutes of your class period. Your students will be measured multi-dimensionally on seven concepts as they relate to physical activity.

Your cooperation will be sincerely appreciated.

Please note the day and  $\underline{\text{time}}$  the survey will be administered in your class.



## Monday, December 14th

Time	Instructor	Section	Activity	RM
				* V
7:30	Marc Peterson	3	Individual Fitness	289
9:30	Paul Konrad	19	/Archery	Range
10:00	Brad Erickson	87	Svimmers Svimming	Pool
10:30	Cathy Wolff	33	Volleyball	Gym
11:30	Mick Hoglund	44	/Volleyball	Gym
12:00	Scott Underwood	46	/Archery	Range
1:30	Jim Egeber <del>g</del>	68	Weight Training	WI RM
2:00	Brent Dunford	70-71	Social Dance	Studio
2:30	Scott Underwood	77	Jogging	Gym

## Tuesday, December 15th

Time	Instructor	Section	Activity	RM
		1111		
8:30	Marv Jones	13	/Squash	PEC courts
9:30	Nancy Neiber	28	Beginning Swimming	Pool
10:00	Brian Dutcher	27	Racquetball	IM courts
10:30	Scott Undervood	38	/Beginning Bow Hunting	Range
11:00	Mike Engels	39	Racquetball	PEC courts
11:30	Stacey Schulz	54	Intermediate Swimming	Pool
12:30	Brad Pfeifle	64	Weight Training	WT RM
1:00	Connie Kurtz	65	Aerobic Dance	Studio
1:30	Stacey Schulz	75	/Water Exercise	Pool
2:30	Jim Egeberg	79	/Racquetball	IM courts



### APPENDIX G

## Semantic Differential Scales of ATPA Answer Form #1

Class Level	Social Security Number
Section Number	MaleFemale
1.  1  2  3  4  5  6   2.  1  2  3  4  5  6	7 30.  1  2  3  4  5  6  7   7   31.  1  2  3  4  5  6  7
2. 1 2 3 4 5 6 3 3. 1 2 3 4 5 6	7 31. 1 2 3 4 5 6 7 7 32. 1 2 3 4 5 6 7
4. 11 12 13 14 15 16	7 32. 11 12 13 14 15 16 17
5. 1 2 3 4 5 6	7 33.  1   2   3   4   5   6   7
6. 1 2 3 4 5 6	7 34. 1 2 3 4 5 6 7
7. 1 2 3 4 5 6	7 35. 1 2 3 4 5 6 7
8. 1 2 3 4 5 6	7 36. 1 2 3 4 5 6 7 37. 1 2 3 4 5 6 7
9.  1   2   3   4   5   6	37. 1 2 3 4 5 6 7 7 38. 1 2 3 4 5 6 7
10. 11 2 3 4 5 6	7 39. 11 2 3 4 5 6 7
11. 11 2 3 4 5 6	7 40. 1 2 3 4 5 6 7
12. 1 2 3 4 5 6	7
13. 1 2 3 4 5 6	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
14. 1 2 3 4 5 6 1 15. 1 2 3 4 5 6	7 42. 1 2 3 4 5 6 7 7 43. 1 2 3 4 5 6 7
16. 11 2 3 4 5 6	7 44. 11 2 3 4 5 6 7
<del></del>	45. 1 2 3 4 5 6 7
	7 46. 1 2 3 4 5 6 7
	7 47. 1 2 3 4 5 6 7 7 48. 1 2 3 4 5 6 7
19. 1 2 3 4 5 6 20. 1 2 3 4 5 6	7 48. 1 2 3 4 5 6 7
21. 11 2 3 4 5 6	7 49.  1   2   3   4   5   6   7
22. 1 2 3 4 5 6	7 50. 11 2 3 4 5 6 7
23. 1 2 3 4 5 6	7 51. 1 2 3 4 5 6 7
24. 1 2 3 4 5 6	7 52. 1 2 3 4 5 6 7
25.  1   2   3   4   5   6	53. 1 2 3 4 5 6 7 7 54. 1 2 3 4 5 6 7
26. 1 2 3 4 5 6	7 55. 1 2 3 4 5 6 7
27. 11 2 3 4 5 6	7 56. 11 2 3 4 5 6 7
28. 1 2 3 4 5 6	7
29. 1 2 3 4 5 6	7



## Semantic Differential Scales of BI Answer Form #2

Class	s Lev	æl	_							Soc	cial	Secur	ity	N	umb	er								
Sect	ion N	<b>Jumb</b>	æ	r _						Mal	le _													
								=		Fer	ale													
1.	11	12		3	. 14	1	5	L	6	7	L	25.	1	Ι.	2	_ 1	3	4		5	]6		7	
2.	1	2		3	1	1	5		6	7		26.	1	I	2		3	4		5	[6	Ŀ	7	
3.	1	2		3	1	1	5		6	7		27.	1	I	2		3	4		5	6	$\mathbf{I}$	7	
4.	1	2		3	1	1	5		6	7		28.	Ti	T	2		3	4		5	6	I	7	J.
5.	1	2		3	1	1	5		6	7		29.	Ţī	Τ.	2		3	4	Π	5	<b>T</b> 6	T	7	
6.	11	2		3	1	4	5		6	7	[	30.	1	T	2		3	4		5	6	$\mathbf{I}$	7	
7.	1	2		3	1	4	5		6	7		31.	1	T	2		3	4		5	6	$\mathbf{I}$	7	
8.	11	2		3	I	1	5		6	7		32.	Ţī	T	2		3	4		5	6	Ι	7	
9.	1	2		3	I	4	<b>5</b>		6	7		33.	Ţ	Ι.	2		3	4		5	6	$\mathbf{I}$	7	
10.	11	2		3	I	4	5		6	7		34.	1	$\mathbf{I}$	2		3	4		5	6	$\mathbf{I}$	7	
11.	1	2		3	I	4	5		6	7		35.	1	Ι.	2	Ι	3	4		5	6	Ι	7	
12.	1	2		3	I	4	5		6	7		36.	1	I	2		3	4	$[\ ]$	5	6	$\mathbf{I}$	7	
13.	1	2		3	I	4	5		6	7		37.	]]	Ι.	2		3	4	Π	5	6	$\mathbf{I}$	7	
14.	11	2		3	I	4	5		6	7		38.	1	I	2		3	4	I	5	6	$\mathbf{I}$	7	
15.	1	2		3	1	4	5		6	7		39.	]1	Ι.	2		3	4		5	6	$\mathbf{I}$	7	
16.	1	2		3	I	4	5		6	7		40.	1	T	2		3	4	Π	5	6	$\mathbf{I}$	7	
17.	1	2		3	I	4	5		6	7		41.	1	Ι.	2		3	4	Π	5	6	$\mathbf{I}$	7	
18.	11	2		3	I	4	5		6	7		42.	]]	Ι.	2		3	4		5	6	$\mathbf{I}$	7	
19.	1	2		3	I	4	5		6	7		43.	T	Ι.	2		3	4		5	6	I	7	
20.	1	2		3	I	4	5		6	7		44.	1	I	2		3	4	$\Box$	5	6	I	7	
21.	1	2		3	I	4	5		6	7		45.	I	Ι.	2		3	4		5	6		7	
22.	1	2		3	I	<u>4</u>	5		6	7		46.	1		2		3	4		5	<b>[6</b>		7	
23.	1	2		3	I	<u>4</u>	5		6	7		47.	1	Ι.	2		3	4		5	6	$\mathbf{I}$	7	
24.	1	2		3	I	<u>4</u>	5		6	7		48.	1	Ι.	2		3	4	LΙ	5	[6	$\mathbf{I}$	7	



# APPENDIX H Scoring The ATPA Semantic Differential Scales

### A PRIORI

After inventory was completed, the investigator used A PRIORI weights to assign the proper weight for each item marked on each of the eight sub-domains.

i.e. Physical Activity as a Social Experience

1. 
$$good$$
  $\underline{\phantom{a}}: \underline{\phantom{a}}: \underline{\phantom{a}:} \underline{\phantom{a}}: \underline{\phantom{a}}: \underline{\phantom{a}}: \underline{\phantom{a}}: \underline{\phantom{a}:} \underline{\phantom{a}:} \underline{\phantom{a}:} \underline{\phantom{a}:} \underline{\phantom{a}:} \underline{\phantom{a}:} \underline{\phantom{a}:} \underline{\phantom{a}:} \underline{\phantom{a}:} \underline{\phantom{a}:}$ 

Social A Priori Weights

Record a 5 beside item 1 of the Social Sub-Domain on the inventory.

Add up item scores on each sub-domain to obtain sub-domain scores. Add up the sub-domain scores to obtain the total Attitude Toward Physical Activity score.



A Priori Weights for Semantic Differential Scales

Attitude	Item Number	A Priori Weights
Social (S)	•	7-6-5-4-3-2-1
30Clai (3)	1 2	1-2-3-4-5-6-7
	3	7-6-5-4-3-2-1
	4	1-2-3-4-5-6-7
	5	7-6-5-4-3-2-1
	6	1-2-3-4-5-6-7
	7	7-6-5-4-3-2-1
	8	7-6-5-4-3-2-1
Health and Fitness (H)	9	7-6-5-4-3-2-1
	10	1-2-3-4-5-6-7
	11	7-6-5-4-3-2-1
	12	1-2-3-4-5-6-7
	13	7-6-5-4-3-2-1
	14	1-2-3-4-5-6-7
	15	7-6-5-4-3-2-3
	16	7-6-5-4-3-2-2
Pursuit of Vergito (V)	17	7-6-5-4-3-2-1
	18	1-2-3-4-5-6-7
	19	7-6-5-4-3-2-3
	20	1-2-3-4-5-6-7
	21	7-6-5-4-3-2-1
	22	1-2-3-4-5-6-7
	23	7-6-5-4-3-2-1
	24	7-6-5-4-3-2-1
Aesthetic (Ae)	25	7-6-5-4-3-2-1
	26	1-2-3-4-5-6-7
	27	7-6-5-4-3-2-1
	28	1-2-3-4-5-6-7
	29	7-6-5-4-3-2-1
	30	1-2-3-4-5-6-7
	31	7-6-5-4-3-2-1



A Priori Weights for Semantic Differential Scales - (continued)

Attitude	Item Number	A Priori Weights
Catharsis (C)	33	7-6-5-4-3-2-1
	34	1-2-3-4-5-6-7
	35	7-6-5-4-3-2-1
	36	1-2-3-4-5-6-7
	37	7-6-5-4-3-2-1
	38	1-2-3-4-5-6-7
	39	7-6-5-4-3-2-1
	40	7-6-5-4-3-2-1
Ascetic (As)	41	7-6-5-4-3-2-1
	42	1-2-3-4-5-6-7
	43	7-6-5-4-3-2-1
	44	1-2-3-4-5-6-7
	45	7-6-5-4-3-2-1
	46	1-2-3-4-5-6-7
	47	7-6-5-4-3-2-1
	48	7-6-5-4-3-2-1
Chance (Ch)	49	7-6-5-4-3-2-1
	50	1-2-3-4-5-6-7
	51	7-6-5-4-3-2-1
	52	1-2-3-4-5-6-7
	53	7-6-5-4-3-2-1
	54	1-2-3-4-5-6-7
	55	7-6-5-4-3-2-1
	<b>56</b>	7-6-5-4-3-2-1
Body Image (BI)	1	7-6-5-4-3-2-1
	2	1-2-3-4-5-6-7
	3	7-6-5-4-3-2-1
	4	1-2-3-4-5-6-7
	5	7-6-5-4-3-2-1
	6	1-2-3-4-5-6-7
	7 8	4-4-4-4-4-4
	8	7-6-5-4-3-2-1
	<b>25</b>	7-6-5-4-3-2-1
	26 27	1-2-3-4-5-6-7 7-6-5-4-3-2-1
	27 28	1-2-3-4-5-6-7
	28 29	7-6-5-4-3-2-1
	30	1-2-3-4-5-6-7
	31	4-4-4-4-4-4
	32	7-6-5-4-3-2-1

