NUGENT, JANE ELIZABETH. A Comparison of Attitude Change Toward Physical Education in Classes Taught with Different Emphases. (1970) Directed by: Dr. Celeste Ulrich pp. 106

The purpose of this study was to determine if planned discussion within one physical education class would produce a significant change in attitude toward physical education on a pre-test and post-test basis as compared to the results of no planned discussion within another physical education class also engaged in the same pre-test and post-test procedure. Both groups were taught the skills and knowledges of beginning yoga.

Kenyon's "Six Scales for Assessing Attitude Toward Physical Activity: Form D - College Women" was used as the testing instrument.

The study lasted five weeks. Two class meetings per week were used within each class. Fifteen full-time college women of the University of North Carolina at Greensboro were enrolled in each class, one of which was used as a control group, while the other was used as an experimental group. Both groups were taught a skill and concept unit in yoga for six lessons and both classes covered approximately the same amount of material. The control group spent every lesson engaged in the activity, while the experimental group spent the final ten minutes of every period in some type of planned discussion. An attempt was made to emphasize positive values of physical education through discussion techniques. Following the post-test with the attitude inventory both groups received a teacher-constructed, multiple-choice test based on the skill and concept unit only. An attempt was made to determine if the amount of time spent in discussion would affect knowledge concepts of the unit material taught.

A two-by-two factorial analysis of variance was used as the statistical technique to determine differences in the attitude inventory. The results indicated that no significant differences could be found between groups scores, within group scores, and between treatments on a pre-test and post-test basis at the five per cent level of confidence. Therefore, the author concluded that the discussion and no-discussion methods seemed to have no significant bearing on the attitude scores in relation to this study.

With regard to the knowledge understandings learned in yoga, a Fisher "t" test was used to determine if there was a significant difference between scores of the control and experimental group. The technique indicated that at the five per cent level of confidence there was no significant difference between mean scores of both groups. There is the assumption that, even though ten minutes was spent on discussion in every class meeting of the experimental group, it did not significantly affect the comprehension of the material presented during the teaching of the yoga skill and concept unit as compared to the control group, which spent the entire class period with the yoga skill and concept unit.

The teaching of the yoga skill and concept unit, as well as the conditions of discussion and no-discussion, took place in the body mechanics room in Coleman Gymnasium at the University of North Carolina at Greensboro.

A COMPARISON OF ATTITUDE CHANGE TOWARD PHYSICAL EDUCATION IN CLASSES TAUGHT WITH DIFFERENT EMPHASES

by

Jane Elizabeth Nugent

A Thesis Submitted to
the Faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Master of Science in Physical Education

Greensboro
August, 1970

Approved by

Thesis Adviser

APPROVAL SHEET

This thesis has been approved by the following committee of the Faculty of the Graduate School at the University of North Carolina at Greensboro.

Thesis Director _____

Oral Examination Committee Members _____

_____

_____

August 18, 1970
Date of Examination

ACKNOWLEDGEMENT

Sweetness and strength from regions far
Withdrawn and strange you bring.
And look no stronger than a star.
No graver than the spring.
(21:82)

To Dr. Celeste Ulrich appreciation is extended for directing this study.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

> But let us attend to the student's attitude toward these boxes of knowledge, his leaning toward, his stretching out to these granite blocks of truth. (32:123)

Many writers have indicated that people frequently attempt to achieve some form of internal consistency in their beliefs and attitudes about aspects of their world. Various groups of people conceive their ways of life, their ways of doing things, and their stands on issues in different ways, thus, their attitudes are different.

Man has a desire for meaning, and the meaning he abstracts from his environment is, in part, determined by his attitudes toward that environment. Sherif has stated:

> Each day we become more keenly conscious of how far the social sciences lag behind, while man's knowledge of physical nature has reached the point that he can destroy the human race. There is an urgency today for a breakthrough in the frontiers of knowledge about human relationships and attitudes related to them. (46:4)

Within the educational setting, we teach or instruct because we hope that through our instruction the student will somehow be different than he was before the instruction. The mastery of fundamental ideas of a field involve, as Bruner theorized, not only the grasping of general principles, but, also the development of an attitude toward learning and inquiry. (8:20) Often, teachers neglect discussing anything other than

the subject matter *per se*, forgetting that the development of positive and meaningful attitudes toward that subject might be just as important in fostering an intimate student-subject relationship. Frequently, educators wait for "teachable moments" instead of planning specifically for them. If physical education is interested in casting reflections of the culture, profession, or subject matter, physical educators must allow for relevant discussion of these concepts.

An objective of physical educators is to create within the student as favorable an attitude toward the subject matter as possible. It is in this way that he will remember what he has been taught and, hopefully, will want to learn more. To concentrate on the attainment of skill alone seems rather limited in light of the potential of physical education to affect mental, social-psychological, and physical domains of the individual's being. Verbal articulation of the worth of physical education is often needed to clarify the value of activity and movement. Through such a technique, it might be possible to assist in establishing a more accurate basis for the individual's attitude formation and structure toward physical education. Skill in effecting intelligent, valid, and meaningful communication then assumes an importance in the teaching repertoire of the physical educator.

Since a teacher may be thought of as a modifier and controller of behavior, it would behoove the instructor to assess carefully her objectives, her aims and ultimately her

means of reaching those goals. If verbal communication is to play a significant role in leading to a student's understanding and perception of a particular subject, the nature of that communication must be evaluated most carefully as to its effectiveness in meeting ultimate aims.

> To be a professional means to accept responsibility. . . responsibility for actions and for results. It is to act in the best interests of those served. . . to help them grow rather than shrivel. When we accept the responsibility for professionally influencing the lives and actions of other people, we must do all we can to make that influence positive rather than negative. We must accept not only the responsibility for sending our students away with as much knowledge and skill as is within our power to give them, but also for sending them away with the ability to use those skills to help themselves and others. (30:99)

CHAPTER II

STATEMENT OF THE PROBLEM

> Our success in influencing future performances is in part a function of our success at sending students away with tendencies to approach, rather than avoid, the things we want them to think about, feel about, and do about. (30:97)

The purpose of this study was to determine if planned discussion regarding physical education within one class would produce a significant change in attitude toward physical education on a pre-test and post-test basis as compared to results received through no planned discussion within another class also engaged in the same pre-test and post-test procedure. The classes selected were body mechanics sections at The University of North Carolina at Greensboro. Group discussion and persuasive message techniques were used as the communicating influences regarding the establishment of positive attitudes toward physical education.

The study was undertaken to determine if there is a place for planned discussion in physical education courses as opposed to waiting for "teachable moments" to impart concepts. Since the nature of communication can affect attitude formation, an attempt was made to determine whether planned discussion concerning certain values of physical education for college women as compared to no planned discussion of values could have an influence on the attitudes toward physical education.

The test administered prior to and after the experimental treatment was that devised by Gerald S. Kenyon - "Six Scales for Assessing Attitude Toward Physical Activity: Form D - College Women." (80)

A secondary problem within the study attempted to determine the difference in knowledges gained between the group experiencing structured discussion and that group experiencing no structured discussion. A teacher-constructed test, based on the physical education unit taught, was administered after teaching the unit and after completing all attitude testing.

CHAPTER III

REVIEW OF LITERATURE

> After the first refusal, consciousness came. The flowers flared; the sun blared like brass. Beast and bird slept their beatitudes. To man alone fell a choice of attitudes. Man fell alone to the knowledge of his name. (10:12)

Attitude and attitude change have become fertile areas of study for the social-psychologist. Research in these areas has, in the past decade, returned to the dominant status within social-psychology that it had thirty years ago. (29:136) The growing interest in attitudes over the past fifteen years, especially, has made it one of the most popular topics of study in social-psychological research. Searching for systematic theories concerning attitudes, researchers have designed much of their work about the principles of resulting cognitive consistencies.

It is the purpose of this review not to deal with the formation of attitudes as such, but to report some of the research findings regarding:

1. Attitude consistency and change.
2. Communication and consistency.
3. Attitude measurement.
4. Attitude concepts in physical education.
5. Attitude measurement for physical education.

The definition of attitude will be served by the following interpretations:

Louis Thurstone, a pioneer in attitude research, defined attitude as:

> The sum total of a man's inclinations and feelings, prejudice or bias, preconceived notions, ideas, fears, threats, and convictions about any specific topic. (48:6)

Theodore Newcomb stated that:

> An individual's attitude toward something is his predisposition to perform, perceive, think and feel in relation to it. (34:118)

Gerald Kenyon, whose attitude scale was used for this study, has reported:

> An attitude is held to be 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. (80:567)

Attitude Consistency and Change

People learn as a result of their experiences as they attempt to orient themselves toward objects and symbols. (34:18) Since attitudes are learned in relation to objects, persons, groups, or norms, it follows that they are not unchangeable. (45:238) While Doob believed attitudes are learned and that learning, retention, and decline of attitudes involve perception and motivation (65:135), he cautioned that total analysis of an attitude problem must involve the knowledge of:

1. goal response,
2. afferent-habit strength,
3. efferent-habit strength.

4. drive strength,
5. interaction strength,
6. social significance. (65:145)

Allport (33:839), in some early attitude research, reported that attitudes, characteristically, have a material or conceptual object of reference and are pointed in some direction with respect to the object; and the thread running through all attitude work involved the feature of "preparation or readiness for response." Allport (33:805) stated, "An attitude is not behavior, but the pre-condition of it."

Rokeach recently stated:

> An attitude change would be a change in predisposition, the change being a change in the organization or structure of beliefs, or a change in the content of one or more of the beliefs entering into the attitude organization. (99:530)

Since value satisfaction and instrumental relations are important in the attitude structure, Carlson (57:256) felt that an attitude change would result from changes in either the expected satisfaction from goals, or altering perceptions of the attitude object as leading to the attainment of valued goals. The problem of attitude change is concerned with the consequences to a person's belief and the resulting value systems of such a change. Katz felt that attitudes served important functions within one's personality system, those being:

1. An adjustive function of satisfying utilitarian needs.
2. An ego-defensive function of handling internal conflicts.
3. A value expressive function of maintaining self-identity and of enhancing self-image.

4. A knowledge function of giving understanding and meaning to the ambiguties of the world around him. (76:204)

Thus, man would constantly strive for a unified, meaningful structure of his perceptions, beliefs, and attitudes, and would attempt to reduce inconsistencies within these structures as much as possible. (75:i) Heider (91:12) has reported, then, that attitude change would involve not only external modifications of the environment, but internal psychological change as well. Newcomb believed that:

> An existing attitude may be maintained by creating environments in which either new information could be avoided, or in which other persons support one's own information. In either case, the state of an attitude is mediated by the social environment in which the individual attempts to maintain or restore balance regarding that same attitude. (91:13)

Attitude change is a complicated phenomenon for it is not merely change toward an object, but also change toward a situation. In order to produce a stable behavioral change following an attitude change, Festinger (69:416) believed that an environmental change must also be produced which, representing reality, would support new opinion and new behavior. Otherwise, he assumed the same factors that produced the initial attitude and resulting behavior would continue to nullify the effect of the change. (69:416) Heider (72:372) further reported that the change in the environment gains its meaning from the source to which it is attributed.

Sherif found that attempts to cause an attitude change involved:

1. Some sort of communication.
2. A susceptibility to change.
3. A range of assimilation of the communication.
4. A believable source of communication. (46:129)

In support of this statement, Rosenberg (100:318) believed that "a disruption of structural consistency is a basic condition for the occurrence of attitude change." Consequently, since people seek to maintain balanced cognitive structures (81:113), attitudes can be changed by modifying the beliefs or feelings associated with those structures. (100:318) Newcomb (34) maintained that an individual's frame of reference was important to attitude stability and change. He felt that changing events, persuasion, prestige, and group relations would be influential in the state of an attitude. Kelman (78:62) stated that the stability of an attitude was dependent on compliance, identification, and internalization; if one of these factors was upset, a change could result.

Since intensity of an attitude is important with regard to consistency, Cantril (56:132) theorized that, "the more extreme an attitude is in its direction, the more intensely it is likely to be held." Doob (64:565) also felt that, "if there is no change in attitude, this often means the attitude is more certain and intense." Brehm and Cohen (5:247) stated that, "the magnitude of dissonance and consequent attitude change increases as the amount of inconsistency between attitude and commitment increases." In other words, the less strongly held an initial position is, the more attitude change is likely to take place, and the more strongly an attitude is maintained the less chance

of change. Osgood (93) postulated that the dynamics of attitude change involved certain principles:

1. Cognitive modification results from the psychological stress produced by cognitive inconsistencies.
2. If cognitive elements are to interact, they must be brought into some relation with one another.
3. The magnitude of stress toward modification increases with the degree of cognitive inconsistency.
4. The dynamics of cognitive interaction are such that modifications under stress always reduce total cognitive inconsistency.

Summers (105:219) has concluded that a "systematic relation can be seen between conflict, compromise and a resultant belief change." In other words, when the individual undergoes cognitive inconsistency, a conflict arises within his belief system and in order to witness a particular attitude change some type of compromise must be made between conflict and belief.

Two conditions for arousing an existing attitude within such a cognitive state have been postulated by Katz (76:177):

1. Activation of relevant need states.
2. Perception of appropriate cues associated with the content of the attitude.

Katz (76:203) believed that prediction of attitude change could not be made solely on the basis of need measures; attitude change is also geared to the relevant motivational basis of the attitude.

Rosenberg (100:322) has spoken of "tolerance limit" with regard to attitudes, and felt that if affective-cognitive components were mutually inconsistent to a degree which exceeded the individual's tolerance level, the attitude would be in an unstable state. In such a state the attitude would undergo reorganization so that one of the following would occur:

1. A rejection of forces that engendered the inconsistency would restore the original attitude and stability of it.
2. A fragmentation of the attitude would occur.
3. An accommodation to the original inconsistency would occur producing change so that a new attitude would be formed consistent with the change. (100:322)

The last three decades, especially, have seen a steady and impressive growth in our knowledge concerning attitudes and how they change. The concept regarding consistency has moved toward a set of systematic theories rather than fragmented descriptive reports on the nature of consistency. Many of the latest attempts at systematization have involved a kind of balance-of-forces approach in which the overloading of one type of factor gives rise to changes designed to restore equilibrium. (83:538) The principle of consistency and attitude change now seems to be revolving about three theories: congruity, balance and dissonance. (6:550) "Common to the concepts of balance, congruity, and dissonance is the notion that thoughts, beliefs, attitudes, and behavior tend to organize themselves in meaningful and sensible ways. " (114:280) Zajonc (114:293) has reported that the theories dealing with consistency principles are mainly concerned with intra-individual phenomena, be they with relationships between attitude and value, or information, or perception.

The most general theory of the three attitude change concepts is "dissonance theory" and was first proposed by Festinger in 1957. (6:584) He theorized that two elements are in dissonance if one implies the obverse or negation of the other. This

produces a state of psychological discomfort, with the individual seeking a consonance or restoration of equilibrium. (114:290) Dissonance theory is often used to ascertain the effect of persuasive communication in relation to the initial position of the subject. (83:545) It has been further reported that in many of the areas inspired by dissonance theory, the experimenter seems to be dealing with slight effects that are very sensitive to subtle conditions of the experiment which might be hard to anticipate or control. (29:240) Due to the elaborate controls often established in a Festinger-type experiment, it is often difficult to replicate that same experiment or abstract any valid generalizations from the study. (29:140) Dissonance theory has been charged with being too simplistic a view, lacking systematization and concentrating too greatly on nonobvious and meaningless findings. (29:102) Brown (6:601) has reported that too many of the concepts of dissonance are unclear, its structure is loose rather than logical, and many of the deductions based on dissonance are a result of arbitrary selection from a number of possibilities.

"Balance theory" has developed from the work of Heider (1944, 1946, 1958) and later through the research of Abelson and Rosenberg (1960). (6:574) This theory is concerned with the way relations among persons involving some impersonal entity are cognitively experienced by the individual. (114:282) How people view their relations with other people and the environment is important to balance theory. Should a state of tension or

imbalance arise concerning the object relation or person relation, a drive toward balance or equilibrium will take place along the least costly path. (6:582) Newcomb (91:12) stated that a balanced condition was an intrapersonal, psychological state formulated in individual and phenomenological terms.

While there is widespread support of balance theory, it is still in an extremely rudimentary stage of development. McGuire (29:95) has reported that balance theorists are often ignorant of what conditions facilitate or interfere with the attainment of cognitive balance. Many variables can be encountered when using balance theory and present day balance conceptions are not sufficiently detailed to account for resulting discrepancies.

The "congruity model" was developed in connection with the work of Osgood, Souci, and Tannenbaum in 1957. (6:558) The principle of this more sophisticated model has been that "changes in evaluation are always in the direction of increased congruity with the existing frame of reference." (95:43) In general, equilibrium in the congruity model encompasses all associative bonds between equally polarized objects of like sign and all dissociative bonds between equally polarized objects of unlike sign. (6:559) If incongruity arises, the shift in evaluation always tends toward equalization of the degree of polarization of the objects of judgment associated by an assertion. (95:52) This model has said, in effect, that "when certain kinds of

information are fed into the human psychological apparatus, certain perfectly determinate changes of attitude will result." (6:550) In other words, attitude change is effected by introducing specific messages or information to the objects involved and it is entirely possible mathematically to predict where the objects will repolarize on the continuum based on certain previously known positions of the objects in question.

The strength of the congruity model lies in its formal structure. But, as Brown (6:570) has reported, the model does not tell us how to deal simultaneously with multiple bonds, and only two objects can be dealt with at a time.

While we speak of cognitive theories, it has been suggested that present day attitude researchers borrow much of their experimental structure from either Hovland or Festinger. (29) As it is difficult to place oneself in perfect line with one or the other, researchers often use at least the principles of one or a combination of the principles of both. Hovland's method is based on a convergent style of research which is oriented toward the dependent variable in the change process. Multiple-item scales, analysis of variance and covariance, large numbers of subjects and manipulation of extraneous variables mark Hovland's work. Festinger is concerned with a divergent style of research oriented toward the independent variable. An attempt is made to hold all variables constant except the crucial one. Small numbers of subjects, simpler "t"

test and chi square techniques, and two-item response tests are often used in Festinger-type experiments.

Even though we often over-simplify the case for attitude research, there is increasing emphasis in present day social-psychology on the problems of cognitive organization and the attempts of people to achieve unity and consistency in their own mental worlds. There is still a need for more precise formulation of the types of variables and processes involved in attitude change. But, the hope is that individual and modular theories eventually will yield to researchers a general theory based on concepts of motivational states and postulates concerning human abhorence of psychological inconsistency.

Communication and Consistency

Previously established was the fact that attempts at attitude change involve some sort of communication. (46:129) Communication for this study involved student-teacher interaction in selected small groups in class situations.

The term "group" has been defined as "a plurality of individuals who are in contact with one another, who take one another into account, and who are aware of some significant commonality." (38:21) Bales (22:15) has reported that a "small group" involves a number of persons engaged in interaction with one another in a face-to-face meeting or series of meetings in which each member receives some impression or perception of each member. The term "small group" as Olmsted (38:22) has perceived it refers to a number of members whose upper limit would be

twenty and lower limit would be two. He further concluded that the small group is involved with studying small scale systems of interaction, and "avoids predetermination of the qualities of its internal relations." (38:22) Shepherd (44:1) has postulated that a small group serves an important mediating function between the individual and a larger society, as well as providing a source for the development of values and attitudes.

In dealing with the small group Zalesnik and Moment (52:453) reported that due to the ease with which an entire small group can be observed, the dynamics of the change process may be described in more specific detail. It is rather apparent, then, that many class situations have the potential to provide ideal situations for small group interaction.

Janis and Hovland (24:269) have theorized that the effects of communication are based on the nature of the communicator, the communication, and the audience. The more favorable the attitude toward the communicator, the more influential he will be in changing people's opinions. (75:iii) The communicator must be of high credibility and the argument he presents must act as an incentive toward change. (24:269) Newcomb has assumed that:

> Communication among humans performs the essential function of enabling two or more individuals to maintain simultaneous orientation toward one another as communicators and towards objects of communication. (90:393)

If the communicator can create certain forces impinging on the cognitive structure of the individual, and if these forces are

strong and persistent, there will result "strains" toward a new equilibrium point. (90:395) Kelman (3:230) felt that the influence process would take the form of "compliance, identification, and internalization." He concluded that each of these corresponded to a characteristic pattern of internal responses, thoughts, and feelings in which the individual engages as he accepts influence. (3:230)

In addition to knowledge of internal need states, Sherif (46:115) proposed the theory that latitudes of acceptance and rejection, as well as the level of arousal within the individual's attitude structure, would be important in understanding any commitment to change. Diab stated that, "latitudes of acceptance are those positions on an issue that the individual finds most acceptable, plus other positions also acceptable to him." (62:427) "Latitudes of rejection," he felt, "are those positions on the same issue that he finds most objectionable, plus other objectionable positions on the issue." (62:427) Diab concluded that:

> Knowledge of a subject's latitude of acceptance and rejection, rather than an estimate of the subject's stand alone, enables us to account much more adequately for a subject's reactions to and evaluations of a communication. (61:774)

Communicators must know the positions or stands of individuals when they are communicating if they are interested in changing attitude. (46:175) It is important to note an individual's tolerance for various positions related to his stand on an issue and his degree of involvement on that stand when imparting a communication. (46:174)

McGuire (29:76) reported that the social influence process or nature of communication often assumes one of the following types of attitude-change situations:

1. Suggestion situations.
2. Conformity situations.
3. Group discussion situations.
4. Persuasive messages.
5. Intensive indoctrination.

This author chose both group discussion situations and persuasive type messages in attempting to bring about attitude change. Members of groups discuss and present arguments and counterarguments to positions when engaged in group discussion situations, while previously prepared statements or concepts are imparted in the persuasive message situation.

Heider (71:107) has worked closely with research relating to an individual's attitude toward communicators and attitudes on issues in question with regard to similarity and proximity. It is generally felt that subjects tend to view positions close to their own more favorably than those considered divergent. (46:161) Also, a person can be influenced by a persuasive message to the extent that he perceives it as coming from a source similar to himself. (112:771) Even though maximizing the effectiveness of the communication is based on assessing the positions of the audience, Wright (113:210) has emphasized "make sure the person you are trying to persuade likes you in the first place, or your efforts are likely to be in vain." Whittaker (112:771) hypothesized that in the case of an issue which an audience holds a moderate stand toward, the

communication may be most effective if it presents a stand considerably divergent from that of the audience; when the audience position is extreme and intense, communication will be effective only if the position it presents is very close to the audience stand. Although this hypothesis is open to much debate, there is considerable support of the concept "smaller discrepancy, higher change." (46:161) In relation to the writer's study, when utilizing communication principles, persuasive messages were kept at a level perceived to be relatively close to the attitudes college women hold regarding physical education. When group discussion was attempted, problems and situations were discussed which seemed pertinent and understandable to the group involved. In all instances attempts were made to accentuate the positive values of physical education in relation to beliefs held.

Responsible agents of change will keep in mind the ideals of growth, learning, self-actualization, the development of competence, ego-autonomy, and improved potential for adaptation when considering an attempt to change behavior and attitudes. (52:455)

> Teachers do not like to admit to wielding power and influence. But no study of change is complete if it overlooks the important reality that the change agent possesses power, influence, and authority. The prospective leader benefits from learning to examine who he is and what it is he's trying to do, than from devoting his attention exclusively on how-to-do-it techniques. (52:462)

Teachers, as responsible agents in the change process, must be considerate of the subjects as well as principles involved in attitude concepts.

Attitude Measurement

In experimenting with attitude change according to Osgood (93:359), we try to measure some part of the individual's existing attitude structure, produce messages which are congruent or incongruent to some definable degree, predict what the effects on him should be, and then measure his attitude structure again to determine the correctness of these predictions. Newcomb (34) has stated that the measurement of attitude is probably the most characteristic and significant technical achievement of social psychology, yet he believed that there was no single method of measurement applicable to all dimensions of an attitude.

Concerning any form of attitude measurement, Thurstone (48:9) warned that "the expression of a man's opinion does not necessarily mean the prediction of what he will do." Today it is generally felt that if we want to predict subsequent behavior, we must have a great deal of supporting evidence concerning the attitude itself. (78:57) The development of scales to more closely determine future behavior concerns the attitude researcher today, and will be of concern for the attitude researcher of tomorrow. (46:1)

Thurstone felt that:

> All we can do with an attitude scale is to measure the attitude actually expressed, with full realization that the subject may be hiding his true attitude or that the social pressure of the situation has made him really believe what he expresses. (48:10)

In establishing criteria for attitude statements in regard to scaling, Wang has suggested that:

1. The statement must be debatable.
2. All statements on a given issue should belong, as nearly as can be judged, to the same attitude variable.
3. An attitude statement must not be susceptible to more than one interpretation.
4. There should not be a bi-modal distribution in the same statement.
5. An attitude statement must be short.
6. Each attitude statement should be complete in denoting a definite attitude toward a specific issue.
7. Each attitude statement should contain only one complete thought.
8. An attitude statement should be clear cut and direct.
9. The attitude statement should not be ambiguous.
10. The attitude statement should have effect and should avoid colorless expressions. (108:368)

Guttman (70:140) has defined the attitude scale as "the multivariate frequency distribution of a universe of attributes." The scale is represented in a compact manner and the content of the universe is indicated by the title chosen for that universe, and all the attributes within that content belong in the universe. (70:141) Since scales are relative to time and population, Thurstone felt it would be possible to make four types of descriptions by means of an attitude scale:

1. The average or mean attitude of a particular individual on the issue at stake.
2. The range of opinion he is willing to accept or tolerate.
3. The relative popularity of each attitude of the scale for a designated group as shown by the frequency of distribution for that group.
4. The degree of homogeneity or heterogeneity in the attitude of a designated group on the issue, as shown by the spread or dispersion of its frequency distribution. (48:16)

Thurstone (107:554) further reported that an attitude scale would have evenly graded opinions so arranged that equal steps on the

scale would seem to most people to represent equally noticeable shifts in attitude. Much of Thurstone's work, done in the early part of this century, still holds true today in the field of attitude research.

Newcomb (34:155) believed the purpose of the attitude scale was to assign to an individual a numerical value somewhere between two extremes of maximum favoring of some issue and maximum disfavoring of the same issue. Nearly all attitude scales are made up of statements, phrases or proportions to which respondents indicate, in one way or another, agreement or disagreement. Diab concluded that attitude scales have two characteristics:

1. They represent the individual's attitude toward an object by a preference score or most acceptable position on a continuum of positions ranging from highly favorable to highly unfavorable.
2. In every case the individual is fully aware that his attitudes on the subject in question are being measured. (46:141)

It is most important that the scale be reliable in giving consistent results and valid to the degree that it represents the dimension which the investigator is trying to measure. (34:167)

The most frequently used scaling techniques have been those developed by Thurstone (1929, 1931), Likert (1932), and Guttman (1944); they require subjects to indicate agreement or disagreement with a set of statements about the attitude object. (43:13) Thurstone's technique is based on a linear continuum concept; the final scale consists of a series of statements of opinion, each of which is allocated to a particular point on a

baseline. (47:219) Each statement is given an assigned scale value and the subject may agree or disagree with the statement proposed. (34:193) The score is a measure of central tendency, being the average value of all the statements endorsed. (47:219)

The Likert technique is based on a summated rating of statements having a value of one through five. (82:42) The subject may respond to each statement by indicating strongly agree, agree, neutral, disagree, or strongly disagree. (43:24) This continuum, from favorable to unfavorable, provides for some range of consistency and intensity. (34:167)

The Guttman technique is based on a scale analysis development. The items are arranged in an order such that an individual who responds positively to any particular item also responds positively to all other items having a lower rank. (43:25) Using this scalogram concept, the investigator evaluates a set of items after the items have been selected in some fashion. (68:374)

Edwards has developed a rather eclectic "scale discrimination" technique which makes use of Thurstone's scaling procedure, as well as Likert's procedure for evaluating the discriminatory power of individual items, and meets the requirements for Guttman's scale analysis. (68:382)

One of the more contemporary approaches to attitude measurement is the semantic differential technique based on the work of Osgood, Souci, and Tannenbaum (1957). (39) The semantic differential is made up of seven step scales bounded on either end by polar adjectives; the subject indicates his preferred

position between each pair of adjectives. (55:289) The concept is given and the subject judges it against each successive scale by putting a checkmark in the appropriately desired position. (94:172) The presumption underlying the semantic differential as a measure of attitude is that summated scores represent attitude intensity as well as direction. (85:642) Often the semantic differential is not considered a test, but a method of getting at certain information concerning the individual's attitude on an issue. (39:76) Presumably, the semantic differential gives a more complete picture of the attitude and a more exact estimate of the subject's attitude on given issues. (63:303)

Regardless of which technique or combination of techniques is used, it is generally felt that an attitude scale must provide for varying degrees of favoring or opposing the same thing. (34:148) To determine if change has occurred, some sort of attempt must be made to measure attitudes before and after interpolation of some specific type of communication to ascertain the nature and degree of that change. (6:549)

Attitude Concepts for Physical Education

Before physical educators can begin to deal with the concepts of attitude concerning their discipline, some generalized attitude concepts should be identified as pertaining to the whole educational complex.

> The most central problem in all of education is an understanding of the nature of man. Educators who know of man accept the fact of man's unitary nature and construct educational programs on that basis. (37:3)

Phenix (41:166) has stated that the goal of education may be regarded as a personal wholeness, and part of that goal is bound up with providing learning experiences so that the student might then be a modified person in knowledge, attitudes, beliefs, and skills. In particular, the teacher must be interested in the attitude structure of students toward the environment of which they are a part. The teacher, then, as part of that environment has the ability to control and modify behavior as to the development of a personal completeness.

Education, as an institution, will tend to reflect the expectations of a society at large. (17:8) Since schools are established by a society to insure the continued existence of that society, all children must learn certain essentials of their culture in order to perpetuate their society as adults. (36:3) Educators today concern themselves not only with imparting knowledge and the freeing of thought, but with the creation and improvement of attitudes considered socially desirable and which best fit the individual for the functions he must perform in a highly complex and changing culture. (97:224) Bruner reported that:

> To instill such attitudes by teaching requires something more than the presentation of fundamental ideas. Just what it takes to bring off such teaching is something about which a great deal of research is needed, but, it would seem that an important ingredient is a sense of excitement about discovery - discovery of regularities of previously unrecognized relations and similarities between ideas, with a resulting sense of self-confidence in one's abilities. (8:20)

Rice (97:224) concluded that attitudes appear to be the outcomes of all of the influences with which the learner comes into contact. The likelihood of a student putting these knowledges into use, as Mager (30:11) theorized, is influenced by his attitudes for or against the subject at hand.

All living is governed by the attitude-value duo. Davis and Wallis (12:232) have stated that:

> We are just beginning to recognize fully the major role that attitudes play in pupils behavior and conduct, and the absolute necessity, therefore, of helping them attain desirable attitudes.

Brownell and Hagman believed:

> Attitudes are an integral part of the state of readiness of an individual and may either exert a directive, compulsive, or inhibitory effect on the individual's pattern of reaction. The fact that one's attitudes influence the way he reacts makes the consideration of attitudes important from an educational standpoint. (7:37)

Since each individual develops a unique "self" through interaction with his environment, Kozman (26:25) felt that through these experiences and responses to them, the individual would develop attitudes which would lead him to respond in certain ways in subsequent experiences. As feelings recur, attitudes are developed; the attitudes then are expressed in behavior patterns particular to the individual. (27:26) Therefore, it should be the primary concern of every educator to insure that the quality of living in the school is meaningful and valuable to every student. (26:157)

Jesse F. Williams believed that the aim of physical education, as part of the total educational process, was:

> . . . to provide skilled leadership and adequate facilities which will afford an opportunity for the individual or group to act in situations that are physically wholesome, mentally stimulating and satisfying, and socially sound. (51:331)

Concomitant to this aim was the development of appreciations, attitudes and ideals. (51:331) Oberteuffer and Ulrich (37:3) reported that the term physical education "signifies education by means of experiences which involve activity and movement, and which also have emotional, behavioral, and intellectual components." They believed that since education is concerned with the completeness of man, the teacher of physical education is in an inescapable position of affecting the whole child. (37:3) By providing activities through the physical education program, the individual may develop desirable attitudes toward himself, his problems, the task at hand, his teammates, his rivals, and authority figures. (35:202) Rice (97:256) believed that, "there is no better field equipped by nature to teach attitudes compatible with democratic theory than the field of physical education." Phenix stated:

> The union of thought, feeling sense and action is the particular aim of the arts of movement, recreation, and physical education. No where else is the coordination of all the components of the living person so directly fostered, nor the resulting activity, so deeply rooted in the unitary existence of the person. (41:166)

Barrow and McGee determined that:

> A student is not physically educated by simply developing motor skills, or knowledge and understandings concerning sports and dance. There is still another aspect of learning inherent in the teaching of these activities. This is the area of emotional and social patterns, including attitudes, appreciations, ideals, and habits. (2:132)

Oberteuffer believed that:

> Through physical education we have the opportunity to bring man into possession of himself, to provide him with the means for enjoying life, to give him friends and fun and the eminent satisfaction of doing something well. The educated life surely holds these things valuable. (92:57)

The leadership in physical education should be concerned with helping the individual see the similarity which exists between situations on the play field and those encountered in ordinary life. (35:204) If the development of democratic relations is important, it depends on democratic attitudes; how the teacher teaches through her objectives could determine many of those attitudes. (26:255) Cowell believed that:

> The forces which interact on the playing fields, in the gymnasium and elsewhere provide for children a steady flow of motivations which gradually shape the personality. In the sense that we, as teachers, have a part in controlling these factors in our culture, we become guardians and developers of personality by influencing the dominant attitudes and goals of that part of our culture related to games, sports, and recreation in general. (59:287)

Barrow and McGee (2:397) reasoned that, "Attitudes are important to the total development of the individual. They are acquired concurrently with activity and often have tremendous influence on performance." They further believed that, "not every student can be a championship performer, but each can develop a healthy attitude toward activity." (2:397)

Attitudes play an important part in whatever performance is achieved in individual cases. P. J. Arnold has written:

> It is the sum total of attitudes and overt ways of the behaving of the individual which are correlatives of his regulative habits, developing values, and

> volitional drives. It is a dynamic concept involving inner creativeness and psycho-cultural determination. But this is a mature state of affairs. The child, as in all educational undertakings, must be helped and guided. (1:104)

The potential in physical education is often underestimated and overlooked. Attitudes such as honesty, fair play, cooperation, and respect for rules are all important in helping the individual become a useful citizen. The carry-over values as well as the immediate values of physical education are realized to a marked extent by the degree to which desirable habits, attitudes, and appreciations can be developed. (7:373) Attitudes, appreciations and ideals are bases of behavior. Since all experience in physical education is involved with behavior, the teacher must not overlook her role in fostering desirable outcomes through her activities. (2:133)

> A careful definition of the objectives desired in relation to habits, attitudes, and appreciations for each educational experience in the program, and an attempt to appraise by the best possible means whether these objectives are achieved, place a significant responsibility on the person who would become an effective teacher of physical education. (7:374)

Attitude Measurement in Physical Education

"Physical education teachers are concerned with the development of positive mental attitudes and they accept this as one of their responsibilities." (42:441) Yet, because attitudes are difficult to measure, it may be easier to measure what a person can do than it is to measure what he wants to do. There has been little done in physical education regarding the

appraisal of attitudes (7:374), and there are relatively few standardized attitude scales or inventories available in published form. (7:448) The attitude survey, itself, can be highly indicative of the reactions of students to the physical education program and its outcomes. (50:73) Scott and French (42:442) have warned that the teacher using an attitude measuring device must use the results for what they are, a summary of the opinions in the sample. Thus, it should be noted that to make generalizations which might be reliable or valid is often difficult when concerned with the behavior patterns of human beings.

Burnstine (1966) has reported on the historical development of attitude research in physical education and may be referred to for a more complete list of attitude measuring devices. (115) She has considered those attitude measures which involved a scaling technique, and which dealt, specifically, with physical education as an activity course within the educational curriculum. She concluded that attitude research in physical education is still of the exploratory nature. While it is a popular area for study, Burnstine felt that a greater cooperation between psychologists and physical educators will enhance progress in understanding attitude implications and help in avoiding duplication of efforts. She felt that through the research reviewed, a favorableness of attitudes toward physical education should be encouraging to the profession. The main problem, she reported, continues to be the development of adequately reliable and valid tools by which attitudes can be measured.

One of the first attitude scales was developed by Carr (1944), and was based on the Thurstone scaling technique. (58) Three areas in physical education were considered: (a) social, (b) personal, and (c) activity. The scale was composed of eighty-four statements and designed for high school girls. Carr's test attempted to determine the relationship between success in physical education and selected attitudes within the three areas previously mentioned.

Nemson (1949) constructed another Thurstone type scale composed of 121 statements designed to determine annoyances with regard to student attitudes toward physical education classes for high school boys. (89)

Wear (1951) developed an attitude scale based on the Likert technique in order to determine the intensity and direction of individuals and the group toward physical education as an activity course. (110) The initial form, given to college men, totaled 120 items. Wear also devised a Short Form of forty items. Statements concerning the physical, social, and safety aspects of physical education were included. Although Wear devised the scale for college men, he felt women could take the inventory as well as high school students.

Plummer (1951) constructed an inventory to determine the factors which influenced the attitudes and interests of college women in physical education. (119) The scale consisted of twenty Likert type statements.

Kappes (1954) proposed an inventory to determine attitudes of college women toward physical education and student

services of a physical education department. (74) A Likert type scale of fifty items was constructed with twenty of those items applying to physical education specifically.

In 1955 Wear devised equivalent forms of an attitude scale in order to determine attitude changes resulting from brief experiences such as listening to a talk, watching a demonstration, viewing a film, or taking part in some activity. (109) Each form consisted of thirty statements regarding four categories of physical education: physical, emotional, social, and general information.

Kneer (1956) adapted the Short Form of Wear's Physical Education Attitude Inventory for high school girls. (115) The vocabulary was simplified, but the original meaning was not changed.

Cutler (1954), using the Likert technique, constructed an attitude scale arranged in four divisions pertaining to physical education:

1. General information regarding physical education.
2. General attitudes toward physical education.
3. Attitudes toward required physical education.
4. Attitudes toward grading and credit for physical education. (60)

The scale was designed for use among college men.

Galloway (1959) developed an inventory to measure the effectiveness of physical education programs regarding the social, psychological, spiritual, and general values of physical education. (116) Based on a combination of Thurstone and Likert techniques, this inventory contained ninety-seven statements and was designed for college women.

Drinkwater (1960) constructed two Likert type forms of thirty-six statements each to be used in determining the attitudes of high school girls toward physical education as a career for women. (66) The statements derived regarded program objectives, personal characteristics of women in the profession, opinions of others relating to the physical education profession, and academic requirements of college curriculums leading to a degree in physical education.

Richardson (1960) used the Thurstone scaling technique to construct two forms of an inventory for determining attitudes for or against physical fitness and exercise. (98) College men and women could be tested with these equivalent forms, each consisting of nineteen statements.

Mercer (1961) revised the Galloway Attitude Inventory for use at the high school level. (118) The scale, designed for girls, tried to ascertain the extent to which attitudes and values have been identified and interpreted to students through high school physical education experiences.

Adams (1963) constructed two scales for determining attitudes toward physical education concerning the general college program. (53) Each scale, administered under either Thurstone or Likert conditions, was designed for college level use, but could be used at a high school level if desired.

There have been few attempts to categorize units within the realm of physical education regarding attitude testing. Attempts to systematically conceptualize, quantify, and assess

values of physical activity have been hampered by the lack of accurate models for mathematical analysis. Since attitudes can be one important indication for understanding the socio-psychological aspects of physical activity, a clarification of these aspects must be made in order to provide an accurate assessment of the attitudes that various sub-groups of people have toward physical activity in educational settings.

A conceptual framework based on a logical analysis of the function of physical activity in contemporary society has been recently attempted by Gerald S. Kenyon. He first constructed a model (1966) characterizing physical activity as a socio-psychological phenomenon. (79:96) He assumed that physical activity could be reduced to a multi-dimensional, six subset domain. (79:98) These domains included:

1. Physical activity as a social experience.
2. Physical activity as an experience of health and fitness.
3. Physical activity as a pursuit of vertigo.
4. Physical activity as an aesthetic experience.
5. Physical activity as a recreational experience.
6. Physical activity as a competitive experience.

He theorized that the entire domain of physical activity was by no means exhausted and that this was merely one approach to characterizing physical activity. (79:104) Kenyon (79:104) felt that although the model had some degree of validity, and attitude scales based on the model could be developed, it was not known if the model could be used as a classification of interests for individuals engaged in physical activity.

Based on this conceptual model, Kenyon, in 1968, developed an attitude scale relying on the semantic differential technique. (117) He added one more dimension, that of "physical activity as an experience of chance," to his model and tried to contrast attitudes toward sport and physical education through a cross-cultural approach. (117:3) He also explored the degree to which certain dispositional and situational variables were able to explain attitudes and involvement in them. (117:49)

Alderman (1970), in use of Kenyon's semantic differential scale without the seventh scale, studied attitudes toward physical activity in championship athletes. (54) He attempted to discover and clarify some of the intrinsic workings of attitude formulation in athletes in comparison to the attitude structure of non-athletes.

Further work by Kenyon (1968) led him to develop an attitude inventory based on the Likert technique of scaling. (80) For areas of concern he decided upon his initial muldidimensional model of physical activity:

1. as a social experience,
2. as a health and fitness experience,
3. as the pursuit of vertigo,
4. as an aesthetic experience,
5. as a cathartic experience,
6. as an ascetic experience. (80:568)

He developed separate scales to be used for college men and college women, each scale containing numbers of statements particular to each sub-domain designated. After subjecting the scales to testing, Kenyon (80:570) arrived at a fifty-nine item

scale for men and a fifty-four item scale for women. With the exception of "physical activity as a cathartic experience," a moderately reliable and valid scale, consisting of a relatively small number of items, was developed for each domain. Reliabilities ranged from .72-.72 (men-women) to .89-.86 (men-women) regarding the six scales, lowest of which was the "social experience scale" and highest being the "pursuit of vertigo scale." Kenyon has reported that validity for all scales, except the "cathartic scale," differentiated between strong and weak preference groups in the predicted direction. He has stated that a thorough analysis of the data has failed to provide a satisfactory explanation of the "cathartic scale" validity. But, comparative measures of central tendency, variability and reliability have indicated a certain instrument stability. Specific reliabilities and validities may be found in Table I on page 41. Kenyon has cautioned that the use of these scales should be restricted to research purposes only. (80:575)

Concerning the nature of the research involved in this particular study, Kenyon's "Six Scales for Assessing Attitude Toward Physical Activity: Form D-College Women" was chosen for use on a pre-test and post-test basis. Further explanation of the inventory will be given in an ensuing chapter.

Summary Statement

In conclusion, Theodore Newcomb has suggested:

> There are many reasons for wanting to know how individuals differ from each other in attitudes, or for wanting to compare one group with another, or for

> wanting to know the distribution of favorable and unfavorable attitudes toward something within one or more specified populations. (34:193)

The problems of attitude and attitude change are among the most vital and timely in this world of rapid change. There is much work left to be done in the qualifying and quantifying of these areas of study, and the educational world cannot help but benefit from the uncovered knowledge. To attempt to unravel the attitude formulation and structure of individuals and groups will yield greater insight to and a better understanding of social reality. Research in the field of cognitive consistency must be pursued by those interested in the search for greater perception of motivational states, beliefs, and actions. Those within and without the educational structure must continue to combine knowledges of complexities concerning humanity's cognitive domain.

CHAPTER IV

PROCEDURE

> A life that does not incorporate some degree of. . . ritual and attitude has no mental anchorage. (28:244)

In determining the procedure for this study, the author felt that a pilot study should be undertaken to clarify some administration techniques regarding the inventory used. Following the conduction of the pilot study, the actual experimental phase of the study was completed in accord with the initial statement and purpose of the problem under investigation.

PILOT STUDY

A pilot study was conducted before the actual study to gain several understandings: to see if the directions of the test were clear; to see how long it would take to administer the test; to establish scoring procedures and time involved in scoring; and to help familiarize the author with the test and any problems encountered with its use.

Selection of Attitude Inventory

Gerald S. Kenyon's "Six Scales for Assessing Attitude Toward Physical Activity" was used for the pilot study as well as the actual experimental study. Form DW for college women was used and may be found in Appendix B. Kenyon reported "physical activity" as being:

> . . . organized (structured), non-utilitarian (in an occupational or maintenance sense), gross human movement, usually manifested in active games, sports, calisthenics, and dance. (79:97)

The scale breakdown, by definition, may be found in Appendix C. Scale breakdown by item number may be found in Appendix D. The scoring table may be found in Appendix E; scores are based on summated ratings. With regard to the scoring table, a priori weightings were corroborated by the writer, the writer's adviser and two physical education graduate students of the University of North Carolina at Greensboro. The four women agreed on the directions of all fifty-four items.

Validity and reliability findings (80) are listed in Table I. The total inventory, containing forms for both college men and women, was obtained from the Library of Congress Photoduplication Service, Document Number 9983. (80:566)

There has been little use of Kenyon's inventory in experimental situations, but the author felt it was a contemporary approach to characterizing physical activity and felt it would serve a worthwhile purpose to attempt to use it in an experimental setting. Keeping in mind Kenyon's warning that "the use of these scales should be restricted to research purposes" (80:573), the author felt it was necessary to use a social-psychological tool in accordance with the perceived nature of the study. Since Kenyon's work is one recent attempt to establish the value of physical activity as an integral facet of our culture, the author decided it would serve the design of this study, but realized findings would be restricted to this study only.

TABLE I

RELIABILITY AND VALIDITY MEASURES
FOR FORM D - WOMEN

Scales	Items	Reliability*	Validity
1. Social experience	8	.68	3.85 < .001
2. Health and fitness	11	.83	6.51 < .001
3. Pursuit of vertigo	9	.86	9.89 < .001
4. Aesthetic experience	9	.87	7.98 < .001
5. Catharsis	9	.79	-3.02** < .01
6. Ascetic experience	8	.74	7.02 < .001

*Based on a priori weights one through seven.
**A careful analysis of the data has failed to provide an explanation for this finding. Further study of this dimension is needed.

Selection of Subjects for Pilot Study

The subjects (N = 14) were those college women enrolled in one body mechanics class taught by the writer. The women were full-time general college students at the University of North Carolina at Greensboro.

Treatment of the Pilot Study

It was perceived that between thirty-five and forty minutes were needed for one administration of the inventory. Directions seemed to be clear and no question was made of any of the statements.

Scoring of the entire set of tests (N = 14), when using a hand calculator, took approximately two hours. Some basic statistical work was attempted with the scores (mean, median, standard deviation), but the findings had no bearing on the experimental section of this study. The pilot study was attempted just to help familiarize the author with understanding a set of scores and with the administration of the chosen test.

CONDUCT OF EXPERIMENT

It was the purpose of this study to compare the effects of planned discussion concerning some of the concepts and values of physical education as opposed to the effects of no structured discussion within physical education classes. An experimental group underwent the discussion technique in addition to the teaching of the planned skill unit, while a

control group underwent only the teaching of a unit of skill work with no planned discussion of physical education values.

Selection of Inventory

In order to determine the effects of discussion and no-discussion, Kenyon's "Six Scales for Assessing Attitude Toward Physical Activity: Form D - College Women" was used. The inventory was given on a pre-test and a post-test basis. The experimental factors of discussion and no-discussion intervened between administrations of the inventory.

Selection of Subjects

The control group consisted of sixteen college women, one of whom did not complete the post-test, entered in a body mechanics class at the University of North Carolina at Greensboro. The class met on a Tuesday-Thursday sequence from 10:15 A.M. to 10:50 A.M.

The experimental group consisted of fifteen college women, all of whom completed the pre-test and post-test administrations. These women were enrolled in a body mechanics class at the University of North Carolina at Greensboro, which met on a Monday-Wednesday sequence from 4:15 P.M. to 4:50 P.M.

Both body mechanics classes were established for the general college student. All subjects had varying academic and physical education backgrounds and were from freshman through senior class levels.

Administration of Pre-Test

Both groups were met by the writer on the first day of each class respectively (Spring Semester - 1970). The unit outline only was explained; nothing was said concerning the experimental nature of this study in order to alleviate influences on taking the inventory. During the second class period of the semester, the inventory was administered to the control group and the experimental group. See Table II.

Experimental Conditions

For the next six class periods both the control and experimental groups were taught the same unit in the concepts and skills of yoga. Lesson plans may be found in Appendix A. An attempt was made to cover equal amounts of material in both the control and experimental groups for each lesson planned.

The writer proceeded at a slower pace repeating and practicing skills in the control group. The entire class period in the control group situation was spent in teaching concepts and skills of yoga. No planned discussion was held and any discussion was incidental, succinct, and unstructured.

The experimental group was presented the same amount of material as the control group, but teaching was done at a faster pace and repetition of skill was less than that of the control group. Because of this pace, approximately ten minutes could be allotted to planned discussion situations at the end of every lesson. The circumstances and format of these discussion situations may be found in Appendix A. It was attempted

TABLE II

SCHEDULE OF PRE-TEST ADMINISTRATION

Group	Date	Number	Time	Place
Control	2/5/1970	16	10:15 A.M.	Room 22 Coleman UNC-G
Experi-mental	2/4/1970	15	4:15 P.M.	Room 22 Coleman UNC-G

in every instance to make as smooth a transition as possible from the yoga situation to a discussion of more generalized concepts concerning physical education. The emphasis in discussing any topic was placed on the ultimate positive value of physical education, as well as consideration of physical activity as an integral part of the American culture. Even though a specific topic and technique were planned for each of the six lessons, it was almost impossible to anticipate or accurately predict the ultimate direction of the discussion.

Upon completion of the six lesson time period, the writer did feel that approximately the same amount of material had been taught to both groups regarding the concepts and skills of the yoga unit.

Concerning the nature of the discussion sessions, the author felt pertinent concepts emerged regarding the statements presented. Each situation is presented specifically in Appendix A.

The first discussion situation was concerned with the topic of vertigo experiences as becoming more prevalent in the American culture. The discussion was extremely teacher-centered and teacher-directed. Emerging from the group, though, seemed to be a feeling that Americans need excitement and seek activities that suggest it. Physical education, as indicated by the group, is not solely responsible for introducing students to vertigo activities, but should assume more responsibility in this area. The students seemed particularly concerned with

activities such as snow and water skiing, scuba and skin diving, surfing, and sailboat racing. They indicated a desire for institution of some of these courses in the physical education curriculum.

In the second group discussion situation, which was also teacher-centered and teacher-directed, the class dealt with the value that the American society places on a particular kind of physique. Although the students indicated that physical education had the opportunity of introducing them to concepts concerning body shape and effective movement concepts, the class strongly resisted the suggestion of abandoning the sport-game basis of physical education for a movement-body concept basis.

In the third discussion situation, the class was divided into small groups of three and four people. The question under discussion dealt with the American culture and its seemingly strong concern for sport activities. Recorders in each group reported back to the class some of the ideas discussed within each small group. The author sensed that all groups perceived sport in a cathartic and recreational sense, in that release of tension through some means was important for Americans even if this meant many spectators and few players. Since sport was an important outlet for a large number of people, the concept emergent seemed to be that sport does claim a rightful place in the society.

The fourth discussion situation also concentrated on small groups working on a particular problem. Magazines were given to all students and each student was instructed to tear

out every page containing an indication of sport activity from the magazine. The loose pages were to be placed together within each small group and then discussion was to ensue as to the meaning of how sport concepts were used by the textual media. At this point, the author attempted a planned persuasive message technique of indicating why so much space was devoted to sport in the written media. Strong resistance to the author's presentation was evidenced, since the author apparently pushed the concepts beyond a tenable point with regard to the students understandings and beliefs. The group idea seemed to be that there was no unusually large amount of printed material concerning sport in magazines and no particular significance should be attached to the material presented. This feeling was expressed in spite of the fact that a large percentage of the articles and advertisements contained in the magazines seemed to allude to sport in some way. The author perceived great resistance during this session and believes that the nature of both the communicator and communication presented aversive stimuli to the students involved.

The fifth and sixth sessions were structured as panel situations in which students were asked to respond in a positive or negative manner as specifically indicated by the teacher. The author felt that these two sessions were very successful in that intense thought seemed to be given before each answer and many responses appeared not to be to peer or respondent liking due to the nature of the forced structure. For example, if a

student were directed to answer in a negative direction only concerning the value of physical education in the school curriculum, it seemed that the student had a difficult time trying to formulate an answer, even though she was instructed not to be concerned if the statement differed from her feeling on the subject.

The fifth session centered on the concept of physical education maintaining a valid place in the school curriculum. The author felt that when the students were forced to the point of a biased and highly subjective answer, they were then forced to strive for some personal objectivity concerning the situation. In other words, if the student were directed to answer in a positive manner concerning the value of physical education in the curriculum, she might not necessarily have held an extremely positive attitude in accord with her directed answer and at that point had to make some decision as to her own stand on the issue rather than that which she was forced to make. The author felt that by forcing the issue one way and then the other, the students seemed to feel ultimately that physical education was of some value in the school curriculum and should remain a part of it.

The sixth session followed the same format and the author felt that the situation proceeded along a direction similar to that of the preceding session. The idea under consideration was that of reducing personal prejudices and biases on the playing field through sport activities. The conclusion seemed to be that physical education could contribute to alleviating some

biases and that it could be extremely valuable for that reason. Again the author felt an intensity of interest and concern, and perceived that these final two sessions were the most effective of the six attempts in bringing the students to consider their own attitudes on the subjects in question.

Administration of Post-Test

Immediately following the end of the teaching unit, the inventory was again used on a post-test basis for both the experimental and control groups. See Table III.

Administration of Teacher-Constructed Test

A secondary problem within this study was to determine if the manner in which an equal amount of material was taught would affect scores on a knowledge test concerning that material. In other words, did the amount of time spent in the experimental group on discussion affect the knowledge concepts of yoga in comparison to a class where complete time was spent on yoga techniques and knowledges?

The writer constructed a twenty-five item, one hundred point, multiple-choice test based on the material presented in the yoga unit only. See Appendix F for the items and Appendix G for the answers. There is no established validity of the test and it was used only for purposes of this research study. All questions were based on material presented during the six lesson time period.

TABLE III

SCHEDULE OF POST-TEST ADMINISTRATION

Group	Date	Number	Time	Place
Control	3/3/1970	15	10:15 A.M.	Room 22 Coleman UNC-G
Experi-mental	3/2/1970	15	4:15 P.M.	Room 22 Coleman UNC-G

The administration of this test to both classes followed the period of post-testing with the attitude inventory. See Table IV.

Summary Statement Regarding Experimental Condition

An attempt was made throughout administration of tests and teaching of all lessons to keep as many variables as possible in a stable condition, with only the one condition of structured discussion being allowed to vary between the two groups. In working with human behavior and human variables, this, of course, was not always accomplished; but the author felt that both groups were treated on an equal basis as possible with the exception of the discussion periods. The entire study last for approximately a five week period. The teaching of the yoga skill and concept unit as well as the discussion and no-discussion conditions, took place in the body mechanics room of Coleman Gymnasium at the University of North Carolina at Greensboro.

STATISTICAL TREATMENT

Upon completion of scoring all pre-tests and post-tests for both the experimental and control groups, a two-by-two factorial analysis of variance technique was used to determine differences in the treatments of the groups. The raw scores concerning all attitude inventory administrations may be found in Appendix H.

A Fisher "t" test of significance for small uncorrelated groups was used to determine the difference between means of the

TABLE IV

ADMINISTRATION SCHEDULE OF TEACHER-CONSTRUCTED TEST

Group	Date	Number	Time	Place
Control	3/5/1970	15	10:15 A.M.	Room 22 Coleman UNC-G
Experi-mental	3/4/1970	15	4:15 P.M.	Room 22 Coleman UNC-G

control group's scores and the experimental group's scores for the teacher-constructed test regarding knowledges concerning yoga. Raw scores for these tests may be found in Appendix I.

CHAPTER V

ANALYSIS AND INTERPRETATION OF DATA

> Measure is a guess the mind makes about itself: gestures and glimpses worked into confidence. (11:5)

It was the primary purpose of this study to determine the effects on attitudes towards physical education of planned discussion within one class in contrast to no planned discussion within another class. Fifteen women from the University of North Carolina at Greensboro comprised the experimental group, which encountered the condition of planned discussion. Fifteen women comprised the control group which encountered the condition of no planned discussion; all women were general college students at the University of North Carolina at Greensboro. All subjects were full-time college students and enrolled in classes in body mechanics. A unit in yoga concepts and skills was taught to both groups with the experimental group being subjected to the variable of a ten minute discussion period following each lesson.

The experiment lasted for six lessons and Kenyon's "Six Scales for Assessing Attitude Toward Physical Activity" was used on two occasions as pre-test and post-test situations to determine attitude standings. All teaching was done in the body mechanics room in Coleman Gymnasium at the University of North Carolina at Greensboro.

A series of null hypotheses were formulated and a significance of difference at the five per cent level of confidence was considered an acceptable standard at which to find the hypotheses tenable or not tenable. The null hypotheses formulated stated that there is no significant difference:

1. Between scores of the experimental and control groups on the pre-test.
2. Between scores of the experimental and control groups on the post-test.
3. Between total group scores from pre to post-test of the control group.
4. Between total group scores from pre to post-test of the experimental group.

To determine findings regarding all four hypotheses a two-by-two factorial analysis of variance was used. The results appear in Table V.

Discussion

The analysis of variance technique indicated that no significant differences could be found between group scores, within group scores, and between treatments on a pre-test, post-test basis. Therefore, all null hypotheses were found tenable. The analysis of variance technique showed that the two groups were statistically equal at the beginning of the experiment in terms of attitudinal state. The analysis of variance technique also indicated that the groups were statistically equal at the end of the experiment. Consequently, the

TABLE V

TWO-BY-TWO FACTORIAL ANALYSIS OF VARIANCE TO DETERMINE SIGNIFICANT DIFFERENCE FROM PRE TO POST-TEST IN EXPERIMENTAL AND CONTROL GROUPS

Source	Ss	df	MS	F*
Between groups	1647.98	1	1647.98	2.5881
Between treatments	479.403	1	479.403	.7529
Interaction	1459.901	1	1459.901	2.2928
Within groups	36293.706	57	636.7317	
Total	39880.99	60		

* No significant differences found at the five per cent level of confidence.

discussion versus no discussion methods seemed to have no significant bearing on attitude scores. Based on the research reviewed, the author suggested a rationale to explain this conclusion.

A certain number of speculations may be proposed at this time concerning the outcome of the statistical treatment. As Newcomb (91) might believe, the students existing attitudes could have been maintained by completely avoiding contemplation of the information presented during the discussion sessions. The source and nature of the communication might not have been believable as Sherif (46) proposed in his concepts of attitude maintenance. Rosenberg (100) has spoken of a "tolerance limit" having to be met before change will occur. This level might not have been reached during this particular study. Osgood (93) has indicated that if no psychological stress is encountered, no change will occur. Doob (64:565) felt that, "if there is no change in attitude, this often means the attitude is more certain and more intense." There is also support of the statement "smaller discrepancy, higher change." (46:161) The author felt that regarding the nature of the communication, there might have been too small a discrepancy between held concepts and proposed concepts to make a difference in the attitudinal state. The author realized that the aforementioned statements are only possibilities of what actually did occur within the study. Moreover, frames of reference, environmental conditions, and human variables could not be discounted concerning the speculation.

The secondary purpose of the study was to determine if the effect of the discussion or no-discussion method might have produced a significant difference on scores obtained on a teacher-constructed, multiple-choice test. The objective test was constructed on the basis of only the material presented during the unit on yoga concepts and skills. The test was administered following the post-test situation concerning the attitude inventory. A Fisher "t" test was used to determine if there was a significant difference between scores obtained in the control group as to scores obtained in the experimental group.

A null hypothesis was formulated and a significance of difference at the five per cent level of confidence was again considered an acceptable standard at which to reject or accept the hypothesis. The null hypothesis presented stated that:

> There is no significant difference between scores obtained on the teacher constructed test from the control group to experimental group.

The Fisher "t" test indicated that no significant difference was found (Table VI), therefore, the null hypothesis was accepted as stated. This statistical technique indicated that both groups were equated as to the knowledge concepts presented on the test, which was constructed on the basis of the six lesson unit only. These findings were based on the difference between mean scores of both groups. Even though ten minutes was spent on discussion in every class meeting of the experimental group, when measured by an author-constructed knowledge test the

TABLE VI

THE "t" TEST OF SIGNIFICANT DIFFERENCE BETWEEN MEAN SCORES ON THE TEACHER-CONSTRUCTED TEST IN CONTROL AND EXPERIMENTAL GROUPS

Group	N	M	Md	df	"t"*
Control	15	64.8			
			.5334	28	.0446
Experi-mental	15	64.266			

* No significant difference found at the five per cent level of confidence.

comprehension of the experimental class was no different from that of the control group, which spent the entire class period learning yoga skills and concepts.

CHAPTER VI

SUMMARY AND CONCLUSIONS

All melody is a series of attitudes.
(28:192)

It was the primary purpose of this study to determine if planned discussion in a physical education class would affect attitude toward physical education as compared to the attitudinal state of a class encountering no planned discussion of physical education. A secondary problem within the study attempted to determine the difference in skill knowledges gained between the group experiencing structured discussion and that group experiencing no structured discussion.

Two body mechanics classes at the University of North Carolina at Greensboro were chosen for the study. Fifteen full-time women students were enrolled in each class, one class serving as a control group, the other as an experimental group. Each class met twice a week for approximately thirty-five to forty minutes. All teaching was done in the body mechanics room in Coleman Gymnasium at the University of North Carolina at Greensboro.

Kenyon's "Six Scales for Assessing Attitude Toward Physical Activity" was chosen as the attitude inventory and was used on a pre-test and post-test basis to investigate the

primary problem of the study. The inventory was designed for college women respondents. A pilot study was done prior to the actual study in order to assist the author with administration facets of the inventory. A teacher-constructed multiple-choice test was administered following each post-test session in order to investigate the knowledge regarding the subject of yoga, which was taught to both classes in different time sequences.

The study lasted for nine class periods: two for attitude testing, six for instruction, one for unit knowledge testing. Both groups were taught the same unit in yoga concepts and skills for six lessons. The control group spent all class time involved in the yoga unit only. The experimental group spent all but ten minutes of each of the six periods involved in the yoga unit. The final ten minutes of every lesson was spent in discussing some aspect of physical education. Group discussion and persuasive message techniques were used and every topic was planned for specifically.

Kenyon's inventory was given before and after the six lesson unit to determine what differences, if any, might be revealed based on the experimental treatment. Following the attitudinal post-test session, a multiple-choice test, covering only the material presented during the yoga skill and concept section of the time, was administered to determine what differences in scores, if any, might have occurred due to amounts of time spent in each group regarding the unit material.

Concerning the attitude inventory, a two-by-two factorial analysis of variance technique was used to determine differences. The following results were obtained.

1. There was no significant difference between scores of the experimental and control groups on the pre-test.
2. There was no significant difference between scores of the experimental and control groups on the post-test.
3. There was no significant difference between total group scores from pre to post-test of the control group.
4. There was no significant difference between total group scores from pre to post-test of the experimental group.

All results were obtained using the five per cent level of confidence.

Regarding the teacher-constructed test, a Fisher "t" test of significance was used to determine differences. The following result was obtained:

There was no significant difference between scores obtained on the teacher-constructed test from the control group to the experimental group.

Again, the five per cent level of confidence was used.

Within the limits of this study, the following conclusions have been drawn:

1. There appeared to be no significant change in attitude toward physical education due to either planned discussion or no planned discussion of physical education within the classes tested.
2. There appeared to be no aversive effects concerning the knowledge aspect of the teaching unit within the experimental group, even though ten minutes of every period was spent discussing concepts other than those of the unit *per se*.

Summary Statement

The author felt that in addition to the factors mentioned in the interpretation of the statistical treatment of this study, other influences might have affected the outcome of the experiment. The amount of time spent at the end of each lesson might have been too limited and the duration of the study might have been too small. The use of an attitude inventory that did not allow a wide enough latitude for acceptance or rejection of statements could have been pertinent to the outcome of the study. The author felt that one severe limiting factor of the study was the time of day at which the experimental group met. The lateness of the class meetings seemed to affect the interest levels in particular. With regard to the discrepancy factor, the author felt that introduction of the concepts chosen for communication might have been sufficiently close to the attitudinal states of the students involved such that no change in attitude was necessary from pre to post-test.

However, the author believes that planned discussion can maintain an important place in the physical education class without detracting from other teaching objectives. Attitudinal change cannot seemingly be effected over a very short space of time, but, giving consideration to the length of the school year or semester, it appears that this longer time block might allow for some valuable teaching moments with regard to attitude toward physical education if planning were done carefully for the amount of time involved in each class period. As we come to realize the value of positive attitudes toward the environment of which we are a part, we must look to our teaching approaches and decide how it is that we can best effect the kinds of objectives teachers and students hope to achieve.

BIBLIOGRAPHY

BIBLIOGRAPHY

A. BOOKS

1. Arnold, P. J. Education, Physical Education and Personality Development. London: Heinemann Educational Books Ltd., 1968.

2. Barrow, Harold M., and Rosemary McGee. A Practical Approach to Measurement in Physical Education. Philadelphia: Lee and Febiger, 1964.

3. Bennis, Warren G., Kenneth D. Benne, and Robert Chin. The Planning of Change. New York: Holt, Rinehart, and Winston, Inc., 1969.

4. Berman, Louise M. New Priorities in the Curriculum. Columbus, Ohio: Charles E. Merrill Publishing Company, 1968.

5. Brehm, Jack W., and Arthur Cohen. Explorations in Cognitive Dissonance. New York: John Wiley and Sons, Inc., 1962.

6. Brown, Roger. (ed.). Social Psychology. New York: The Free Press, 1965.

7. Brownell, Clifford L., and E. Patricia Hagman. Physical Education - Foundations and Principles. New York: McGraw-Hill Book Company, Inc., 1951.

8. Bruner, Jerome S. The Process of Education. New York: Vintage Books, 1960.

9. _____. Toward a Theory of Instruction. New York: W. W. Norton and Company, Inc., 1966.

10. Burr, Gray. A Choice of Attitudes. Middletown, Connecticut: Wesleyan University Press, 1969.

11. Chasin, Helen. Coming Close. New Haven: Yale University Press, 1968.

12. Davis, Elwood C., and Earl L. Wallis. Toward Better Teaching in Physical Education. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1961.

13. Dechanet, J. M. Yoga in Ten Lessons. New York: Harper and Row, Publishers, 1965.

14. Dinkmeyer, Don, and Rudolf Dreikurs. Encouraging Children to Learn: The Encouragement Process. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1963.

15. Feldman, Shel. Cognitive Consistency. New York: Academic Press, 1966.

16. Ferster, C. B., and Mary Carol Perrott. Behavior Principles. New York: Appleton-Century-Crofts, 1968.

17. Frost, Joe L., and G. Thomas Rowland. Curricula for the Seventies. Boston: Houghton Mifflin Company, 1969.

18. Hare, A. Paul, Edgar F. Borgatta, and Robert Bales (eds.). Small Groups. New York: Alfred A. Knopf, 1965.

19. Heider, Fritz. The Psychology of Interpersonal Relations. New York: John Wiley and Sons, Inc., 1958.

20. Homans, George C. The Human Group. New York: Harcourt, Brace and World, Inc., 1950.

21. Hooper, Walter (ed.). Poems: C. S. Lewis. New York: Harcourt, Brace and World, Inc., 1964.

22. Hopkins, Terence K. The Exercise of Influence in Small Groups. Totowa, New Jersey: The Bedminster Press, 1964.

23. Hovland, Carl I., and Irving L. Janis. Personality and Persuasibility. New Haven, Connecticut: Yale University Press, 1959.

24. _____, Irving L. Janis, and Harold H. Kelley. Communication and Persuasion. New Haven, Connecticut: Yale University Press, 1953.

25. _____, and Milton J. Rosenberg (eds.). Attitude Organization and Change. New Haven, Connecticut: Yale University Press, 1960.

26. Kozman, Hilda C. (ed.). Developing Democratic Human Relations. First yearbook. Washington, D. C.: American Association for Health, Physical Education, and Recreation, 1951.

27. _____, Rosalind Cassidy, and Chester O. Jackson. Methods in Physical Education. Philadelphia: W. B. Saunders Company, 1948.

28. Langer, Susanne K. Philosophy in a New Key. New York: The New American Library, Inc., 1951.

29. Lindzey, Gardner, and Elliott Aronson (eds.). The Handbook of Social Psychology. Vol. III. Reading, Massachusetts: Addison-Wesley Publishing Company, 1968.

30. Mager, Robert F. Developing Attitude Toward Learning. Palo Alto, California: Fearon Publishers, 1968.

31. Metheny, Eleanor and others. This is Physical Education. Washington, D. C.: American Association for Health, Physical Education, and Recreation, 1965.

32. Morris, Van Cleve. Existentialism in Education. New York: Harper and Row, Publishers, 1966.

33. Murchison, Carl (ed.). A Handbook of Social Psychology. Worcester, Massachusetts: Clark University Press, 1935.

34. Newcomb, Theodore. Social Psychology. New York: The Dryden Press, 1950.

35. Nixon, Eugene W., and Frederick W. Cozens. An Introduction to Physical Education. Philadelphia: W. B. Saunders Company, 1959.

36. Nixon, John E., and Ann E. Jewett. Physical Education Curriculum. New York: The Ronald Press Company, 1964.

37. Oberteuffer, Delbert, and Celeste Ulrich. Physical Education. Fourth edition. New York: Harper and Row, Publishers, 1970.

38. Olmsted, Michael S. The Small Group. New York: Random House, Inc., 1959.

39. Osgood, Charles E., George J. Suci, and Percy H. Tannenbaum. The Measurement of Meaning. Urbana, Illinois: University of Illinois Press, 1957.

40. Phelan, Nancy, and Michael Volin. Yoga for Women. New York: Harper and Row, Publishers, 1963.

41. Phenix, Philip H. Realms of Meaning. New York: McGraw-Hill Book Co., 1964.

42. Scott, M. Gladys, and Esther French. Measurement and Evaluation in Physical Education. Dubuque, Iowa: Wm. C. Brown Company Publishers, 1959.

43. Shaw, Marvin, and Jack M. Wright. Scales for the Measurement of Attitudes. New York: McGraw-Hill Book Company, 1967.

44. Shepherd, Clovis R. Small Groups. San Francisco, California: Chandler Publishing Company, 1964.

45. Sherif, Muzafer. Social Psychology. New York: Harper and Brothers Publishers, 1948.

46. _____, and Carolyn Sherif (eds.). Attitude, Ego-Involvement and Change. New York: John Wiley and Sons, Inc., 1967.

47. Thurstone, Louis L. The Measurement of Values. Chicago: The University of Chicago Press, 1959.

48. _____, and E. J. Chave. The Measurement of Attitude. Chicago: The University of Chicago Press, 1929.

49. Webster, Randolph W. Philosophy of Physical Education. Dubuque, Iowa: Wm. C. Brown Company Publishers, 1965.

50. Willgoose, Carl E. The Curriculum in Physical Education. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1969.

51. Williams, Jesse F. The Principles of Physical Education. Philadelphia: W. B. Saunders Company, 1964.

52. Zaleznik, Abraham, and David Moment. The Dynamics of Interpersonal Behavior. New York: John Wiley and Sons, Inc., 1964.

B. PERIODICALS

53. Adams, R. S. "Two Scales for Measuring Attitude Toward Physical Education," Research Quarterly, 34:91-94, March, 1963.

54. Alderman, Richard R. "A Sociopsychological Assessment of Attitude Toward Physical Activity in Changing Athletes," Research Quarterly, 41:1-9, March, 1970.

55. Brenton, James E. "Deriving an Attitude Scale from Semantic Differential Data," Public Opinion Quarterly, 25:289-95, Summer, 1961.

56. Cantril, Hadley. "The Intensity of an Attitude," Journal of Abnormal and Social Psychology, 41:129-135, April, 1946.

57. Carlson, Earl R. "Attitude Change Through Modification of Attitude Structure," Journal of Abnormal and Social Psychology, 52:256-61, March, 1956.

58. Carr, Martha G. "The Relationship Between Success in Physical Education and Selected Attitudes Expressed by High School Freshmen Girls," Research Quarterly, 16:176-191, October, 1945.

59. Cowell, Charles C. The Contributions of Physical Activity to Social Development," Research Quarterly, 31:286-306, May, 1960.

60. Cutler, Russell K. "Attitudes of Male Students Toward Physical Education in Selected Junior Colleges of California," Dissertation Abstracts, 14:2279-2280, February-June, 1959.

61. Diab, Lufty N. "Reaction to a Communication as a Function of Attitude - Communication Discrepancy," Psychological Reports, 18:767-774, June, 1966.

62. _____. "Some Limitations of Existing Scales in the Measurement of Social Attitudes," Psychological Reports, 17:427-30, October, 1965.

63. _____. "Studies in Social Attitudes III: Attitude Assessment Through the Semantic Differential Technique," Journal of Social Psychology, 67:303-14, December, 1965.

64. Doob, Leonard. "Some Factors Determining Change in Attitude," Journal of Abnormal and Social Psychology, 35:549-65, October, 1940.

65. _____. "The Behavior of Attitudes," Psychological Review, 54:135-56, May, 1947.

66. Drinkwater, Barbara L. "Development of an Attitude Inventory to Measure the Attitude of High School Girls Toward Physical Education as a Career for Women," Research Quarterly, 31:575-80, December, 1960.

67. Edwards, Allen L., and Kathryn C. Kenny. "A Comparison of the Thurstone and Likert Technique of Attitude-Scale Construction," Journal of Applied Psychology, 30:72-83, February, 1946.

68. _____, and Franklin P. Kilpatric. "A Technique for the Construction of Attitude Scales," Journal of Applied Psychology, 32:374-84, August, 1948.

69. Festinger, Leon. "Behavioral Support for Opinion Change," Public Opinion Quarterly, 28:404-17, Fall, 1964.

70. Guttman, Louis. "A Basis for Scaling Qualitative Data," American Sociological Review, 9:139-50, April, 1944.

71. Heider, Fritz. "Attitudes and Cognitive Organization," Journal of Psychology, 21:107-112, January, 1946.

72. _____. "Social Perception and Phenomenal Causality," Psychological Review, 51:358-374, November, 1944.

73. Jordan, Nehemiah. "Cognitive Balance, Cognitive Organization and Attitude Change: A Critique," Public Opinion Quarterly, 27:123-32, Spring, 1963.

74. Kappes, Eveline E. "Inventory to Determine Attitudes of College Women Toward Physical Education and Student Services of the Physical Education Department," Research Quarterly, 25:429-438, December, 1954.

75. Katz, Daniel. "Attitude Change: Preface," Public Opinion Quarterly, 24:i-iii, Summer, 1960.

76. _____. "The Functional Approach to the Study of Attitudes," Public Opinion Quarterly, 24:163-204, Summer, 1960.

77. Kelly, Ellen. "Attitudes Are Important," The Physical Educator, 12:86-88, October, 1955.

78. Kelman, Herbert C. "Processes of Opinion Change," Public Opinion Quarterly, 25:57-78, Spring, 1961.

79. Kenyon, Gerald S. "A Conceptual Model for Characterizing Physical Activity," Research Quarterly, 39:96-105, March, 1968.

80. _____. "Six Scales for Assessing Attitude Toward Physical Activity," Research Quarterly, 39:566-74, October, 1968.

81. Kogan, Nathan, and Renato Taguiri. "Interpersonal Preference and Cognitive Organization," Journal of Abnormal and Social Psychology, 56:113-16, January, 1958.

82. Likert, Rensis. "A Technique for the Measurement of Attitudes," Archives of Psychology, 22:5-55, June, 1932.

83. Maccoby, Nathan, and Eleanor E. Maccoby. "Homeostatic Theory in Attitude Change," Public Opinion Quarterly, 25:538-45, Winter, 1961.

84. Mayhew, Lewis B., and Walker H. Hill. "Attitude Inventories," Journal of Higher Education, 21:375-79, October, 1950.

85. McCroskey, James C., Samuel Prichard, and William E. Arnold. "Attitude Intensity and the Neutral Point on Semantic Differential Scales," Public Opinion Quarterly, 31:642-5, Winter, 1967-68.

86. McCue, Betty Foster. "Constructing an Instrument for Evaluating Attitudes Toward Intensive Competition in Team Games," Research Quarterly, 24:205-209, May, 1953.

87. McGee, Rosemary. "Comparison of Attitudes Toward Intensive Competition for High School Girls," Research Quarterly, 27:60-73, March, 1956.

88. Mehling, Reuben. "A Simple Test for Measuring Intensity of Attitudes," Public Opinion Quarterly, 23:576-78, Winter, 1959-60.

89. Nemson, Edward. "Specific Annoyances in Relation to Student Attitude in Physical Education Classes," Research Quarterly, 20:336-47, October, 1949.

90. Newcomb, Theodore. "An Approach to the Study of Communicative Acts," Psychological Review, 60:393-404, November, 1953.

91. _____. "Persistence and Regression of Changed Attitudes: Long Range Studies," Journal of Social Issues, 19:3-14, October, 1963.

92. Oberteuffer, Delbert. "Some Contributions of Physical Education to an Educated Life," Journal of Health, Physical Education, and Recreation, 16:3-5, January, 1945.

93. Osgood, Charles E. "Cognitive Dynamics," Public Opinion Quarterly, 24:341-65, Summer, 1960.

94. _____. "Semantic Differential Technique in the Comparative Study of Cultures," American Anthropologist, 66:171-200, June, 1964.

95. _____, and Percy H. Tannenbaum. "The Principle of Congruity in the Prediction of Attitude Change," Psychological Review, 62:42-55, January, 1955.

96. Oxendine, Joseph B. "Social Development: The Forgotten Objective," Journal of Health, Physical Education, and Recreation, 37:23-4, May, 1966.

97. Rice, Sidney. "Attitudes and Physical Education," Journal of Health, Physical Education, and Recreation, 17:224, April, 1946.

98. Richardson, Charles E. "Thurstone Scale for Measuring Attitudes of College Students Toward Physical Fitness and Exercise," Research Quarterly, 31:638-643, December, 1960.

99. Rokeach, Milton. "Attitude Change and Behavioral Change," Public Opinion Quarterly, 30:529-50, Winter, 1966-67.

100. Rosenberg, Milton J. "A Structural Theory of Attitude Dynamics," Public Opinion Quarterly, 24:318-40, Summer, 1960.

101. Schopler, John, Charles Gruder, and others. "Endurance of Change Induced by a Reward and a Coercive Power Figure," Human Relations, 20:301-9, August, 1967.

102. Scott, M. Gladys. "The Contributions of Physical Activity to Psychological Development," Research Quarterly, 31:307-320, May, 1960.

103. Scott, Phebe M. "Attitudes Toward Athletic Competition in Elementary Schools," Research Quarterly, 24:352-61, October, 1953.

104. Smith, Judith L., and Margaret F. Bozymowski. "Effects of Attitude Toward Warm-Ups on Motor Performance," Research Quarterly, 36:78-85, March, 1965.

105. Summers, David A. "Conflict, Compromise, and Belief Change in a Decision Making Task," Journal of Conflict 12:215-21, June, 1968.

106. Sykes, A. J. M. "Myth and Attitude Change," Human Relations, 18:323-37, November, 1965.

107. Thurstone, Louis L. "Attitudes Can Be Measured," American Journal of Sociology, 33:529-54, January, 1928.

108. Wang, Charles. "Suggested Criteria for Writing Attitude Statements," Journal of Social Psychology, 3:367-373, February 19, 1932.

109. Wear, Carlos L. "Construction of Equivalent Forms of and Attitude Scale," Research Quarterly, 26:113-119, March, 1955.

110. _____. "The Evaluation of Attitude Toward Physical Education as an Activity Course," Research Quarterly, 22:114-126, March, 1951.

111. Wessel, Janet A., and Richard Nelson. "Relationship Between Strength and Attitudes Toward Physical Education Activity Among College Women," Research Quarterly, 35:562-569, December, 1964.

112. Whittaker, James O. "Opinion Change as a Function of Communication - Attitude Discrepancy," Psychological Reports, 13:763-772, December, 1963.

113. Wright, Paul H. "Attitude Change Under Direct and Indirect Interpersonal Influence," Human Relations, 19:199-211, May, 1966.

114. Zajonc, Robert B. "The Concepts of Balance, Congruity, and Dissonance," Public Opinion Quarterly, 24:280-296, Summer, 1960.

C. UNPUBLISHED MATERIALS

115. Burnstine, Deidre. "An Historical and Interpretive Survey of Attitudes and Attitude Research in Physical Education." Unpublished Master's thesis, University of North Carolina at Greensboro, 1966.

116. Galloway, June P. "An Exploration of the Effectiveness of Physical Education Experiences in the Development of Attitudes of College Women Toward Sociological, Psychological, and Spiritual Values as Related to These Experiences." Unpublished Master's thesis, Woman's College of the University of North Carolina at Greensboro, 1959.

117. Kenyon, Gerald S. "Values Held for Physical Activity by Selected Urban Secondary Students in Canada, Australia, England and the United States." United States Office of Education, Contract S-376, February, 1968.

118. Mercer, Emily Louise. "An Adaptation and Revision of the Galloway Attitude Inventory for Evaluating the Attitudes of High School Girls Toward Psychological, Moral-Spiritual, and Sociological Values in Physical Education Experiences." Unpublished Master's thesis, Woman's College of the University of North Carolina at Greensboro, 1961.

119. Plummer, Tomi Carolyn. "Factors Influencing the Attitudes and Interests of College Women in Physical Education." Unpublished Doctoral dissertation. State University of Iowa, Iowa City, 1952. Microcard.

APPENDIX A

Lesson Plans and Discussion Situations

LESSON PLANS AND DISCUSSION SITUATIONS

Unit in Yoga Concepts and Skills

Lesson I: 2/9/1970 and 2/10/1970

Breathing techniques
Salute
Triangle I
Spinal twist
Torso flex
Curling leaf
Triangle II

Lesson II: 2/11/1970 and 2/12/1970

Salute fall
Triangle I
Curling leaf
Tree
Knee flex
Forward bend
Kneeling stretch
Head turns

Lesson III: 2/16/1970 and 2/17/1970

Torso flex
Forward bend
Knee twist
Angle stretch
Center sit
Egg sit
Bow

Lesson IV: 2/18/1970 and 2/19/1970

Angle stretch
Hurdle stretch
Back press
Straight leg twist
Bent leg twist
Bow
Lunge

Lesson V: 2/23/1970 and 2/24/1970

Budding lotus
Sit tight
Cobra
Pump
Half-lotus
Candle
Yoga ploughshear

Lesson VI: 2/25/1970 and 2/26/1970

Candle
Ploughshear
Lunge
Cobra
Back bend
Half and full lotus
Tripod
Tip-up
Headstand

In all instances the first date represented the experimental group lesson, while the second date represented the control group lesson.

Discussion Situations

2/9/1970: General Class Discussion

Question: "Why do you think Americans, in particular, have suddenly taken to activities involving vertigo experiences?"

2/11/1970: General Class Discussion

Question: "Do you think that body shape will become more important as the decade goes on? Rudi Gernreich has suggested that the fashionably dressed person must have a desirable physique."

2/16/1970: Buzz Groups of Three's and Four's

Question: "Is America 'hung-up' on sport? If this is so, do you think it is desirable or undesirable?"

2/18/1970: Buzz Groups of Three's and Four's

Magazines were brought in and each group examined a number of them, tearing out anything denoting sport in any way. Discussion followed in each group as to the types of pictures found and where emphases seemed to be placed in the placement of advertisements and commentaries.

2/23/1970: Panel Response

There were two members who were instructed to respond in a positive manner to the statement proposed, while the other two panel members were told to respond in a negative manner to statements proposed. Class discussion followed.

Statement: Physical education contributes nothing to a school curriculum.

2/25/1970: Format same as 2/23/1970

Statement: On the playing field prejudices are minimal. A good physical education program can contribute to this.

Each situation lasted for approximately ten minutes and an effort was made to make the transition from yoga to discussion as meaningful as possible. An attempt was always made to leave some type of persuasive message from the teacher regarding the positive value of physical education in relation to the discussion situation.

APPENDIX B

Six Scales for Determining Attitude Toward Physical Activity: Form D College Women

SIX SCALES FOR DETERMINING ATTITUDE TOWARD PHYSICAL ACTIVITY: FORM D COLLEGE WOMEN

INTRODUCTION

The following is part of a research project designed to ascertain the opinions of college students about certain aspects of our society. The statements on the pages that follow are concerned with physical activity. We are asking you to express what you think or feel about each. The best answer is your personal opinion. Many different and opposing points of view are presented; you may find yourself agreeing strongly with some of the statements and disagreeing just as strongly with others.

INSTRUCTIONS

1. Express your agreement or disagreement by circling the appropriate symbols at the left of each statement, according to the following:

   VSA: very strongly agree

   SA: strongly agree

   A: agree

   U: undecided

   D: disagree

   SD: strongly disagree

   VSD: very strongly disagree

   For example, if you strongly disagree with a statement you circle SD as follows:

   VSA SA A U D (SD) VSD a. The United Nations should be abolished.

2. You should rarely need to use U (undecided).

3. Work independently of others.

4. Do not spend too much time on any one statement; try to respond then go on to the next.

5. Respond to ALL statements.

IMPORTANT

1. Do not begin until told to do so.

2. Respond to the statements in the order given. (Do not go on to Page 2 until you have finished Page 1, etc.)

3. The significance of this research depends upon the degree to which you express your own opinion.

ITEMS-FORM DW - (WOMEN)

VSA SA A U D SD VSD 1. I would prefer quiet activities like swimming or golf rather than such activities as water skiing or sail boat racing.

VSA SA A U D SD VSD 2. I would gladly put up with the necessary hard training for the chance to try out for the U. S. Women's Olympic Team.

VSA SA A U D SD VSD 3. The most important value of physical activity is the beauty found in skilled movement.

VSA SA A U D SD VSD 4. Physical education programs should stress vigorous exercise since it contributes most to physical fitness.

VSA SA A U D SD VSD 5. The years of strenuous daily training necessary to prepare for today's international competition is asking a lot of today's young women.

VSA SA A U D SD VSD 6. The need for much higher levels of physical fitness has been established beyond all doubt.

VSA SA A U D SD VSD 7. Among the best physical activities are those which represent a personal challenge, such as skiing, mountain climbing, or heavy weather sailing.

VSA SA A U D SD VSD 8. Among the most desirable forms of physical activity are those which present the beauty of human movement such as modern dance and water ballet.

VSA SA A U D SD VSD 9. I would get by far the most satisfaction from games requiring long and careful preparation and involving stiff competition against a strong opposition.

VSA SA A U D SD VSD 10. Of all physical activities, those whose purpose is primarily to develop physical fitness, would <u>not</u> be my first choice.

VSA SA A U D SD VSD 11. The best way to become more socially desirable is to participate in group physical activities.

VSA SA A U D SD VSD 12. Almost the only way to relieve severe emotional strain is through some form of physical activity.

VSA SA A U D SD VSD 13. Frequent participation in dangerous sports and physical activities are all right for other people but ordinarily they are not for me.

VSA SA A U D SD VSD 14. Physical education programs should place <u>much</u> more emphasis upon the beauty found in human motion.

VSA SA A U D SD VSD 15. If given a choice, I sometimes would choose strenuous rather than light physical activity.

VSA SA A U D SD VSD 16. There are better ways of relieving the pressures of today's living than having to engage in or watch physical activity.

VSA SA A U D SD VSD 17. I like to engage in socially oriented physical activities.

VSA SA A U D SD VSD 18. A part of our daily lives must be committed to vigorous exercise.

VSA SA A U D SD VSD 19. I am not particularly interested in those physical activities whose sole purpose is to depict human motion as something beautiful.

VSA SA A U D SD VSD 20. Colleges should sponsor many more physical activities of a social nature.

VSA SA A U D SD VSD 21. For a healthy mind in a healthy body the only place to begin is through participation in sports and physical activities every day.

VSA SA A U D SD VSD 22. The <u>least</u> desirable physical activities are those providing a sense of danger and risk of injury such as skiing on steep slopes, mountain climbing, or parachute jumping.

VSA SA A U D SD VSD 23. Being physically fit is not the most important goal in my life.

VSA SA A U D SD VSD 24. A sport is sometimes spoiled if allowed to become too highly organized and keenly competitive.

VSA SA A U D SD VSD 25. I enjoy sports mostly because they give me a chance to meet new people.

VSA SA A U D SD VSD 26. Practically the only way to relieve frustrations and pent-up emotions is through some form of physical activity.

VSA SA A U D SD VSD 27. The time spent doing daily calisthenics could probably be used more profitably in other ways.

VSA SA A U D SD VSD 28. Given a choice, I would prefer motor boat racing or running rapids in a canoe rather than one of the quieter forms of boating.

VSA SA A U D SD VSD 29. Of all the kinds of physical activities, I don't particularly care for those requiring a lot of socializing.

VSA SA A U D SD VSD 30. One of the things I like most in sports is the great variety of ways human movement can be shown to be beautiful.

VSA SA A U D SD VSD 31. Most intellectual activities are often just as refreshing as physical activities.

VSA SA A U D SD VSD 32. Strength and physical stamina are the most important pre-requisites to a full life.

VSA SA A U D SD VSD 33. Physical activities that are purely for social purposes, like college dances, are sometimes a waste of time.

VSA SA A U D SD VSD 34. The self-denial and sacrifice needed for success in today's international competition may soon become too much to ask of a thirteen or fourteen year old girl.

VSA SA A U D SD VSD 35. I am given unlimited pleasure when I see the form and beauty of human motion.

VSA SA A U D SD VSD 36. I believe calisthenics are among the less desirable forms of physical activity.

VSA SA A U D SD VSD 37. Watching athletes becoming completely absorbed in their sport nearly always provides me with a welcome escape from the many demands of present-day life.

VSA SA A U D SD VSD 38. If I had to choose between "still-water" canoeing and "rapids" canoeing, "still-water" canoeing would usually be my choice.

VSA SA A U D SD VSD 39. There are better ways of getting to know people than through games and sports.

VSA SA A U D SD VSD 40. People should spend twenty to thirty minutes a day doing vigorous calisthenics.

VSA SA A U D SD VSD 41. There is sometimes an over-emphasis upon those physical activities that attempt to portray human movement as an art form.

VSA SA A U D SD VSD 42. Physical activities having an element of daring or requiring one to take chances are desirable.

VSA SA A U D SD VSD 43. Since competition is a fundamental characteristic of American society, highly competitive athletics and games should be encouraged for all.

VSA SA A U D SD VSD 44. A happy life does not require regular participation in physical activity.

VSA SA A U D SD VSD 45. The best form of physical activity is when the body is used as an instrument of expression.

VSA SA A U D SD VSD 46. Sports are fun to watch and to engage in, only if they are not taken too seriously, nor demand too much time and energy.

VSA SA A U D SD VSD 47. Calisthenics taken regularly are among the best forms of exercise.

VSA SA A U D SD VSD 48. I could spend many hours watching the graceful and well-coordinated movements of the figure skater or modern dancer.

VSA SA A U D SD VSD 49. The best thing about games and sports is that they give people more confidence in social situations.

VSA SA A U D SD VSD 50. Among the best forms of physical activity are those providing thrills such as sailing in heavy weather or canoeing on river rapids.

VSA SA A U D SD VSD 51. Regular physical activity is the major pre-requisite to a satisfying life.

VSA SA A U D SD VSD 52. In this country there is sometimes too much emphasis on striving to be successful in sports.

VSA SA A U D SD VSD 53. I would enjoy engaging in those games and sports that require a defiance of danger.

VSA SA A U D SD VSD 54. Most people could live happy lives without depending upon frequent watching or participating in physical games and exercise.

APPENDIX C

Scale Breakdown by Definition

SCALE BREAKDOWN BY DEFINITION

The six scales described by Kenyon are as follows:

1. Physical Activity as a Social Experience.

   A characterization of those activities whose primary purpose is to provide a medium for social intercourse, i.e., to meet new people and to perpetuate existing relationships.

2. Physical Activity for Health and Fitness.

   A characterization of those activities in which participation is designed to improve one's health and physical fitness.

3. Physical Activity as the Pursuit of Vertigo.

   A characterization of those activities or experiences providing, at some risk to the participant, an element of thrill and excitement through the mediums of speed, acceleration, sudden change of direction, or exposure to dangerous situations with the participant remaining in control.

4. Physical Activity as an Aesthetic Experience.

   A characterization of those activities which are thought of as possessing beauty or certain artistic qualities such as ballet, gymnastics, or figure skating.

5. Physical Activity as Catharsis.

   A characterization of those activities which provide, through some vicarious means, a release of tension precipitated by frustration.

6. Physical Activity as an Ascetic Experience.

   A characterization of those activities that are conceived of as requiring long, strenuous, and often painful training and stiff competition, and which demand a deferment of many other gratifications.

APPENDIX D

Scale Breakdown by Item Number

SCALE BREAKDOWN BY ITEM NUMBER

1.	Social Experience:	11	4.	Aesthetic Experience:	3
		17			8
		20			14
		25			19
		29			30
		33			35
		39			41
		49			45
					48
2.	Health and Fitness:	4	5.	Cathartic Experience:	12
		6			16
		10			21
		15			26
		18			31
		23			37
		27			44
		32			51
		36			54
		40			
		47	6.	Ascetic Experience:	2
					5
3.	Vertigo:	1			9
		7			24
		13			34
		22			43
		28			46
		38			52
		42			
		50			
		53			

1. Social Experience: eight items
2. Health and Fitness: eleven items
3. Vertigo: nine items
4. Aesthetic Experience: nine items
5. Cathartic Experience: nine items
6. Ascetic Experience: eight items

Total number of items for Form D - College Women equalled fifty-four statements.

APPENDIX E

A Priori Weightings for Form DW

A PRIORI WEIGHTINGS FOR FORM DW

1.	1234567	19.	1234567	37.	7654321
2.	7654321	20.	7654321	38.	1234567
3.	7654321	21.	7654321	39.	1234567
4.	7654321	22.	1234567	40.	7654321
5.	1234567	23.	1234567	41.	1234567
6.	7654321	24.	1234567	42.	7654321
7.	7654321	25.	7654321	43.	7654321
8.	7654321	26.	7654321	44.	1234567
9.	7654321	27.	1234567	45.	7654321
10.	1234567	28.	7654321	46.	1234567
11.	7654321	29.	1234567	47.	7654321
12.	7654321	30.	7654321	48.	7654321
13.	1234567	31.	1234567	49.	7654321
14.	7654321	32.	7654321	50.	7654321
15.	7654321	33.	1234567	51.	7654321
16.	1234567	34.	1234567	52.	1234567
17.	7654321	35.	7654321	53.	7654321
18.	7654321	36.	1234567	54.	1234567

Thirty-two items were perceived to be of a positive nature, while twenty-two items were perceived to be of a negative nature.

APPENDIX F

Teacher-Constructed Test Concerning Yoga Concepts-Skills

TEACHER-CONSTRUCTED TEST CONCERNING
YOGA CONCEPTS-SKILLS

DIRECTIONS: Circle letter beside answer which you consider to be most correct.

1. Exercises in yoga are concerned primarily with:
   a. strength and endurance
   b. flexibility and agility
   c. fitness and posture
   d. rotation and extension

2. Relaxation in yoga seems to be dependent on:
   a. physical output
   b. complete extension
   c. intense concentration
   d. muscle fatigue

3. Numerous exercises in this yoga unit were designed for the area of:
   a. neck and head
   b. abdomen and extremities
   c. leg and back
   d. torso and thighs

4. The relaxation technique is most easily accomplished:
   a. in a supine position
   b. in a curling leaf position
   c. in a full lotus position
   d. in a half lotus position

5. In a full lotus position the feet are placed:
   a. flat on the floor
   b. sole to sole
   c. heel to heel
   d. on the inner side of the opposite knee

6. In a curling leaf position the head is:
   a. tucked on the chest
   b. between the knees
   c. on the floor
   d. held erect

7. In any triangle position the torso should be:
   a. twisted as the touch is made
   b. not twisted at all
   c. twisted before the touch is made
   d. held in full extension

8. In a bow position the concave curve of the mid-spine is:
    a. increased
    b. decreased
    c. extended
    d. not changed

9. The lumbar region of the spine is often affected through yoga exercises. Which region of the spine is this?
    a. upper
    b. lower
    c. mid
    d. dorsal

10. Rolling back onto your shoulders with weight balanced over your head, and with legs extended, is called:
    a. cobra
    b. locust
    c. bow
    d. ploughshear

11. Rolling back onto your shoulders with legs extended at a ninety degree angle to the floor is called:
    a. pump
    b. salute
    c. candle
    d. torso flex

12. A tripod position may be further worked to:
    a. a headstand position only
    b. a tip-up position
    c. headstand-roll out position
    d. ploughshear position

13. In a salute, flexion occurs at one main area:
    a. knee
    b. elbow
    c. shoulder
    d. hip-waist

14. Adding a collapse fall to a salute produces:
    a. flexion at two main points
    b. no flexion at all
    c. flexion in as many points as possible
    d. extension throughout the body

15. In a closed tree position, hands are held over the head while one foot is:
    a. extended to the side
    b. tucked on the inner thigh of the opposite leg
    c. resting on the front aspect of the opposite thigh
    d. resting on the top of the opposite knee

16. In any head turn, we can induce tension in the neck area by:
    a. opening the mouth
    b. tucking head on chest
    c. closing mouth and teeth tightly
    d. shutting eyes tightly

17. The egg sit may also be used, in particular, as a pre-season exercise for:
    a. golf
    b. hockey
    c. skiing
    d. basketball

18. In a lateral lunge the muscles concentrated upon are in:
    a. the lower leg
    b. the lower back
    c. the inner thigh
    d. all extremities

19. In a lateral lunge the knee which endures the main flexion is at what angle?
    a. forty-five degrees
    b. ninety degrees
    c. no angle
    d. slight angle

20. A more advance yoga technique might be the:
    a. tree
    b. budding lotus
    c. tripod
    d. half lotus

21. In a yoga ploughshear the hands and arms are used:
    a. for support
    b. for providing balance at the base
    c. for raising the shoulders
    d. for raising the hips

22. The forward lunge may also be used as an exercise for:
    a. diving
    b. skiing
    c. fencing
    d. tennis

23. In a sit-tight position we are most dependent on the:
    a. abdominal muscles
    b. lower leg muscles
    c. shoulder muscles
    d. lower arm muscles

24. A headstand position should find the base of support coming from palms flat and:
    a. the top of the head
    b. the base of the head
    c. the front of the forehead
    d. the top of the forehead

25. In a candle position we are interested in:
    a. extension of the head
    b. flexion of the spine
    c. extension through the spinal area
    d. support of the hips

APPENDIX G

Answers to Multiple-Choice Test Concerning Yoga Concepts

ANSWERS TO MULTIPLE-CHOICE TEST CONCERNING YOGA CONCEPTS

1. b
2. c
3. d
4. a
5. d
6. b
7. c
8. a
9. b
10. d
11. c
12. c
13. d
14. c
15. b
16. c
17. c
18. c
19. b
20. c
21. b
22. c
23. a
24. d
25. c

APPENDIX H

Raw Scores for Inventory Administrations

RAW SCORES FOR INVENTORY ADMINISTRATIONS

Control Group: Pre-Tests		Experimental Group: Pre-Tests	
271	239	288	235
266	221	263	224
262	220	258	223
255	220	254	223
253	216	251	222
247	212	238	220
244	212	238	184
241	202	238	

Control Group: Post-Tests		Experimental Group: Post-Tests	
270	215	297	241
249	210	269	231
245	209	261	222
243	207	260	220
241	196	257	219
228	182	256	210
226	177	252	177
217		248	

APPENDIX I

Raw Scores for Administrations of Teacher-Constructed Test

RAW SCORES FOR ADMINISTRATIONS OF
TEACHER-CONSTRUCTED TEST

Control Group Scores	Experimental Group Scores
80	84
76	80
72	76
68	76
68	72
68	68
68	68
68	64
64	64
60	56
60	56
60	52
56	52
56	52
48	44