

AN EVALUATION OF A LECTURE-LABORATORY
PROGRAM OF PHYSICAL EDUCATION

by

BRADLEY GIBSON

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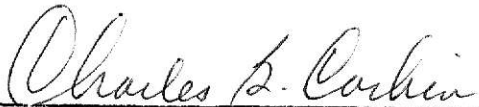
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Major Professor

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DEDICATION

I would like to dedicate this thesis to my wife, Leanna. Without her love, understanding and constant reassurances this project would never have been initiated let alone completed.

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Chapter 1

INTRODUCTION

Historically, physical education programs have been oriented to teaching activities that keep the students busy in the gymnasium setting. Few if any other horizons were explored. Brunner (2:42) interviewed adults who had been away from their school physical education program for 20 to 30 years. He found that 63% of those interviewed felt their school physical education experiences was of no benefit to them in later life.

In an attempt to provide a more pertinent basis for individuals to use later in life, a new approach to teaching physical education has been developed. This new method, the lecture-laboratory approach, consists of a lecture discussing various aspects of physical fitness and then laboratory procedures to help the students learn how to solve their own physical fitness problems. One such lecture-laboratory approach is the Concepts in Physical Education program (Concepts) at Kansas State University. This program was begun in 1972 and has served as a model for over 200 similar programs throughout the United States.

STATEMENT OF THE PROBLEM

It has been documented that weaknesses exist in traditional physical education programs. Also acknowledged

is the sound theoretical basis of the new lecture-laboratory courses. However little if any evaluation of these programs have been conducted.

This study was conducted to determine the amount of success that the Concepts program at Kansas State University has had as far as value to the student. The value of any program to the people that it is designed for can only be determined through serious and precise evaluation. Without an evaluation, it is pure conjecture to make any statements as to the effectiveness of the program. Hodges (7:15) concluded that it was important that we learn as much as possible about our present programs so that present and future programs will be constructed in the best interest of those concerned.

A primary objective of the Concepts course is "to acquaint students with basic knowledges, understandings and values of physical activity as it relates to optimal healthful living" (5:1). Another consideration is the cognitive domain. The focus of the (cognitive) domain is not upon the learning construct but upon the behavioral response which results from the construct (13:143). If the individual who has been exposed to the subject matter is truly to benefit from it, then the information should be transferred into actual practice.

PURPOSE OF THE STUDY

Since the inception of the Concepts program at Kansas State University, there has been little evaluation of it. Therefore, the purpose of this investigation was to evaluate the effectiveness of a lecture-laboratory physical education (Concepts) class as taught at Kansas State University. More specifically, the purposes of this study were to determine the attitudes of the students toward the Concepts class and the effects, if any, on their personal views toward physical activity.

There were three areas evaluated. The first area was the impact of the Concepts class on the personal behavior of the subject. The second area was the self-assessed ability of the subject in establishing personal physical fitness programs. The third was an evaluation of the Concepts course by the subjects who had completed the course.

Hypotheses

The following hypotheses were tested.

Hypothesis one. There is no difference in mean scores between the control and experimental groups on relevant behavioral measures.

Hypothesis two. There is no difference in mean scores between males and females on relevant behavioral measures.

Hypothesis three. There is no difference in mean scores between Sophomores and Juniors on relevant behavioral measures.

Hypothesis four. There are no interactions among sex, class and group on relevant behavioral measures.

Hypothesis five. There is no difference in mean scores between the control and experimental groups on measures of confidence in designing a personal physical fitness program.

Hypothesis six. There is no difference in mean scores between males and females on measures of confidence in designing a personal physical fitness program.

Hypothesis seven. There is no difference in mean scores between Sophomores and Juniors on measures of confidence in designing a personal physical fitness program.

Hypothesis eight. There are no interactions among sex, class and group on measures of confidence in designing a personal physical fitness program.

Hypothesis nine. The subjects of the experimental group will evaluate specific aspects of the Concepts course positively.

Hypothesis 10. There is no difference in mean scores between males and females of the experimental group on general evaluation measures.

Hypothesis 11. There is no difference in mean scores between Sophomores and Juniors of the experimental group on general evaluation measures.

Hypothesis 12. There are no interactions between sex and class of the experimental group on general evaluation measures.

To test these hypotheses, a specially constructed questionnaire was administered to students who had gained credit for the Concepts course during the past two years and to a group of students who had no such credit on their transcripts. The questionnaire yielded general scores as well as results on individual items. These general scores were: the Behavioral Index, the Confidence Index, and the Evaluation Index.

LIMITATIONS OF THE STUDY

There were three limitations which existed in this study. The first was that the questionnaire format may obtain answers other than answers that are true feelings of the subject for a valuable result. The second limitation was that there was no method used for determining which members of the experimental group had quizzed out of the Concepts in Physical Education course. The third was that the course was new and constantly changing.

DELIMITATION OF THE STUDY

The subjects involved in this study were a sample of Sophomores and Juniors enrolled at Kansas State University, Manhattan, Kansas, during the 1974 Fall Semester. The subjects included some transfer students from other colleges in the control group.

DEFINITION OF TERMS

Behavioral Index. A section of the questionnaire to determine the degree the Concepts course has affected the personal behavior of the subject.

Confidence Index. A section of the questionnaire to determine the self-assessed ability of the subject in establishing personal physical fitness programs.

Concepts in Physical Education. A required basic physical education class which presents the most up-to-date scientific evidence underlying physical fitness. A lecture-laboratory structured course.

Evaluation Index. A section of the questionnaire to determine the evaluation of the Concepts course by the subjects who had completed the course (Experimental group).

Chapter 2

REVIEW OF RELATED LITERATURE

For the past several years, many studies have been done to determine the status of physical education programs. These studies have covered a wide range of programs in two and four year colleges across the United States. However, since the lecture-laboratory approach to college physical education was initiated; little has been done to evaluate courses of this type. This review includes studies of student attitudes toward physical education programs, status of physical education programs, methods of attitude measurement in physical education and lecture-laboratory course evaluations.

STUDENT ATTITUDES TOWARD PHYSICAL EDUCATION PROGRAMS

Two studies were conducted to determine the effects of various types of physical education programs and how the students reacted to these programs. These studies covered different aspects of the total physical education programs in different sections of the country. Kahnert (9) tried to determine a relationship of selected components of physical fitness to physical fitness knowledge and attitude or opinion expressed toward physical fitness of male college students. He found that physical fitness knowledge related positively to attitude or opinion expressed toward physical

fitness.

In the other study, Gravett (6) made a comparison of the effects of four selected programs of physical education with regard to physical education. The four programs were an adaptive activities program in a homogeneous class, an adaptive activities program in a heterogeneous class, a regular activity program in a homogeneous class and a regular activity program in a heterogeneous class. He found that heterogeneous grouping in an adaptive activities program produced a significant improvement in attitude toward physical education, however, there was no significant differences found among the four programs with regard to improvement in attitude toward physical education.

In 1972, Reeves (12) researched the stated attitudes of freshman students toward physical education at the beginning and at the end of their first college physical education activity class to determine if there was any statistically significant change. He found a positive change in the stated attitudes of all freshman students toward physical education that was significant at the .01 level. Generally sex was not a significant variable in stated attitude change toward physical education.

STATUS OF PHYSICAL EDUCATION PROGRAMS

In 1971-72, Oxendine (11) researched the current status and practices of general instruction programs of

physical education in four-year colleges and universities in the United States. He found 95% to have a physical education program for the general college student. Also, the requirement of physical education in four-year institutions had decreased substantially over the past four years. The extent of the requirement had been reduced in many institutions where a requirement remains in existence. Competency examinations are being used more and more as a means of exempting students from the physical education requirement. Finally, the awarding of credits for physical education classes has increased substantially since 1968.

Using the same questionnaire format as Oxendine, Hodges (7) investigated the current status and organizational structure of physical education in public two-year colleges of the midwestern United States. He found that females of institutions surveyed placed body conditioning as fifth on their list of areas of interest whereas the males didn't include it in their top five activities. This should give physical educators impetus to push for an increase in the emphasis of conditioning to correct this attitude.

Also with a questionnaire format, Thomas, et. al. (14) studied the status and trends of physical education in junior colleges in the Southern District of the AAHPER. They found that physical fitness activities were second in increased demand only to recreational classes (life-time sports). There was no indication as to the extent of the

courses offered to the students. They concluded that programs seem to be receiving increased emphasis in both state and private junior colleges.

METHODS OF ATTITUDE MEASUREMENT IN PHYSICAL EDUCATION

The most widely used methods of constructing attitude scales were developed by Thurstone and Likert. Developed in 1920, Thurstone (15) based his attitude scale on the equally appearing intervals technique. In 1932, Likert (10) devised a scale in which each statement is a scale in itself. Both methods present statements in questionnaire format and the respondents are required to indicate to what extent, for the Likert scale, they agree or disagree with each statement. The Thurstone scale required the respondents to answer only the statements that were relevant to them. However, the Likert scale required the respondents to answer all the statements with one of a range of either three or five responses.

Wear (16) developed an attitude evaluation inventory containing 120 statements with a Likert-type scale containing five responses and administered it to 494 men students. The statements were believed to be related to the outcomes which authorities in the field of physical education generally agreed should result from a well-balanced and well-conducted program of physical education. He concluded that either the

total Inventory or the 40-item Short Form would serve a useful purpose when used as an evaluation instrument for securing an objective assessment of changes in attitude toward physical education. Wear further concluded that through responses to a relatively small number of statements related to the outcomes sought by means of physical education activities, it was possible to secure a reliable and valid evaluation of attitude toward physical education.

In 1940, Baker (1) used the questionnaire format for a study of factors that influence participation in physical education for women. The questionnaire consisted of measurements of height and weight, chronological age, menarcheal age and attitude toward physical activity. She administered the questionnaire to 1150 girls and women between the ages of 15 and 25. Baker concluded that the girls habits of activity modified as they matured and factors which produced these changes seemed to be of social and physical action. Also the psycho-physical factors investigated seemed to exert little influence on participation.

LECTURE-LABORATORY COURSE EVALUATION

In 1969, Corbin (3) found that 70% of the students rated the lecture-laboratory course at Texas A&M favorably after the first semester and 95% rated the course favorably after the second semester. Also, the students indicated a two to one preference for "Concepts" as more valuable than

the activity class. He summarized by encouraging other institutions to meet the needs of thinking students and supplement their program with a lecture-laboratory "Concepts" type program.

Corbin and Chevrette (4) investigated whether changes in attitude toward physical education resulted from a required lecture-laboratory physical education course designed to present information concerning exercise and physical activity. The Wear Attitude (Form A) was administered to 596 male freshman students enrolled in the course during the first and last laboratory periods of the semester. They found that the freshman scored higher on the post-test general subscale, the mental-emotional subscale and on the test total. The social and physiological-physical subscales showed no statistical change over the semester. No sound conclusions were drawn from the results of this study. However, they recommended further research concerning attitudinal changes resulting from lecture-laboratory physical education and the development of an attitudinal instrument more suited to the lecture-laboratory type than to the traditional skill class.

SUMMARY

There seems to be a general consensus of these studies as to the importance of evaluating present programs to determine if changes in programs need to be made and, if

so, where changes need to be made. Although several studies have been done to evaluate the traditional physical education programs, little has been done to evaluate the new lecture-laboratory physical education programs. The evaluations that have been done with these programs have not been extensive and have used previously established evaluation questionnaires. It has been suggested that further investigations need to be made with an evaluation instrument designed specifically for the measurement of the new lecture-laboratory physical education programs (4:139). Therefore, this study was undertaken to achieve such an evaluation.

Chapter 3

PROCEDURES

The purposes of this study were to determine the attitudes of the students toward lecture-laboratory physical education (Concepts) and toward physical activity. The procedures were outlined, submitted and approved by the Rights and Welfare Committee of the Health, Physical Education and Recreation Department.

Selection of Subjects

Subjects for this study were 500 students enrolled at Kansas State University during the 1974 Fall Semester. Two-hundred and sixty two male and 238 female subjects were randomly selected from the student directory. A table of

Table 1

Number and Grouping of Students
Selected for Test Subjects

	Experimental	Control
So. Males	108	38
So. Females	92	12
Jr. Males	91	25
Jr. Females	109	25

random numbers was used and the average number of students of the group on a page of five random pages determined the

highest number acceptable for the selection process. A separate group of numbers was used for each group of subjects selected. Two hundred Sophomores and 200 Juniors who had successfully completed the Concepts in Physical Education course (Experimental group) and 50 Sophomores and 50 Juniors who had not been exposed to the Concepts in Physical Education course (Control group) were selected. The sex and class distributions are shown in Table 1. The actual sample size was depleted because some subjects selected were not included in any of the areas that were to be compared. This particular subject group can be seen in Table 3.

The determination of status relative to the Concepts in Physical Education course was made at the Office of Records and Admissions. The subject's academic record was checked to determine whether or not credit for Concepts had been completed.

Pilot Study

The initial step for preparing the test questionnaire was to obtain taped interviews from volunteer students who had taken the Concepts in Physical Education course. These subjects were not among those selected for the major study. The identity of each subject interviewed was kept confidential as seen in Appendix B.

The intent of this procedure was to ensure that the test questionnaire contained content relevant to the attitudes and behaviors of the population of interest. However,

the information obtained from the interviews added little to the questions obtained from other sources.

Development of Questionnaire

All of the instructors of the Concepts labs submitted questions concerning different aspects of the course. These questions were submitted to a panel of four professors who made the final evaluations and selections. The four were Dr. Charles Corbin, Head of Health, Physical Education and Recreation and one of the authors of Concepts in Physical Education; Dr. David Laurie, Coordinator of the Concepts in Physical Education program at Kansas State University; Dr. John Merriman, Assistant Professor of Health, Physical Education and Recreation; and Dr. Donald Hoyt, Head of Educational Resources. The judgement of this panel of experts was used to enhance the content validity of the instrument.

The final questionnaire developed consisted of three sections (Appendix A). The first section, the Behavioral Index, consisted of 14 questions about various behaviors concerning physical activity. Subjects were to indicate if they had displayed these behaviors the past 12 months. The answer was a simple yes or no response. A sample item was:

6. Followed a program designed to increase strength and muscular endurance?

The Kuder-Richardson formula 20 was used to determine the reliability of the Behavioral Index. An estimate of .76 was

obtained; the corrected odd-even correlation was .80.

Results for individual items are shown in Table 2.

Table 2

Item Characteristics and Internal
Consistency of the Physical
Fitness Behavioral Index

Item	Percent "Yes"	Correlation with Total
1	40.8	.63
2	43.7	.26
3	65.0	.29
4	50.8	.32
5	28.6	.65
6	33.1	.60
7	25.4	.52
8	36.0	.39
9	7.4	.19
10	46.0	.60
11	48.6	.59
12	31.5	.62
13	43.4	.51
14	38.9	.63

Mean= 5.39 Standard Deviation=
3.23 KR 20= .76 Corrected
Odd-Even Correlation= .80

For a brief, two-alternative "test", the obtained reliability was surprisingly high. From these results, there was no reason to challenge the adequacy of the instrument for testing Hypotheses one, two, three and four. Item nine appeared unusually difficult, and items two, three and four were not as highly correlated with the total score as might be desired. Refinements of this index might profitably

concentrate on revising these items.

The second section, the Confidence Index, of the questionnaire was made up of six items designed to determine the level of confidence the subject had in implementing specific aspects of physical fitness and activity. A Likert-type scale was used containing the following five responses: Not Confident, Quite Unsure of Self, Inbetween, Quite Confident, and Very Confident. A sample item of this index was:

2. I can determine the fitness areas in which I am most in need of improvement.

No single answer was considered correct, though high degrees of confidence was thought to be desirable. Therefore, reliability was established by coefficient alpha. This coefficient for the Confidence Index was .82 suggesting a high degree of internal consistency among the items. These results supported the belief that the confidence measures could be used to make meaningful tests of Hypotheses five, six, seven and eight.

The third section, the Evaluation Index, was made up of seven items which asked the subjects of the experimental group to rate the Concepts in Physical Education course. Again a Likert-type scale was used containing the following five responses: 1. Definitely Disagree, 2. More Disagree than Agree, 3. Inbetween, 4. More Agree than Disagree, and 5. Definitely Agree. A sample of this index was:

4. The Concepts course was more rewarding to me personally than were my high school physical education classes.

Again no single answer was considered correct on these items, but the items were written such that positive evaluations were associated with "agree" responses. Reliability was once again determined by coefficient alpha. For the Evaluation Index, the coefficient was .88 which suggested a high degree of internal consistency among the items. Apparently, these measures were reliable enough to make meaningful tests of Hypotheses nine, 10, 11 and 12 possible.

The questionnaire also contained a section for any personal comments regarding the Concepts in Physical Education course, including the identification of strengths and weaknesses as well as changes the students would like to see. Only subjects of the experimental group participated in this section of the questionnaire.

The Behavioral Index was designed to examine the actual participation of the subjects in activities and fitness programs. The Confidence Index was designed to determine the level of confidence each subject displayed as to his or her ability to measure physical fitness needs and to prescribe activities to meet these needs. The Evaluation Index was designed to determine the subjects reactions to the Concepts in Physical Education course and how they compared it with other courses they have taken.

The subjects of the control group did not receive an Evaluation Index with their questionnaire. In place of it was a general information sheet (Appendix D) to confirm that

they had not taken the Concepts in Physical Education course and to find out why.

Identification numbers were affixed to the self-addressed return envelope so that subjects could be checked off the master list when they had returned the questionnaire. Once the questionnaire was returned, it was separated from the return envelope to insure confidentiality.

Collection of Data

The questionnaire was mailed to the 500 subjects selected for the study. Each mailer consisted of the proper test questionnaire (Experimental or Control), a cover letter explaining the study (Appendix C), and a self-addressed stamped envelope.

Table 3

Number and Grouping of Subjects
Returning Test Questionnaire

	Experimental		Control		Total
	Init.	After Followup	Init.	After Followup	
So. M	54	0	12	4	70
So. F	53	1	5	2	61
Jr. M	58	5	12	2	77
Jr. F	66	5	17	1	89
Unident.	—	—	—	—	14
Unans.	—	—	—	—	31
Total	231	11	46	9	342

Following a five week period, each subject that had not returned either a completed or blank questionnaire was contacted by phone to try to obtain additional data. Some replacement questionnaires were hand delivered to subjects who had lost the original questionnaire. Table 3 describes the number of returns and the specific groups to which they belonged.

Scoring of Test

When all the questionnaires were returned, the results of the questionnaires were transferred to optical mark reader (OMR) cards which were used to transfer data to cards for computer analysis. Each specific hypothesis was tested by using responses to each individual item and also for the response of the total items of the index.

Analysis of Data

All analyses were done by the computer. Because of the exploratory nature of the study, the a-priori level of significance for rejecting statistical hypotheses was set at the .10 level. A three-way analysis of variance was employed to test Hypotheses one thru eight. The three classifications were: Group (Experimental or Control), Sex (Male or Female) and Class (Sophomore or Junior). For Hypotheses 10, 11 and 12, a two-way analysis of variance was used. Sex and class were the two classifications. Hypothesis nine was tested by simply examining the percentage offering favorable responses.

Because not all subjects answered all questions, the number of cases varied slightly from one hypothesis to the next.

Chapter 4

RESULTS AND DISCUSSION

The purposes of this study were to determine the attitudes of the students toward the Concepts (lecture-laboratory physical education) program at Kansas State University and toward physical activity. Analysis of variance was used to compare differences between groups on each item. Data are presented to support or reject each hypothesis investigated.

RESULTS

Hypothesis one. There is no difference in mean scores between the control and experimental groups on relevant behavioral measures.

Although items three and nine were significantly different in favor of the experimental group, the total response of the index was not; therefore, hypothesis one was accepted. A discussion of the differences on these items but not on the total index will be included later in the chapter.

Significant differences did occur between the experimental group and control group on items three and nine of the Behavioral Index (Table 4). The experimental group had a mean of .677 and the control group had a mean of .541 with a significant F ratio of 3.315 on item three. Item three asked the subjects if they had participated in one or more

lifetime sports during the past 12 months.

On item nine, the mean of the experimental group was .102 and the mean of the control group was -.000, yielding a significant F ratio of 5.690. While only 10.2 % of the members of the experimental group participated in formal exercise programs, this was significantly greater than the 0 % for the control group. These formal exercises included Adult Fitness, XBX, 5BX, Aerobics and Rhythmical exercises.

Table 4

Mean Difference Between Control
and Experimental Groups on
the Behavioral Index

Item	Mean Exp.	Mean Cont.	F	Sig.
1	.421	.328	.308	.58
2	.455	.348	1.879	.17
3	.677	.541	3.315	.07 *
4	.495	.497	.000	.98
5	.305	.246	.667	.41
6	.349	.268	1.229	.27
7	.245	.283	.327	.57
8	.357	.301	.563	.45
9	.102	-.000	5.690	.02 *
10	.462	.535	.844	.36
11	.478	.533	.460	.50
12	.314	.414	1.776	.18
13	.462	.354	1.831	.18
14	.376	.381	.004	.95
Total	5.499	5.031	.826	.36

*Significant at the .10 level

The total score was higher for the experimental

group. It was determined that if 50 % of the subjects responded with a yes answer, the Index would be positive. However, the experimental group had 39 % positive responses and the control group had 36 % positive responses.

Hypothesis two. There is no difference in mean scores between males and females on relevant behavioral measures.

Significant sex differences were found on five items of the Behavioral Index. For the other nine items and on the total index, sex differences were not significant; therefore, hypothesis two was accepted. A discussion of the differences on these items but not on the total index will be included later in the chapter.

Significant differences did occur on items two, five, six, seven and eight of the Behavioral Index as shown in Table 5. On item two, the mean for the males was .471 and the mean for the females was .332 yielding a significant F ratio of 3.163. This was not unexpected because of the previous backgrounds of the subjects. Males are raised with sports and athletics as an integral part of their development. For the most part, females are discouraged from participating in these activities after they reach adolescence. Item two asked the subject if he or she had participated in an intramural activity each semester of the last year.

Males had a mean of .341 on item five of the Behavioral Index, significantly different from the female mean of .209 yielding an F ratio of 3.349. Item five asked the

subject if he or she had followed a physical fitness program designed to improve and strengthen his or her respiratory and cardiovascular systems in the past 12 months.

Table 5

Mean Differences Between Males and
Females on the Behavioral Index

Item	Mean M	Mean F	F	Sig.
1	.353	.396	.308	.58
2	.471	.332	3.163	.08 *
3	.608	.611	.001	.98
4	.446	.546	1.559	.21
5	.341	.209	3.349	.07 *
6	.420	.197	9.166	.00 *
7	.336	.193	4.362	.04 *
8	.219	.439	8.814	.00 *
9	.041	.061	.230	.63
10	.483	.514	.150	.70
11	.470	.541	.793	.37
12	.393	.335	.607	.44
13	.393	.422	.130	.72
14	.374	.383	.013	.91
Total	5.349	5.180	.107	.74

*Significant at the .10 level

On item six, .420 was the mean for the males and the females had a mean of .197 yielding a significant F ratio of 9.166. Item six asked the subject if he or she had followed a program designed to increase strength and muscular endurance in the past year.

Means of .336 for males and .193 for females were found on item seven with a significant F ratio of 4.362.

Item seven asked the subject if he or she had followed a program designed to improve flexibility and speed of physical reaction in the past 12 months.

A significant F ratio of 8.814 with means of .219 for males and .419 for females were found on item eight of the Behavioral Index. Item eight asked the subject if he or she had followed an exercise program as part of an effort to control weight during the past year.

It can be seen by reviewing these results that the traditional programs and ideas have influenced the subjects' choices of activities. Males were more likely to try to develop areas of strength, endurance, and flexibility than females; however, females were more likely to be concerned with controlling weight than were males.

Hypothesis three. There is no difference in mean scores between Sophomores and Juniors on relevant behavioral measures.

Although differences favored Sophomores on four of the 14 items, there was no significant difference on the total index nor on 10 of the individual items; therefore, hypothesis three was accepted. A discussion of the differences on these items will be included later in the chapter.

Items one, seven, eight and 12 were significantly different statistically on the Behavioral Index for Sophomores and Juniors as seen in Table 6. Sophomores had a mean of .453 and the Juniors had a mean of .296 with a significant

F ratio of 4.169 on item one. Item one asked the subject if he or she had devised a physical fitness program for him or her during the past 12 months.

Table 6

Mean Differences Between Sophomores and Juniors on the Behavioral Index

Item	Mean So.	Jr.	F	Sig.
1	.453	.296	4.169	.04 *
2	.404	.399	.003	.95
3	.625	.594	.168	.68
4	.502	.491	.019	.89
5	.310	.240	.952	.33
6	.330	.287	.333	.56
7	.340	.188	4.965	.03 *
8	.267	.391	2.811	.09 *
9	.078	.023	1.682	.20
10	.558	.440	2.175	.14
11	.535	.476	.524	.47
12	.439	.289	4.011	.05 *
13	.434	.381	.443	.51
14	.348	.410	.614	.43
Total	5.623	4.906	1.941	.16

*Significant at the .10 level

On item seven, the mean for the Sophomores was .340 and .188 was the mean for the Juniors resulting in a significant F ratio of 4.965. Item seven asked the subject if he or she had followed a program designed to improve flexibility and speed of physical reaction during the past year.

A reversal of this trend occurred on item eight with means of .267 for Sophomores and .391 for Juniors, resulting

in a significant F ratio of 2.811. Item eight asked the subject if he or she had followed an exercise program as part of an effort to control weight during the past 12 months.

A mean of .439 for Sophomores and .289 for Juniors produced a significant F ratio of 4.011 on item 12 of the Behavioral Index. Item 12 asked the subject if he or she had encouraged anyone else to plan and implement a sound physical fitness program during the past year.

The Sophomores appeared to be generally more aware of the total concept of physical fitness, accepting more purposes than weight control. There are several reasons that may explain this. The first, and most probable, was that the Concepts course taken by the Sophomore students was a better course than the one taken by the Juniors. A related reason could be that the instructors were better prepared to teach the course when the Sophomores took it as compared to the time the Juniors took it.

Hypothesis four. There is no interaction among sex, class and group on relevant behavioral measures.

Although interactions did occur on two of the behavioral items, there were no significant interactions for the other 12 items or for the total index; therefore, hypothesis four was accepted. A discussion of the differences on these items but not on the total index will be included later in the chapter.

On Table 7, it can be seen that there was a significant F ratio for the sex and group interaction (7.798) on item three. There was also a sex, class and group interaction (3.545) on item four.

Table 7

F Ratios for Interactions Between
Sex (S), Class (C), and Group
(G) on the Behavioral Index

Item	S X C	S X G	C X G	S X C X G
1	.202	1.821	.000	.836
2	1.249	2.250	.152	.016
3	.856	7.798 *	.002	2.121
4	1.055	.461	.237	3.545 *
5	.276	.059	.192	1.545
6	.518	.131	1.586	1.759
7	1.583	.173	2.352	.003
8	1.160	.251	.285	.153
9	.029	.230	1.682	.029
10	.716	1.967	.028	.277
11	.199	2.687	.410	.024
12	.159	.105	.563	2.338
13	.396	.136	.089	.779
14	.007	1.539	.158	.047
Total	.024	.120	.119	.250

*Significant at the .10 level

The sex and group interaction on item three occurred because the males of the experimental group scored higher than the males of the control group (.78 versus .44, Table 8). This was offset by the fact that the females of the control group scored somewhat higher than the females of the experimental group (.65 versus .57) As noted earlier, the total

index showed a statistically non-significant higher score for the experimental group (.68 versus .54). Item three asked the subject if he or she had participated regularly in at least one lifetime sport during the past year.

Table 8

Cell Means for S X G Interaction
on Item Three of the
Behavioral Index

	Experimental	Control	Total
Males	.78	.44	.61
Females	.57	.65	.61
Total	.68	.54	

Table 9 indicates that for Sophomore females, the experimental group scored higher than the control group on

Table 9

Cell Means for S X C X G Inter-
action on Item Four of the
Behavioral Index

	Experimental	Control	Total
So. Males	.37	.62	.49
So. Females	.59	.43	.51
Jr. Males	.47	.33	.40
Jr. Females	.55	.61	.58
Total	.50	.50	

item four (.59 versus .43). The same was true for Junior males (.47 versus .33). However, this was offset by the higher mean for the control group for Sophomore males (.37 versus .62) and Junior females (.55 versus .61). Item four asked the subject if he or she had changed dietary, smoking, drinking or sleeping habits in order to improve your physical well-being during the past 12 months. It is not obvious why such a complex interaction should occur. Tentatively, it seems best to ascribe it to chance.

Hypothesis five. There is no difference in mean scores between the control and experimental groups on measures of confidence in designing a personal physical fitness program.

Hypothesis five was accepted since, as seen in Table 10, there were no statistically significant differences on

Table 10

Mean Differences Between Control
and Experimental Groups on
the Confidence Index

Item	Exp.	Cont.	F	Sig.
1	4.236	4.341	.881	.35
2	4.015	3.856	1.514	.22
3	3.716	3.850	1.101	.29
4	3.093	2.882	1.713	.19
5	3.925	3.848	.352	.55
6	3.386	3.384	.000	.99
Total	22.369	22.161	.126	.72

any of the items of the Confidence Index. It should be noted that all self-assessed attitudes were high. The average attitude rating on the scale would be 3.000 but the average for even the control group was a high 3.700. In view of previous research findings (8), it is doubtful that the control group are likely that competent in planning programs. Control subjects "feel" that they can plan programs but tests results on typical freshmen not having had the Concepts course indicates that they do not know how to plan programs adequately. Females were not so confident concerning ability to plan programs. It is possible that a result of the Concepts course is that it actual lowers the confidence level as people realize that they need to know more than they do. Perhaps some people learn that they didn't know what they ought to.

Hypothesis six. There is no difference in mean scores between males and females on measures of confidence in designing a personal physical fitness program.

Although two items were not significantly different, the remaining four items and the total index were significantly different; therefore, hypothesis six was rejected. Items three, four, five, six and the total responses all revealed statistically significant differences as seen in Table 11. The mean for males was 4.079 and 3.487 for females resulting in an F ratio of 21.544 on item three. Item three asked the subject to indicate the degree of confidence he or

she had in ability to accurately assess his or her own condition regarding physical fitness.

Table 11

Mean Differences Between Males and
Females on the Confidence Index

Item	Mean		F	Sig.
	M	F		
1	4.347	4.230	1.067	.30
2	4.037	3.834	2.481	.12
3	4.079	3.487	21.544	.00 *
4	3.305	2.670	15.568	.00 *
5	4.038	3.735	5.403	.02 *
6	3.675	3.095	14.922	.00 *
Total	23.479	21.051	17.094	.00 *

*Significant at the .10 level

On item four, males had a mean of 3.305 and females had a mean of 2.670 resulting in an F ratio significant at 15.568. Item four asked the subject to indicate the degree of confidence he or she had in knowing the best ways to assess cardiovascular fitness, fatness, strength, muscular endurance and flexibility.

A significant F ratio of 5.403 was obtained on item five where the males had a mean of 4.038 and females had a mean of 3.735. Item five asked the subject to indicate the degree of confidence he or she had in knowing the purpose and benefits of a variety of exercises.

A mean of 3.675 for males and 3.095 for females

occurred on item six resulting in a significant F ratio of 14.922. Item six asked the subject to indicate the degree of confidence he or she had in knowing how to measure his or her progress toward developing physical fitness.

The total responses of the Confidence Index revealed a significant F ratio of 17.094 with means of 23.479 for males and 21.051 for females. Although males scored significantly higher on four of the six items, it should be noted that the scores of the females were also unusually high except on items three and six.

The traditional upbringing of the males may have a lot to do with the confidence they display in being able to evaluate themselves. Unfortunately, many times the confidence is unwarranted. It is one thing to be confident but another to be confident based on sound information, which may not always be the case. Women appear to be more cautious than men concerning their willingness to generalize about their ability to plan exercise programs.

Hypothesis seven. There is no difference in mean scores between Sophomores and Juniors on measures of confidence in designing a personal physical fitness program.

Although a significant difference occurred on item one, there were no differences on the other five items or on the total index; therefore, hypothesis seven was accepted. A discussion of the difference on this item but not on the total index will be included later in the chapter.

Table 12

Mean Differences Between Sophomores and
Juniors on the Confidence Index

Item	Means		F	Sig.
	So.	Jr.		
1	4.426	4.151	5.943	.02 *
2	3.928	3.943	.012	.91
3	3.765	3.800	.076	.78
4	3.103	2.872	2.062	.15
5	3.955	3.818	1.111	.29
6	3.405	3.364	.077	.78
Total	22.583	21.948	1.169	.28

*Significant at the .10 level

As seen in Table 12, there was a statistically significant difference on item one of the Confidence Index. The means were 4.426 for Sophomores and 4.151 for Juniors with a significant F ratio of 5.943. Item one asked the subject to indicate the degree of confidence he or she had in selecting physical activities which would suit him or her.

The Sophomores rated themselves as confident on every item; the Juniors rated themselves as confident on five of the six items. Juniors did not feel confident in knowing the best ways to assess cardiovascular fitness, fatness, strength, muscular endurance and flexibility.

Again the high levels of confidence may be unrealistic when compared to actual performance of these items. Contrary to earlier theorizing, it may be desirable for the

Concepts course to bring about a reduction in these levels of confidence until the students learn fundamental concepts and how they relate to their needs.

Hypothesis eight. There are no interactions among sex, class and group on measures of confidence in designing a personal physical fitness program.

Table 13

F Ratios for Interactions Between Sex
(S), Class (C) and Group (G)
on the Confidence Index

Item	S X C	S X G	C X G	S X C X G
1	.506	.564	2.729 *	2.387
2	.031	.019	.015	.463
3	.193	.934	.028	.987
4	.498	1.945	.173	.061
5	2.762 *	5.222 *	.036	1.991
6	.223	2.620	.102	.489
Total	.003	1.956	.101	1.489

*Significant at the .10 level

Since only three of the 28 tests for interactions on confidence measures were significant, hypothesis eight was accepted. However, doubt was cast on its viability for item five and possibly, item one.

The class and group interaction (2.729) on item one, sex and class interaction (2.762) on item five and the sex and group interaction (5.222) on item five were all

significant. These results can be seen in Table 13.

Table 14

Cell Means for the C X G Interaction on Item One of the Confidence Index

	Experimental	Control	Total
Sophomores	4.280	4.571	4.426
Juniors	4.191	4.111	4.151
Total	4.236	4.341	

In examining the cell means in Table 14, it was seen that Juniors of the experimental group were slightly higher than Juniors of the control group (4.191 versus 4.111). However, the reverse was true of Sophomores (4.280 versus 4.571). Based on results that Holder (8) obtained by using quiz out tests, the very high 4.571 mean exhibited by the Sophomore control group appears to be quite unrealistic.

Table 15

Cell Means for the S X C Interaction on Item Five of the Confidence Index

	Sophomores	Juniors	Total
Males	4.214	3.861	4.038
Females	3.695	3.775	3.735
Total	3.955	3.818	

Table 15 displays the sex and class interaction on item five. Sophomore males averaged higher than Junior males (4.214 versus 3.861); the reverse was true for females (3.695 versus 3.775). Item five asked the student to indicate the degree of confidence he or she had in knowing the purpose and benefits of a variety of exercises.

Table 16

Cell Means for the S X G Interaction on Item Five of the Confidence Index

	Experimental	Control	Total
Males	3.927	4.148	4.038
Females	3.922	3.548	3.735
Total	3.925	3.848	

The significant sex and group interaction on item five is shown in Table 16. Control group males had a higher mean than experimental males (4.148 versus 3.927). But this finding was reversed for females (3.548 versus 3.922). The results suggest that the Concepts course may have aided females to overcome some traditional beliefs about women and exercise (e.g. lifting weights and strenuous exercise causes muscleboundness in women).

Hypothesis nine. The subjects of the experimental group will evaluate specific aspects of the Concepts course positively.

Although three items were rated positively, four items were not; therefore, hypothesis nine was accepted. It can be seen on Table 17 that items one, two and seven were evaluated positively more often than negatively.

Table 17

Percentage Positive-Negative Responses for
Each Item of the Evaluation Index

Item	% Positive	% Negative	Mean
1	58	26	3.318
2	57	22	3.333
3	31	41	2.663
4	38	45	2.778
5	21	50	2.405
6	12	71	1.921
7	50	32	3.068

Item one asked if a result of the Concepts course was increased acceptance of the importance of improving physical fitness through activity. Item two asked if the Concepts course helped the subject's confidence in devising a practical way to meet personal needs for physical fitness. Item seven concerned recommendation that the Concepts course be required for all undergraduates.

Items three, four, five and six of the Evaluation Index were more often responded to negatively than positively. A plurality of subjects rated the Concepts course negatively for motivating them to maintain physical fitness throughout

life (item three). Since attitudes are usually set by a very early age, this result was not totally unexpected.

On item four, the mean was 2.778; more gave a negative than a positive response when asked if the Concepts course was more rewarding to them personally than were their high school physical education classes. Apparently most subjects enjoyed their high school physical education classes more than the Concepts course, possibly because the latter required more intellectual effort and a more disciplined application of principles.

The Concepts course was also rated negatively compared to other courses taken at Kansas State University with a mean of 2.405 on item five. Possibly, if the Concepts course was compared only to other required courses, it would rate higher. In this study, it was compared to all courses taken.

Subjects rated the Concepts course especially negatively as an aid to more efficient study (item six). Very few perceived this as a benefit.

Hypothesis ten. There is no difference in mean scores between males and females of the experimental group on general evaluation measures.

Although a significant difference occurred on item one, there were no differences on the other six items or on the total index; therefore hypothesis 10 was accepted. A discussion of the difference on this item but not on the

total index will be included later in the chapter.

Table 18

Mean Differences Between Males and
Females on the Evaluation Index

Item	Means		F	Sig.
	M	F		
1	3.306	3.739	6.945	.01 *
2	3.409	3.637	2.196	.14
3	3.738	2.944	1.592	.21
4	2.876	3.049	.778	.38
5	2.486	2.702	1.944	.16
6	1.972	2.108	.930	.34
7	3.369	3.301	.141	.71
Total	20.156	21.480	2.319	.13

*Significant at the .10 level

As seen in Table 18, there was a significant difference statistically only on item one. The mean for the females was 3.739 compared to 3.306 for the males resulting in a significant F ratio of 6.945. As a result of the Concepts course, females were more inclined than were males to upgrade the importance of improving physical fitness through activity. It should be pointed out that both males and females rated this item positively. The females may have given higher ratings because traditionally they have been less exposed to this concept than have males.

Hypothesis 11. There is no difference in mean scores between Sophomores and Juniors of the experimental group on general

evaluation measures.

Since there were significant differences on all the items and the total index, hypothesis 11 was rejected. A discussion of the differences on these items and the total index will be included later in the chapter.

Table 19

Mean Differences Between Sophomores and Juniors on the Evaluation Index

Item	Means		F	Sig.
	So.	Jr.		
1	3.930	3.116	24.549	.00 *
2	3.800	3.246	12.985	.00 *
3	3.140	2.541	13.388	.00 *
4	3.270	2.655	9.809	.00 *
5	2.910	2.278	16.573	.00 *
6	2.220	1.860	6.599	.01 *
7	3.620	3.050	9.883	.00 *
Total	22.890	18.746	22.714	.00 *

*Significant at the .10 level

All seven items of the Evaluation Index were responded to more favorably by Sophomores than by Juniors as can be seen in Table 19. The Sophomores had a mean of 3.930 and the Juniors had a mean of 3.116 on item one resulting in a significant F ratio of 24.549. Item one asked the subject if he or she felt, as a result of the Concepts course, he or she believed improving physical fitness through activity was more important than he or she had previously thought. Both

evaluations were positive.

On item two, means of 3.800 for the Sophomores and 3.246 for the Juniors occurred. This resulted in a significant F ratio of 12.985. Item two asked the subject if he or she felt, from the knowledge gained in the Concepts course, confident that he or she could devise a practical way to meet personal physical fitness needs. Both Sophomores and Juniors evaluated this item positively.

A significant F ratio of 13.388 occurred on item three with a mean of 3.140 for the Sophomores and 2.541 for the Juniors. Item three asked the subject if he or she felt the Concepts course provided motivation to maintain physical fitness throughout life. The Sophomores evaluated this item positively but the Juniors evaluated it negatively.

The mean for the Sophomores was 3.270 and 2.655 for the Juniors resulted in a significant F ratio of 9.809 on item four of the Evaluation Index. Item four asked the subject if he or she felt the Concepts course was more rewarding personally than high school physical education classes. Sophomores evaluated this item positively, however, Juniors evaluated it negatively.

The Sophomores had a mean of 2.910 and the Juniors had a mean of 2.278 on item five resulting in a significant F ratio of 16.573. Item five asked the subject if he or she felt the Concepts course rated well above average in personal value compared to other courses taken at Kansas State

University. Both evaluations were negative on this item.

On item six, the mean for the Sophomores was 2.220 and 1.860 for the Juniors with a significant F ratio of 6.599. Item six asked the subject if he or she felt, as a result of the Concepts course, following an exercise program helped to study more efficiently. Both evaluations were negative on this item.

A significant F ratio of 9.883 occurred on item seven of the Evaluation Index with a mean of 3.620 for the Sophomores and 3.050 for the Juniors. Item seven asked the subject if he or she would recommend requiring the Concepts course for all undergraduates. Both Sophomores and Juniors evaluated item seven positively.

The mean for the Sophomores on the total response for all items of the Evaluation Index was 22.890 compared to 18.746 for the Juniors; a significant F ratio of 22.714 was obtained. Clearly, the Sophomores gave their course much better ratings than did Juniors. Probably, this reflects the fact that the Juniors took the first Concepts courses ever offered at Kansas State. The Sophomores had the advantage of taking a Concepts course that was improved after the initial experience.

Hypothesis 12. There are no interactions between sex and class of the experimental subjects on general evaluation measures.

Although there were significant interactions on two

items, there were no interactions on the remaining five items or on the total index; therefore, hypothesis 12 was accepted. As seen in Table 20, significant sex and class interactions did exist of items three and seven.

Table 20

F Ratios for Interactions Between
Sex (S) and Class (C) on
the Evaluation Index

Item	Sex X Class
1	.321
2	.195
3	3.065 *
4	.609
5	.243
6	1.562
7	3.350 *
Total	1.854

*Significant at the .10 level

On item three, Sophomore males and females were about equal (3.180 versus 3.100) but for Juniors the females rating was substantially higher than the males (2.788 versus 2.295, Table 21). Item three asked the subject if he or she felt the Concepts course provided motivation to maintain physical fitness throughout life. It appears that the improvements in the course benefited males more than females, though, as stated earlier, Sophomores were generally more favorable than Juniors.

Table 21

Cell Means for the S X C Interaction on Item Three of the Evaluation Index

	Sophomores	Juniors	Total
Males	3.180	2.295	2.738
Females	3.100	2.788	2.944
Total	3.140	2.541	

Among Sophomores, males were more inclined than females to recommend Concepts for all undergraduates (3.820

Table 22

Cell Means for the S X C Interaction on Item Seven of the Evaluation Index

	Sophomores	Juniors	Total
Males	3.820	2.918	3.369
Females	3.420	3.182	3.301
Total	3.620	3.050	

versus 3.420); the opposite was true for Junior males and Junior females (2.918 versus 3.182) on item seven. See Table 22.

DISCUSSION

Although 10 of the 12 hypotheses were accepted, differences occurred in individual items within each hypothesis that were very important. In many cases it appeared that the results of one item canceled out the results of another item so that no difference occurred on the total index. However experimental subjects did indicate higher participation in lifetime sports and formal exercise programs.

When the experimental subjects were compared to the control subjects on the Behavioral Index, the items that were significantly different favored the experimental subjects. Therefore, it can be inferred that the Concepts course did affect relevant behavior in a positive way. Even though positive results were obtained on only two items, this can be considered a very good showing; attitudes are normally well established early in life and any positive change in behavior as a result of a brief experience (Concepts course) must be regarded favorably.

On the Confidence Index, there was no significant difference between subjects of the experimental and control groups. However, it was noted that most of the self-ratings of confidence were quite high. It was likely that these ratings were not realistic. Although not originally thought out, it might be contended that the Concepts course might even lower the level of confidence. It is certainly not

desirable to encourage confidence in misinformation and misunderstanding.

Sex comparisons on the Behavioral Index produced results expected from "traditional" sex differentiations. Males were significantly higher on the so called "masculine" aspects of physical fitness (strength, endurance, cardiovascular improvement, flexibility and reaction time). The females scored significantly higher on weight control by exercise. The Concepts course has not closed the gap between the females and males on these items. It seems likely that the course will need significant support from the general culture before it can expect to make similar contributions to both sexes.

Males generally scored higher in confidence than did females. These differences are probably due to the fact that males are more frequently exposed to athletics and physical activities early in life. Females have been traditionally pressured away from these activities when they reach early adolescence. Since confidence grows through participation, males can be expected to display higher confidence regarding physical fitness and activity.

Holder (8) found that many men who are or have been athletes do not score any better than non-athletes on proficiency examinations. It would seem that men may need to take the Concepts course to unlearn many misconceptions they have learned about physical fitness and exercise through

their athletic participation.

On the Evaluation Index, the only significant sex difference that occurred favored females who were more likely to believe that improving physical fitness through activity had become more important as a result of the Concepts course. This suggests the Concepts course did bring about an increase in the awareness of females for some type of physical activity to provide health benefits.

On the Behavioral Index, Sophomores scored significantly higher than did Juniors on devising a personal physical fitness program, participating in programs to increase flexibility and reaction time, and encouraging others to participate in a physical fitness program; on the other hand, Juniors scored significantly higher in participating in an exercise program to control weight. These results are consistent with the hypothesis that a better course was available for the Sophomores than for the Juniors.

The Sophomores were also more confident than the Juniors in selecting physical activities which would suit them. These results lend further support to the theory that the Sophomores had the benefit of a much improved course.

The strongest argument for this hypothesis was found in the comparison of Sophomores and Juniors on the Evaluation Index. The Sophomores rated the Concepts course significantly higher in every category. They also rated five of the seven items positively and based solely on the Sophomores

evaluations, the total index was positive. It was originally thought that the Juniors would rate the Concepts course higher than would Sophomores since they would likely have more perspective on its benefits. The most reasonable explanation for the opposite finding is that the course was vastly improved from the first to the second year and that this improvement offset the possible positive effects of the time lag.

Table 23

Students' Suggestions Concerning
the Concepts Course

Suggestions	% Response
Credit for the course	22
No course requirement	12
Course was excellent	10
Special Individualized Programs	10
More variety of activities for exercise	7
Waste of time	7
More exercise programs	6
Eliminate the course	6
Needs better motivation	5
Miscellaneous	15

The evaluation questionnaire contained a section for personal comments concerning the Concepts course. The results of these comments are listed in Table 23.

The comment that was most widely given was that credit should be given for the Concepts course. The second

most often response was that if no credit is given, then the course should not be required. The other two most widely used responses were that the Concepts course was excellent and students should be allowed to develop their own programs specialized for their own needs and allowed to do them in the labs so that they could see the benefits of their programs and get assistance in areas that are weak.

SUMMARY

The findings of this study indicated significant differences favoring experimental subjects over control subjects on two behavioral items. Sex differences were more frequent, with significant differences on five of the 14 items comprising the Behavioral Index, four of the six items and the total score comprising the Confidence Index, and one of the six items on the Evaluation Index. There were significant interactions between class and sex on item five of the Confidence Index and on items three and seven of the Evaluation Index. Sex and group interactions occurred on item three of the Behavioral Index and on item five of the Confidence Index. In examining the interactions, a class and group interaction was significant on item one of the Confidence Index. Finally, there was a sex, class and group interaction on item four of the Behavioral Index.

Although items three and nine were significantly different in favor of the experimental group, the total

response of the index was not; therefore, hypothesis one was accepted. Significant sex differences were found on five items of the Behavioral Index. For the other nine items and on the total index, sex differences were not significant; therefore, hypothesis two was accepted. Although differences favored Sophomores on four of the 14 items, there was no significant difference on the total index nor on 10 of the individual items; therefore, hypothesis three was accepted. Although interactions did occur on two of the Behavioral items, there were no significant interactions for the other 12 items or for the total index; therefore, hypothesis four was accepted. Hypothesis five was accepted since there were no statistically significant differences on any of the items of the Confidence Index. Although two items were not significantly different, the remaining four items and the total index were significantly different; therefore, hypothesis six was rejected. Although a significant difference occurred on item one, there were no differences on the other five items or on the total index; therefore, hypothesis seven was accepted. Since only three of the 28 tests for interactions on confidence measures were significant, hypothesis eight was accepted. Although three items were rated positively, four items were not; therefore, hypothesis nine was accepted. Although a significant difference occurred on item one, there were no differences on the other six items or on the total index; therefore, hypothesis 10 was accepted.

Since there were significant differences on all the items and on the total index, hypothesis 11 was rejected. Although there were significant interactions on two items, there were no interactions on the remaining five items or on the total index; therefore, hypothesis 12 was accepted.

Chapter 5

SUMMARY AND CONCLUSIONS

In an attempt to provide a more pertinent basis for individuals to use later in life, a new approach to teaching physical education has been developed. This new method, the lecture-laboratory approach, consists of a lecture discussing various aspects of physical fitness and then laboratory procedures to help the students learn how to solve their own physical fitness needs. Although the theoretical basis of the new lecture-laboratory courses is sound, little evaluation of these programs have been conducted.

The purpose of this study was to evaluate the effectiveness of a lecture-laboratory physical education (Concepts) program as taught at Kansas State University. More specifically, they were to determine the attitudes of the students toward the Concepts course and toward physical activity.

Three hundred and eleven Sophomore and Juniors who were students at Kansas State University served as subjects for this study. They were arranged by class, sex and group. Those of the experimental group had successfully completed the Concepts in Physical Education course. Those of the control group had not been exposed to the Concepts in Physical Education course.

Each of the participating subjects of the experimental group completed a questionnaire composed of a

Behavioral Index, a Confidence Index and an Evaluation Index. The subjects of the control group completed a questionnaire containing the same Behavioral Index and Confidence Index, but with a general information section in place of the Evaluation Index. The Behavioral Index was designed to determine what types of activities the subjects had participated in during the last 12 months. The Confidence Index consisted of items that determined how confident the subjects were in choosing activities that would benefit their physical fitness. The Evaluation Index contained items evaluating specific aspects of the Concepts course and how it compares to other courses.

The reliabilities of the indices were determined by two methods. The Behavioral Index was tested using the Kuder Richardson 20 formula with a resultant reliability of .76; its corrected odd-even reliability of .80. The Confidence Index and the Evaluation Index were tested using coefficient alpha. The reliability of the Confidence Index was determined to be .82 and the reliability of the Evaluation Index was .88.

Three-way analysis of variance were performed to compare groups, sexes and classes on the Behavioral and Confidence Indices. A two-way analysis of variance was performed to compare sex and class on the Evaluation Index.

Twelve hypothesis were tested in this investigation. Hypothesis one stated there is no difference in mean scores

between the control and experimental groups on relevant behavioral measures. Although items three and nine were significantly different in favor of the experimental group, the total response of the index was not; therefore, hypothesis one was accepted. Hypothesis two stated there is no difference in mean scores between males and females on relevant behavioral measures. Significant sex differences were found on five items of the Behavioral Index. For the other nine items and on the total index, sex differences were not significant; therefore, hypothesis two was accepted. Hypothesis three stated there is no difference in mean scores between Sophomores and Juniors on relevant behavioral measures. Although differences favored Sophomores on four of the 14 items, there was no significant difference on the total index nor on 10 of the individual items; therefore, hypothesis three was accepted. Hypothesis four stated there are no interactions among sex, class and group on relevant behavioral measures. Although interactions did occur on two of the Behavioral items, there were no significant interactions for the other 12 items or for the total index; therefore, hypothesis four was accepted. Hypothesis five stated there is no difference in mean scores between the control and experimental groups on measures of confidence in designing a personal physical fitness program. Hypothesis five was accepted since there were no statistically significant differences on any of the items of the Confidence Index.

Hypothesis six stated there is no difference in mean scores between males and females on measures of confidence in designing a personal physical fitness program. Although two items were not significantly different, the remaining four items and the total index were significantly different; therefore, hypothesis six was rejected. Hypothesis seven stated there is no difference in mean scores between Sophomores and Juniors on measures of confidence in designing a personal physical fitness program. Although a significant difference occurred on item one, there were no differences on the other five items or on the total index; therefore, hypothesis seven was accepted. Hypothesis eight stated there are no interactions among sex, class and group on measures of confidence in designing a personal physical fitness program. Since only three of the 28 tests for interactions on confidence measures were significant, hypothesis eight was accepted. Hypothesis nine stated the subjects of the experimental group will evaluate specific aspects of the Concepts course positively. Although three items were rated positively, four items were not; therefore, hypothesis nine was accepted. Hypothesis 10 stated there is no difference in mean scores between males and females of the experimental group on general evaluation measures. Although a significant difference occurred on item one, there were no differences on the other six items or on the total index; therefore, hypothesis 10 was accepted.

Hypothesis 11 stated there is no difference in mean scores between Sophomores and Juniors of the experimental group on general evaluation measures. Since there were significant differences on all the items and on the total index, hypothesis 11 was rejected. Hypothesis 12 stated there are no interactions between sex and class of the experimental group on general evaluation measures. Although there were significant interactions on two items, there were no interactions on the remaining five items or on the total index; therefore, hypothesis 12 was accepted.

CONCLUSIONS

The results presented in the preceeding chapter permit the following conclusions to be made. These conclusions are confined to the limitations of this investigation.

1. The attitudes of the students who have successfully completed the Concepts course are more positive towards participation in lifetime sports and formal exercise programs than were students who had not been exposed to the Concepts course.

2. The Concepts course has brought about a much more positive attitude in the females in their confidence in evaluating their own physical fitness needs and prescribing a program to meet these needs.

3. The Concepts course was rated favorably by the Sophomores.

4. The Concepts course improved (based on student ratings) from the first to the second year of operation.

RECOMMENDATIONS

Several suggestions arose from the analysis and interpretation of the data. These are listed below to aid those interested in future research with evaluation of a lecture-laboratory physical education program.

1. Comparisons between students that quiz out and those that participate in the entire lecture-laboratory physical education course need to be investigated.

2. A further study is needed that eliminates several of the limitations of this study for more accurate evaluation.

3. Another area of recommended investigation would be a follow-up study of this one with the same subjects to determine the effect of a five to ten year period on their present feelings.

4. Further evaluations of lecture-laboratory courses using the questionnaire developed for this study with refinements and expansion of the Behavioral Index and restructuring or elimination of the Confidence Index.

5. The lecture-laboratory (Concepts) course needs to be started earlier in the educational life of the student to effectively alter attitudes toward physical fitness and activity.

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APPENDIX A: Questionnaire for Experimental Group

SURVEY OF PHYSICAL ACTIVITY OF KSU STUDENTS

DEPARTMENT OF HEALTH, PHYSICAL EDUCATION, AND RECREATION

KANSAS STATE UNIVERSITY

PLEASE INDICATE YOUR STATUS ON THE FOLLOWING:

SEX: M F

COLLEGE STANDING: SO JR

PART I. CIRCLE "YES" OR "NO" TO ANSWER THE FOLLOWING QUESTIONS:

During the past 12 months, have you:

- | | | | |
|-----|----|-----|---|
| YES | NO | 1. | Devised a physical fitness program for yourself? |
| YES | NO | 2. | Participated in at least one intramural activity each semester? |
| YES | NO | 3. | Participated regularly in at least one "lifetime" sport (a sport for use throughout a lifetime, such as tennis, golf, or biking)? |
| YES | NO | 4. | Changed dietary, smoking, drinking, or sleeping habits in order to improve your physical well-being? |
| YES | NO | 5. | Followed a physical fitness program designed to improve and strengthen your respiratory and cardiovascular systems? |
| YES | NO | 6. | Followed a program designed to increase strength and muscular endurance? |
| YES | NO | 7. | Followed a program designed to improve flexibility and speed of physical reaction? |
| YES | NO | 8. | Followed an exercise program as part of an effort to control weight? |
| YES | NO | 9. | Participated in a formal exercise program such as: XBX, 5BX, adult fitness, etc? |
| YES | NO | 10. | Tried to explain to anyone else the importance of physical fitness? |
| YES | NO | 11. | Made suggestions to anyone else about ways their physical fitness could be improved? |

- YES NO 12. Encouraged anyone else to plan and implement a sound physical fitness program?
- YES NO 13. Explained to anyone or more basic concepts of physical fitness (proper ways to exercise, avoiding heart strain, etc.)?
- YES NO 14. Invited anyone to join you in an exercise-fitness program?

PART II. INDICATE HOW CONFIDENT YOU ARE ABOUT YOUR ABILITY
TO DO THE FOLLOWING:

	NOT <u>CONFIDENT</u>	QUITE UNSURE <u>OF SELF</u>	INBE- TWEEN	QUITE <u>CONFIDENT</u>	VERY <u>CONFIDENT</u>
1. I can select physical activities which will suit me (be fun and still contribute to my health and fitness	_____	_____	_____	_____	_____
2. I can determine the fitness areas in which I am most in need of improvement	_____	_____	_____	_____	_____
3. I can accurately assess my own condition regarding physical fitness	_____	_____	_____	_____	_____
4. I know the best ways to assess cardiovascular fitness, fatness, strength, muscular endurance, and flexibility	_____	_____	_____	_____	_____
5. I know the purpose and benefits of a variety of exercises	_____	_____	_____	_____	_____
6. I know how to measure my progress toward developing physical fitness	_____	_____	_____	_____	_____

PART III. THE FOLLOWING QUESTIONS REFER TO THE CONCEPTS IN PHYSICAL EDUCATION COURSE WHICH YOU TOOK AT KANSAS STATE UNIVERSITY. RECORD THE NUMBER WHICH MOST CLOSELY CORRESPONDS TO YOUR FEELING:

1 = Definitely Disagree 2 = More Disagree than Agree
 3 = Inbetween 4 = More Agree than Disagree
 5 = Definitely Agree

RATING

1. As a result of the Concepts course, I believe improving physical fitness through activity is more important than I had previously thought
2. From the knowledge I gained in the Concepts course, I feel confident that I can devise a practical way to meet my needs for physical fitness
3. The Concepts course provided me with motivation to maintain physical fitness throughout my life
4. The Concepts course was more rewarding to me personally than were my high school physical education classes
5. Compared with other courses I have taken at KSU, the Concepts course rates "well above average" in personal value
6. As a result of the Concepts course, I follow an exercise program which helps me to feel better and, therefore, to study more efficiently
7. I recommend requiring the Concepts course for all undergraduates

What suggestions can you make for improving the Concepts course?

THANK YOU FOR YOUR COOPERATION.
IN THE ENVELOPE PROVIDED TO:

RETURN THE COMPLETED FORM
Bradley Gibson
Ahearn Fieldhouse 203
Kansas State University
Manhattan, Kansas 66506

APPENDIX B: Informed Consent for Personal Interviews

INFORMED CONSENT FORM

This is a preliminary personal interview for a study of the attitudes of Kansas State students who have taken the Concepts course and the effect of this program on their views of physical fitness. I have been informed that the information I am about to divulge is confidential. No names will be used to identify the people involved in the interview. I understand that I am participating in this interview by my own choice. All information gathered in this interview will be for informative purposes only with no recrimination against those involved. All information on tapes will be destroyed after studying them for questionnaire purposes.

signed

APPENDIX C: Cover Letter for Questionnaire

Dear K.S.U. Student:

This questionnaire is part of a research study designed to evaluate attitudes and habits related to physical activity. Your responses will be completely confidential. The number on the self-addressed return envelope will be used to verify that you have returned a completed questionnaire. When we receive this envelope, your name will be crossed off the mailing list; then the questionnaire will be separated from the envelope to protect your confidentiality.

Although you are under no obligation to answer this questionnaire, we hope you will want to take advantage of the opportunity to provide information on matters relating to college curriculums. Both faculty and future students will appreciate your willingness to help us profit from your experience. The questionnaire will require only a few minutes of your time. It will be greatly appreciated if you would complete and return it by December 6, 1974.

The fact that you completed and returned the questionnaire will verify that you have been informed about the project and are participating voluntarily. If you choose not to participate, please return the questionnaire in the envelope which has been supplied so that we will not bother you with further follow-up. Thank you for your time and cooperation.

Mail to: Bradley Gibson
Ahearn Fieldhouse 203
Kansas State University
Manhattan, Kansas 66506

APPENDIX D: General Information Sheet for Control Group

PART III. PLEASE CHECK ALL THE PERTINENT INFORMATION CONCERNING THE FOLLOWING CATEGORIES:

Have you previously taken the Concepts in Physical Education class? Yes ____ No ____

Are you presently taking the Concepts in Physical Education class? Yes ____ No ____

If you haven't taken the Concepts in Physical Education class, please indicate the appropriate reason:

____ Exempt because of participation in varsity athletics.

____ Exempt because of participation in marching band.

____ Exempt because of medical reasons.

____ Exempt because of being a transfer student.

____ Other (Specify)

THANK YOU FOR YOUR COOPERATION. RETURN THE COMPLETED FORM IN THE ENVELOPE PROVIDED TO:

Bradley Gibson
Ahearn Fieldhouse 203
Kansas State University
Manhattan, Kansas 66506

AN EVALUATION OF A LECTURE-LABORATORY
PROGRAM OF PHYSICAL EDUCATION

by

BRADLEY GIBSON

B. A., Kansas Wesleyan, 1970

AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Health, Physical Education, and Recreation

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1975

The purposes of this study were to determine the attitudes of the students toward the Lecture-Laboratory Physical Education (Concepts) program at Kansas State University and toward physical activity. There were 311 students that returned a completed questionnaire designed specifically for this study. The test questionnaire consisted of a Behavioral Index, a Confidence Index, and an Evaluation Index. A three-way analysis of variance was implemented to measure groups, sexes and classes on the Behavioral Index and Confidence Index. A two-way analysis of variance was used to study sex and class on the Evaluation Index. The experimental group consisted of those who had successfully completed the Concepts in Physical Education course and the control group consisted of those who had not been exposed to the Concepts in Physical Education course. An a-priori level of significance for this study was determined to be .10. Results indicated that significant differences did not exist between groups on any of the indices. There was no significant difference between sexes on the Behavioral Index nor on the Evaluation Index; however, a significant difference did occur on the Confidence Index. No significant differences occurred between classes on the Behavioral and Confidence Indices, but the difference between classes on the Evaluation Index was significant. Twelve hypotheses were tested with 10 hypotheses being accepted and two being rejected. On the basis of these results, it was concluded that members of the experimental group have a more positive attitude toward participation in lifetime sports and formal exercise programs

as a result of Concepts and females have become more confident in evaluating their own physical fitness needs and prescribing a program to meet these needs. It was further concluded that the Sophomores rated the Concepts course favorably and (on the basis of student ratings) the Concepts course improved from the first to the second year.