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AN ANALYSIS OF HEALTH RELATED FITNESS PRACTICES IN THE MICHIGAN SECONDARY SCHOOL PHYSICAL EDUCATION CURRICULUM

by

D. Robert Salmon

A Thesis
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AN ANALYSIS OF HEALTH-RELATED FITNESS PRACTICES IN THE MICHIGAN SECONDARY SCHOOL PHYSICAL EDUCATION CURRICULUM

D. Robert Salmon, M.A.
Western Michigan University, 1991

This study investigated the emphasis placed on health-related fitness in Michigan's secondary school physical education system. Information for this study was gathered from questionnaires. A total of 707 questionnaires was sent out, with 421 returned, representing a response rate of 59%. Analyzed variables included: (a) psychomotor, (b) cognitive, (c) socio-economic, (d) frequency, (e) geographical regions, (f) class size, (g) faculty, (h) public/private education, (i) facilities, and (j) evaluation tests. Statistical analyses included percentages, frequencies, and chi squares.

The findings from this study indicated that only two variables, (c) socioeconomic, and (j) evaluation, had a significant effect on fitness education. It was concluded that the lower the socioeconomic status, the lower the cognitive emphasis on health related physical fitness. For evaluation, it was found that schools using some form of evaluation tool provided a greater cognitive emphasis on health related physical fitness topics.
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D. Robert Salmon
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An analysis of health related fitness practices in the Michigan secondary school physical education curriculum

Salmon, Donald Robert, M.A.
Western Michigan University, 1991
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CHAPTER I

INTRODUCTION

Individual exercise compliance is an important component of healthful living. However, only an estimated 20% of American adults participate in physical activity of sufficient frequency, intensity and duration to effect increases in cardiorespiratory fitness (Dishman, 1986; Oldridge, 1982). Recent data on the fitness status of American youth revealed a decided inadequacy with respect to exercise compliance. The National Children and Youth Fitness Study determined that American youth have increased in percentage of body fat since the 1960s (U.S. Department of Health and Human Services—Centers for Disease Control, 1985). As well, the Fitness Gram project that applied the AAHPERD Youth Fitness Test to 84,000 students nationwide concluded that less than 1% of all students reached the 85th percentile of physical fitness (Lacy & Marshall, 1985). These data support the idea that American youth do not excel in the area of physical fitness.

The adolescent years are extremely formative in terms of habituation to adult lifestyle choices. Consequently, inquiry has arisen as to how comprehensive fitness education really is on the secondary school level. In Michigan,
2

The 1984-85 Michigan Educational Assessment Program indicated that a majority of secondary school students (grade 10) failed to meet state recommended fitness levels in the areas of cardiovascular fitness and flexibility (Reuschlein & Haubenstricker, 1985). Yet data from research on the Current Status of Physical Education in Michigan Public Schools indicated that 81% of the state local school districts included physical fitness skill instruction (State of Michigan, Department of Education, 1983). The same study also found that 85.7% of Michigan Public High Schools employ physical education specialists.

Statement of the Problem

A major discrepancy exists between what physical education specialists perceive as fitness education and the fitness performance data of secondary and post secondary school Americans. Somewhere in the chain between theory and practice is a missing link. Accordingly, this study examined the secondary school physical education process in Michigan to see if physical education curricula are meeting fitness education needs.

Purpose

The purpose of this study was to determine the extent of health related fitness education in Michigan high schools. With fitness levels of American youth showing a
decline, it was decided that an investigation of educational practices in this area would reveal poor emphasis. It was hoped that findings from this study might provide some insight as to where the discipline is weakest. It was also hoped that such information might be used to stimulate growth and/or change. All information was gathered by surveying the curriculum content of secondary school physical education.

Delimitations

The study was delimited to: (a) public secondary school physical education curriculum in the State of Michigan; (b) private secondary school physical education curriculum in the State of Michigan. All secondary schools registered with the Michigan Board of Education were included in the study.

Assumptions

It was assumed that physical education curriculum content was balanced enough to provide for fitness education throughout fall and winter semesters. It was also assumed that questionnaire respondents accurately reported the curriculum content of their respective schools.

Hypothesis

Because national fitness norms indicate less than
optimal fitness levels for American youth, the following hypotheses were stated:

1. Secondary school physical education curriculum trends in Michigan will reflect a low emphasis in psychomotor aspects of fitness education.

2. Secondary school physical education curriculum trends in Michigan will reflect a low emphasis in cognitive aspects of fitness education.

3. Differences will exist in fitness education between schools that differ in the level of average student socioeconomic status (SES), with higher student SES reflecting a greater emphasis.

4. Differences will exist in fitness education between schools that have greater mandatory physical education requirements and schools with fewer mandatory physical education graduation requirements.

5. Differences will exist in fitness education between geographical regions.

6. Differences will exist in fitness education between schools differing in Class size, (i.e., Class A, B, C, D).

7. Differences will exist in fitness education between schools differing in the number of full time and/or part time physical educators.

8. Differences will exist in fitness education between public and private schools.
9. No differences will exist in fitness education between schools that vary in availability of physical education facilities.

Definition of Terms

The following terms were used in the study:

1. Fitness education: formal instruction in psychomotor, affective and cognitive aspects of health related fitness.

2. Body composition: the percent of body weight which is adipose tissue (fat) versus lean body mass (Dougherty, 1983).

3. Cardiorespiratory endurance: ability to sustain moderately intense, large muscle group activity for extended periods of time (20 or more minutes) (Dougherty, 1983).

4. Cool-down: a period of low intensity exercise performed at the end of an exercise session.

5. Duration of exercise: total time of exercise at target heart rate.

6. Flexibility: maximum range of motion possible in a joint or series of joints (Dougherty, 1983).

7. Frequency of exercise: number of times per week exercise is performed.

8. Intensity of exercise: rate of heartbeats per minute during exercise.
9. Maximal Heart Rate: estimated maximal heart rate established by subtracting age from 220 (ACSM, 1986).

10. Obesity: excessive body fat (Dougherty, 1983).

11. Overload principle: a level of exercise intensity which exceeds that to which a person is already adapted.

12. Risk factors: a personal characteristic or habit associated with increased risk of developing coronary heart disease (Dougherty, 1983).

13. Stretching: exercise designed to maintain or improve flexibility.

14. Target heart rate: 60 to 90 percent of maximal heart rate (ACSM, 1986).

15. Warmup: period of light to moderately intense exercise preceding intense exercise.
CHAPTER II

REVIEW OF LITERATURE

This study examined the curriculum content of secondary school physical education in the State of Michigan. The problem of the study was to determine the extent of health related fitness education Michigan students were receiving prior to the completion of high school. This chapter provides a review of relevant literature.

Historical Overview

In 1964, a joint committee representing the American Medical Association (AMA) and the American Alliance for Health, Physical Education, and Recreation (AAHPER) co-authored an article on the importance of exercise as a contributing factor to total well being (AMA & AAHPER, 1964). This committee reached three relevant conclusions: (1) exercise is an important factor in total fitness; (2) a program of exercise should be started at an early age; and (3) daily vigorous exercise is desirable, with recommended times ranging from 30 minutes to one hour.

Five years later, Brunner (1969) published an article entitled "How Will Today's Physical Education Be Remembered in 1989?" Brunner researched high school and college
physical education experiences of 60 adults on the campus of the University of Iowa. Of the respondents, 63% expressed their recollections of physical education as negative. Listed below are some of the participant responses.

I am quite bitter about the physical education programs I participated in. Most of my training was in sports—football, basketball, etc.—which I could not pursue in my professional life. Physical education programs are run, not for the benefit of the students, but for the school; welfare, prestige, money, etc. The schools—the physical education programs—channeled it in the wrong direction. I learned handball on my own when I was about 27 (p.42).

I only became interested in regular workouts 16 months ago—mainly for weight control—my only athletic endeavor(s) ... are of no value to me at age 33 (p.42).

There doesn’t seem to be a relationship between sports ... and my present motivation (p. 42).

My high school physical education program was a complete waste of time: baseball in the spring; football in the fall; basketball in the winter—you can bet your life I avoided it in college (p. 42).

Perhaps certain skills have carried over but not habits of exercise (p. 42).

In addition to these comments, Brunner (1969) asked respondents to share ideas on how physical education curriculums might be improved. In a review of all responses, over 50% expressed the thought that more emphasis should be placed on activities which would help keep adults physically active in their post school years. Brunner summarized by stating that the purpose of publishing these comments was not to "chastise physical educators, but to renew awareness of a primary objective of physical educa-
tion" (p. 42). He concluded by asking whether the students of 1969 were formulating habits of exercise that would carry over into their adult lives, as well as by asking how the students of 1989 would evaluate present day physical education programs. This article challenges all physical educators to examine program contributions to life long fitness education.

Present Day Concern

Taylor and Chiogioji (1987) believed that "the physical education curriculum has lost the credibility it once had of being an important part of the general high school curriculum" (p. 23). These authors suggested that this loss of credibility is due to a dichotomy between the goals and practice of physical education. Goals include such things as improvement of physical fitness, self-esteem, cognitive and social skills. In reality, these goals are not being met. Gross over-emphasis on sports participation has resulted in a fragmentation of goal achievement. Suggestions for reform included such things as: (a) increased emphasis on cognitive learning; (b) increased academic integration of physical education; and (c) the encouragement of learning for mastery (Taylor & Chiogioji, 1987).

Powell, Christenson, and Kreuter (1984) concurred with Taylor and Chiogioji. These authors felt that the primary
emphasis of present day physical education curriculum is on competitive sports. Suggestions for reform included: (a) a shift away from the traditional sports emphasis to one of developing lifetime activity skills; and (b) increased frequency of participation.

Garrett (personal communication, November, 1987), reported similar concerns during an interview on the subject of physical education curriculum. Garrett expressed comments which included the view that physical education must contribute substantially to the fitness levels of American youth. Otherwise, its continuity should be questioned, from both educational and economic standpoints.

This concern regarding the physical fitness levels of American youth extends beyond the sphere of physical educators alone. Even the lay press has voiced concerns about the quality of physical education. Safran (1981) published an article in *Redbook Magazine* on this very subject. Questions raised in this article included such issues as: (a) who’s in charge of the curriculum?, (b) is there enough time?, (c) what’s being taught?, and (d) how good is your child’s program? These pointed questions mirror those expressed by the professional community. In fact, when the United States Department of Education published its findings on the need for essential educational reform, physical education was not even included as a
discipline necessary for U.S. education to be internationally competitive in the future (USDE, 1983). Due to the ever increasing cost of public education, many physical education programs are increasingly being required to justify their cost effectiveness.

To add to this, current facts regarding the fitness levels of American youth are alarming. For example, the National Children and Youth Fitness Study reported that American youth have increased their percentage of body fat since the 1960s (Ross & Gilbert, 1985). The Fitness Gram Project (developed by the Institute for Aerobics Research and sponsored by Campbell's Soups) applied the AAHPERD Youth Fitness Test to 84,000 students nationwide. One indication of the poor fitness levels of American youth revealed therein was that less than 1% of all students tested reached the 85th percentile of physical fitness (Lacy & Marshall, 1985).

In 1977, Gilliam, Katch, Thorland, and Weltman tested 47 active, prepubescent children in order to "assess their prevalence of single and multiple coronary heart disease risk factors" (p. 21). Each child was tested in four areas: (1) pulmonary function, (2) blood lipid analysis, (3) physical work capacity (VO2 Max), and (4) body composition. Of the 47 children tested, 62% had at least one risk factor, and of these, over 35% had two or more risk factors.
Oldridge (1982) reviewed evidence which suggested that the more physically active individual may have an improved coronary risk profile, ... and that there is evidence of an association between habitual physical activity and improved cardiovascular and perhaps psychological states of health (p. 56).

These conclusions are supported by numerous additional research studies, including Haskell (1979); Kavanagh, Shephard, Doney, and Pandit (1973); Morris et al. (1973); and Morris, Everitt, Pollard, Chave, and Semmence (1980). This growing body of evidence on the need for lifestyle and fitness education reform cannot be ignored by professional physical educators.

Model Programs

Evidence suggested that many schools are attempting to respond to this crisis. In fact, the professional literature often publishes reviews of exemplary physical education programs.

One such example was in the Tilford Middle School District in Vinton, Iowa. This school district decided to "strike out on a bold path with strong direction" (Kirkpatrick, 1987, p. 46). The primary goal of this program was to contribute to the development of a healthy self concept for every student. To this end, the program consisted of two major components, including a wellness segment that addressed specific areas of fitness, and a complimentary activity segment. Areas included in the fitness component...
were cardiovascular health, percentage of body fat, and posture education. Emphasis was placed on helping each student to strive for excellence in these areas through lifestyle commitment.

Another such model was the award winning program of Forest City Elementary School of Forest City, Iowa (Kopperud, 1986). This program also attempted to aid in the development of positive self images. To help accomplish this goal, students began with the opportunity to acquire an understanding of a comprehensive battery of fitness concepts. Emphasis was always placed on lifetime fitness. Following this, students were given specific opportunities to develop and maintain a level of fitness commensurate with their individual abilities. In addition to completing the AAHPERD Health Related Physical Fitness Test, each student was required to complete monthly takehome assignments that were supervised by parents. Upon completion of each assignment, certificates of achievement were awarded. During the 1984-85 school year, a total of 476 certificates were awarded, and the school was presented with the 1985 Iowa Elementary Physical Fitness and Sports Program Award by the Governor's Council on Physical Fitness and Sports.

One final program worthy of mention was that of Ridgewood Public School in Ridgewood, New Jersey (Jenkins & Staub, 1985). This program put strong emphasis on fitness education, while at the same time attempted to make
fitness fun. Students were taught the "why's" of exercise, and were tested regularly in the classroom in such areas as cardiorespiratory fitness, strength, flexibility, and body composition. Testing feedback always included information on how to develop plans for improvement. Evaluation of student performance in cardiorespiratory endurance using the AAHPERD Health related Fitness Test indicated some positive progress. Of 273 students tested in grades 4 through 6, 256 scored at or above the 50th percentile, and 105 had scores at or above the 85th percentile (Jenkins & Staub, 1985). Such data lend strong support to the argument that fitness education, properly incorporated into the physical education curriculum, has the potential to effect dramatic changes on the health of America's future, its youth.

Evidence Supporting Fitness Education

While research on fitness education is limited, some evidence exists to support the hypothesis that increased quality of fitness education will improve both the health and lifelong activity patterns of students.

In 1968, Johnson compared the effects of a five-day-per-week versus a two-and three-day-per-week physical education program. The parameters under investigation included overall fitness, skill development, adipose tissue and growth. Of the 743 middle school students involved in
the two year study, 284 students (151 male and 133 female) had daily physical education. The remaining 459 students participated in physical education two to three days per week. Both groups participated for the same total number of weeks. Results from this study indicated that in the areas of (a) skill, (b) physical fitness, and (c) adipose tissue, the five-day-per-week program was significantly superior. In the area of growth, no significant differences were found. Other studies by contemporaries of Johnson (Heald, 1963; Keough, 1962) compared frequency of participation to improvement in physical fitness and performance. The findings were similar; students who participated in daily physical education gained significant health advantages.

In 1984, Slava, Laurie, and Corbin published findings on the long term effects of a conceptual physical education program. Subjects selected for the study included undergraduate students from the 1977 and 1979 graduating classes of Arizona State University. This study compared differences in attitude, knowledge, and activity, with respect to physical fitness. Student groups were compared on the basis of completion of a conceptual (lecture-laboratory) physical education class. Students who completed this class were compared with (a) students who opted to "quiz out" of the course, and (b) students who elected to complete "traditional" physical education classes. It was
hypothesized that students who participated in the conceptually oriented class would possess significantly better attitudes towards, knowledge of, and experience with exercise on a long term basis than students who did not take the class. Results of this study indicated that profile differences did exist between those who took the concepts class and the other groups. The concepts group was rated good with respect to attitude, knowledge, and activity. The "quiz out" group rated good in knowledge and low in activity. The "traditional" group profile was low on attitude and knowledge, and "moderate" on activity. Although the researchers acknowledged the limitations of these findings, it was argued that the positive effects of conceptually oriented physical education should not be ignored.

In 1986 Rider, Imwold, and Johnson of Florida State University reported the effects of a personal fitness course on cognitive, attitudinal, and physical fitness measures of secondary school students. In this study, 60 secondary school students were randomly selected from three different school systems within the State of Florida. Assigned teachers were provided with the training necessary to administer the various tests for use in the course. Participating subjects were pretested during the 1984 fall term in the areas of: (a) physical fitness, (b) attitudes towards physical fitness, and (c) knowledge of fitness
concepts. After completion of a 15 week course, students were post tested to determine course effects. In the cognitive area, a pretest/posttest comparison indicated statistically significant increases in 4 of the 6 areas tested. However, in two areas, nutrition and skeleto-muscular, where improvements were non significant, both showed a tendency toward improvement. The analysis of fitness data, using the AAHPERD Health Related Physical Fitness Test, provided mixed findings. While significant changes occurred in the areas of abdominal strength and flexibility, non significant differences were found in the areas of cardiovascular fitness and body composition. The authors suggested that perhaps insufficient time was allotted to the laboratory portion of the course to allow for change. In the area of attitude, measured by Morton's Physical Education Attitude Scale, students showed significant improvement. The results of this study lend support to the decision of the Florida State Legislature to mandate the completion of a personal fitness course as a requirement for high school graduation (Raise Act, 1984).

In 1981, Laurie conducted a study at Kansas State University, the purpose of which was to determine the effects of a conceptual physical education class on students. Specifically, the study attempted to compare preclass to postclass results in the following areas: (a) the ability of students in planning personal exercise
programs, (b) the knowledge of exercise and fitness possessed by students, (c) the relationship of student confidence towards exercise planning ability, (d) the relationship of confidence planning toward self reported exercise behavior, and (e) the relationship of confidence in exercise planning toward the evaluation of a lecture-laboratory course.

Data were collected on 260 coed college students. The one semester hour class met three times per week for seven weeks. One class per week was devoted to lecture, and the remaining two days were devoted to laboratory activities. Pretesting included the completion of a fitness knowledge assessment and a confidence index assessment. On the basis of these assessments, students were categorized into one of three groups: those scoring low, medium, or high. A pretest to posttest comparison provided some interesting information. In the area of fitness knowledge, the average pretest percentage of correct answers was 31%. Posttest percentages of fitness knowledge averaged 75%, representing at course end an acceptable class average of C. In the area of relationship between knowledge and student confidence towards exercise planning ability, no significant changes were found. However, in comparing confidence levels with self reported exercise behavior, significant differences were found. Also, students reporting low confidence in planning ability indicated significantly less
exercise frequency than those who reported medium or high levels of confidence. Finally, comparison of confidence levels towards course evaluation indicated that students low in confidence concerning their own ability to plan an exercise program rated the course less favorably than other students.

Summary

Results from these studies lend support to the idea that increased emphasis on fitness education in the physical education curriculum might be much more effective in establishing healthy lifestyle patterns in American adolescents. In order for physical education to continue as a truly viable discipline, serious consideration must be given regarding its impact on the longterm fitness activity patterns of American society.
CHAPTER III

RESEARCH METHODS

The purpose of this study was to survey the current curriculum content of secondary school physical education programs. The primary goal was to determine the extent of fitness education in Michigan high schools. This chapter provides a review of the procedures involved in the development of this project.

Subjects

The subjects in this research were secondary school physical educators teaching at institutions registered with the Michigan Department of Education. Each registered secondary school in Michigan was sent one questionnaire accompanied by a cover letter. Only one physical educator per institution was asked to complete and return the questionnaire.

Questionnaire

The questionnaire was developed over a period of time. Under the direction of the thesis committee, the researcher developed questionnaire criteria. These criteria were based on variables thought to be relevant to the process of
secondary school fitness education. The questionnaire was designed to analyze the curriculum content of secondary school physical education within Michigan. The questionnaire was divided into six major areas, listed as follows: (1) demographics; (2) facilities; (3) schedule for required physical education; (4) schedule for elective physical education; (5) curriculum content for required and elective physical education classes; and (6) student evaluation. Each of these six major areas included a number of specific questions outlined below. See Appendix A for a copy of the questionnaire.

**Demographics**

This section dealt with: (a) school division size, Class A, B, C, or D; (b) the number of full and part-time physical educators per institution; (c) the estimated socioeconomic status of the student body; and (d) the school's status, a public or private institution.

**Facilities**

Differences in the availability of fitness facilities between schools were thought to be relevant to the process of fitness education. As such, this section dealt with listing the type of facilities available for physical education. A comprehensive list of both indoor and outdoor facilities was included in the questionnaire.
Physical Education Schedule

Frequency, length and choice of activity classes were thought to be important variables relative to the quality of fitness education. Accordingly, the scheduling section asked questions regarding: (a) the duration of classes on a daily basis, (b) the number of class days per week, (c) the duration of classes on a semester basis, and (d) the school years in which physical education was required and/or elected.

Physical Education Curriculum

The questionnaire provided an extensive checklist of activity choices. The physical educator was asked to indicate which one(s) were offered by the respective institution. Activities were classified under the following headings: (a) team sports; (b) individual sports; (c) lifetime sports; and (d) fitness activities. The questionnaire also asked whether or not students had the option of choosing a preferred activity.

Student Evaluation

Physical educators were asked to indicate the basis for student evaluation. The questionnaire included required and elective physical education, with questions relative to both cognitive and practical evaluation. Also,
the questionnaire asked for specific information on
cognitive evaluation with respect to physical fitness and
fitness education.

Cover Letter

Each questionnaire was accompanied by a cover letter
addressed specifically to the physical educator of each
institution. The letter introduced the purpose for the
study. The letter emphasized the need for acquiring infor-
mation directly from the physical educator. As well, the
letter assured confidentiality and provided information on
how the respondents might obtain research results. In
addition to being addressed from the researcher, three
members of the graduate faculty co-signed the letter. See
Appendix B for a copy of the cover letter.

Mailing Procedures

A questionnaire, cover letter, and a stamped, return
addressed envelope was sent to every secondary school
registered in the State of Michigan with the Department of
Education. Due to postal costs, only a single mailing was
sent to each school. State geographic areas were estab-
lished on the basis of: (a) population density, (b)
socioeconomic status, and (c) postal zip codes. The state
was divided into eleven regional areas. Questionnaires
were color coded so that each geographic area could be
easily identified upon return of the questionnaire. Presorting the envelopes by postal code allowed the researcher to obtain bulk mail postal rates for outgoing questionnaires, thus helping to reduce overall costs.

Data Analysis

Groupings

In order to properly organize and analyze the data, classification groups were established. The classifications provided the necessary grouping variables to address the research hypotheses.

Geographical Divisions

Through the use of postal zip codes, population densities, and socioeconomic levels, the State of Michigan was divided into eleven sectional/geographical areas. Each of these areas was identifiable by name and zip code. The areas were: (1) Iron Mountain, zip codes 498 and 499; (2) Gaylord, zip code 497; (3) Traverse City, zip code 496; (4) Grand Rapids, zip codes 493, 494, and 495; (5) Kalamazoo, zip codes 490 and 491; (6) Jackson, zip code 492; (7) Lansing, zip codes 488 and 489; (8) Detroit, zip codes 481 and 482; (9) Royal Oak, zip codes 480 and 483; (10) Flint, zip codes 484 and 485; (11) Saginaw, zip codes 486 and 487. Each of these areas was given a color coded questionnaire.
to facilitate geographic identification upon return.

Class Size

Class size referred to the class rating of individual schools established by the Michigan Department of Education. Class rating was based entirely upon the number of students per school, and was broken down as follows: (a) Class A schools had a student body population of 1150 or greater; (b) Class B schools had between 587 and 1149 students; (c) Class C schools had between 311 and 586 students; and (d) Class D schools had less than 311 students.

Number of Physical Educators

Respondents were asked to indicate the actual number of salaried physical educators per institution. This area was divided into two categories: (1) fulltime physical educators, and (2) parttime physical educators.

Type of Institution

This grouping allowed for differentiation between public and private schools.

Socioeconomic Status

Socioeconomic status allowed for categorization of school populations according to average student socioecono-
mic status. There were four groups, defined as follows: (1) Group 1 had an estimated household income of between $10,000 and $19,999; (2) Group 2 ranged from $20,000 to $34,999; (3) Group 3 ranged from $35,000 to $50,000; and (4) Group 4 was greater than $50,000. These financial breakdowns were obtained from Survey of Buying Power (Sales and Marketing Management, 1987).

Simple Comparisons

Simple comparisons were a priority, and involved descriptive comparisons between the levels of each grouping variable. The grouping variables were socioeconomic status, educational frequency, geographical regions, class size, faculty variations, type of institution, facility variations, and student evaluation methods. Frequencies, percentages, and Chi Squares were calculated for each variable.

Complex Comparisons

Complex comparisons were all post hoc. These comparisons were based upon the relationships found in the simple comparison analyses.

Statistical Analysis

The statistical program used for data analysis was Frequencies and Crosstabs, from SPSSX (Nie, 1975).
CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

The purpose of this study was to analyze the extent of emphasis placed on health related fitness education in Michigan secondary schools. Each secondary school registered with the Michigan Department of Education was sent a questionnaire. Of the 707 schools sent questionnaires, 421 returned them, representing a response rate of 59%. Of the 421 returned questionnaires, four (less than 1%) had to be discarded due to incomplete responses. From the responses, a number of Chi Square Goodness of Fit tests were completed. The following is a list of the respective tests completed: (a) an analysis of the emphasis on psychomotor aspects of fitness education; (b) an analysis of the emphasis on cognitive aspects of fitness education; (c) a comparison of the emphasis on fitness education with respect to the average socioeconomic status of the school’s student population; (d) a comparison of emphasis on fitness education with respect to the frequency of required and/or elective physical education; (e) a comparison of emphasis on fitness education across state geographical regions; (f) a comparison of emphasis on fitness education by school classification (A, B, C, and D); (g) a comparison between
emphasis on fitness education and faculty status (full time, part time, and full and part time physical educators); (h) a comparison of emphasis on fitness education between public and private schools; (i) a comparison of emphasis on fitness education with respect to physical education facilities, (j) a comparison of student evaluation methods and fitness education.

Overview of Required Physical Education

Of the 417 responses received, only 3.1% of the schools surveyed did not require students to take classes in physical education. The remaining 96.9% required students to take some form of physical education. Of this latter group, 7.2% required physical education for one half of one semester, 17.7% for one full semester, and 71.2% for one entire school year. The remaining .8% had a variety of duration requirements, such as one and one half years, or two semesters on alternating years. Of the .8%, no single duration occurred with any significant frequency. In terms of how many days per week physical education was required, the following information was reported. No school offered required physical education classes for one day per week, 1.2% required classes two days per week, 2.4% required classes three days per week, 3.6% required classes four days per week, and 89.9% required classes five days per week. With respect to class time, 0.2% reported a
class duration of 30 minutes, 1.2% reported a 40 minute duration, 11% reported a 45 minute duration, 47.2% reported a 50 minute duration, 18.5% reported a 55 minute duration, 19.4% reported a 60 minute duration, while the remaining 0.2% reported a 65 minute class duration. With respect to the academic year (Freshman, Sophomore, Junior or Senior), physical education was required by 70.7% of the schools during the Freshman year, 22.8% during the Sophomore year, 3.4% during the Junior year, and the remaining 2.6% during the Senior year. Regardless of which year, 22.8% allowed students to choose any combination of two or more academic years to complete physical education requirements for graduation. Students were typically allowed a variety of selection options. For example, students might have elected to choose a combination of semesters to total one full year of physical education, or a combination of predetermined credit hours required for graduation. No one option was more prominent than another. See Table 1.

Overview of Elective Physical Education

Of the 417 responses, 86.5% of the schools indicated that elective physical education was offered, while 14.4% indicated that it was not. Schools that offered elective physical education identified a number of parameters offered for student participation.

1. For class duration, 13.4% of the schools reported
## Table 1

Status of Required Physical Education

<table>
<thead>
<tr>
<th>Variable</th>
<th>% Requiring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of Required Physical Education</td>
<td>% Requiring</td>
</tr>
<tr>
<td>1/2 Semester</td>
<td>7.2%</td>
</tr>
<tr>
<td>1 Semester</td>
<td>17.7%</td>
</tr>
<tr>
<td>1 Full Year</td>
<td>71.2%</td>
</tr>
<tr>
<td>Other</td>
<td>.8%</td>
</tr>
<tr>
<td>Number of Class Days/Week</td>
<td>% Requiring</td>
</tr>
<tr>
<td>2 Days</td>
<td>1.2%</td>
</tr>
<tr>
<td>3 Days</td>
<td>2.4%</td>
</tr>
<tr>
<td>4 Days</td>
<td>3.6%</td>
</tr>
<tr>
<td>5 Days</td>
<td>89.9%</td>
</tr>
<tr>
<td>Daily Class Duration</td>
<td>% Requiring</td>
</tr>
<tr>
<td>30 Minutes</td>
<td>0.2%</td>
</tr>
<tr>
<td>40 Minutes</td>
<td>1.2%</td>
</tr>
<tr>
<td>45 Minutes</td>
<td>11%</td>
</tr>
<tr>
<td>50 Minutes</td>
<td>47.2%</td>
</tr>
<tr>
<td>55 Minutes</td>
<td>18.5%</td>
</tr>
<tr>
<td>60 Minutes</td>
<td>19.4%</td>
</tr>
<tr>
<td>65 Minutes</td>
<td>0.2%</td>
</tr>
<tr>
<td>Academic Year</td>
<td>% Requiring</td>
</tr>
<tr>
<td>Freshman</td>
<td>70.7%</td>
</tr>
<tr>
<td>Sophomore</td>
<td>22.8%</td>
</tr>
<tr>
<td>Junior</td>
<td>3.4%</td>
</tr>
<tr>
<td>Senior</td>
<td>2.6%</td>
</tr>
<tr>
<td>Any Combination</td>
<td>22.8%</td>
</tr>
</tbody>
</table>

offering one half semester classes, 37.2% reported offering full semester classes, while 38.4% reported offering full year classes.
2. For class frequency per week: no schools reported offering elective physical education classes one day per week, 0.5% reported two days per week, 0.2% reported 3 days per week, 0.7% reported 4 days per week, and 81.8% offered elective classes five days per week.

3. Elective class duration (time per day) was reported as follows: (a) 0.2% indicated classes lasting thirty minutes; (b) 1% reported classes of 40 minutes; (c) 7.4% reported classes of 45 minutes; (d) 40% reported classes of 50 minutes, (e) 19.2% reported classes of 55 minutes; and (f) 17.3% reported classes lasting 60 minutes.

4. For academic year and students electing physical education, 9.6% reported the Freshman year, 37.4% reported the Sophomore year, and 67% reported both the Junior and/or Senior years. See Table 2.

Analysis of Psychomotor Aspects

Required Physical Education

Of the schools that participated in this research, 96.9% reported that physical education credit was required for secondary school graduation. Only 3.1% of the schools did not require students to take classes in physical education. Of the former group, 40% offered some form of aerobics class, 87.5% offered a physical fitness class, and 66.7% offered a weight training class. See Table 3.
Table 2
Status of Elective Physical Education

<table>
<thead>
<tr>
<th>Variable</th>
<th>% Offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of Elective Physical Education</td>
<td>% Offering</td>
</tr>
<tr>
<td>1/2 Semester</td>
<td>13.4%</td>
</tr>
<tr>
<td>1 Semester</td>
<td>37.7%</td>
</tr>
<tr>
<td>1 Full Year</td>
<td>38.4%</td>
</tr>
<tr>
<td>Number of Class Days/Week</td>
<td>% Offering</td>
</tr>
<tr>
<td>2 Days</td>
<td>0.5%</td>
</tr>
<tr>
<td>3 Days</td>
<td>0.2%</td>
</tr>
<tr>
<td>4 Days</td>
<td>0.7%</td>
</tr>
<tr>
<td>5 Days</td>
<td>81.1%</td>
</tr>
<tr>
<td>Daily Class Duration</td>
<td>% Offering</td>
</tr>
<tr>
<td>30 Minutes</td>
<td>0.2%</td>
</tr>
<tr>
<td>40 Minutes</td>
<td>1.0%</td>
</tr>
<tr>
<td>45 Minutes</td>
<td>7.4%</td>
</tr>
<tr>
<td>50 Minutes</td>
<td>40%</td>
</tr>
<tr>
<td>55 Minutes</td>
<td>19.2%</td>
</tr>
<tr>
<td>60 Minutes</td>
<td>17.3%</td>
</tr>
<tr>
<td>Academic Year</td>
<td>% Offering</td>
</tr>
<tr>
<td>Freshman</td>
<td>9.6%</td>
</tr>
<tr>
<td>Sophomore</td>
<td>37.4%</td>
</tr>
<tr>
<td>Junior and/or Senior</td>
<td>67%</td>
</tr>
</tbody>
</table>

Elective Physical Education

Of the 417 responses received, 86.5% of the schools indicated that elective physical education was offered, while 14.4% indicated that it was not offered. Of those
schools offering elective physical education, 38% offered some form of class in aerobics, 63% offered a physical fitness class, and 67% offered a weight training class. See Table 4.

Table 3
Percentage Values for Psychomotor Aspects of Required Physical Education

<table>
<thead>
<tr>
<th>Variable</th>
<th>% NO</th>
<th>%Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Fitness</td>
<td>12.5%</td>
<td>87.5%</td>
</tr>
<tr>
<td>Aerobics</td>
<td>60%</td>
<td>40%</td>
</tr>
<tr>
<td>Weight Training</td>
<td>33.3%</td>
<td>66.7%</td>
</tr>
</tbody>
</table>

Table 4
Percentage Values for Psychomotor Aspects of Elective Physical Education

<table>
<thead>
<tr>
<th>Variable</th>
<th>% NO</th>
<th>%Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Fitness</td>
<td>37</td>
<td>63%</td>
</tr>
<tr>
<td>Aerobics</td>
<td>62%</td>
<td>38%</td>
</tr>
<tr>
<td>Weight Training</td>
<td>33%</td>
<td>67%</td>
</tr>
</tbody>
</table>

Analysis of Cognitive Aspects

Each of the respondents was asked to indicate the
extent to which cognitive aspects of physical fitness were included on written exams. The results are as follows:

1. For body composition, 28.5% of the respondents indicated that students were responsible to demonstrate understanding of this parameter on a written test. Conversely, 71.5% indicated that no such cognitive knowledge was required.

2. For cardiovascular endurance, 50.6% of the respondents indicated that students were required to demonstrate cognitive understanding in the form of a written test. Conversely, 49.4% indicated that no such cognitive knowledge was required.

3. With respect to cool down, 31.7% of the respondents indicated that students were required to demonstrate cognitive understanding on a written test. The remaining respondents, 68.3%, indicated that no such cognitive knowledge was required.

4. For duration of exercise, 37.6% of the respondents indicated that students were required to demonstrate cognitive understanding on a written test. The remaining respondents, 62.8%, indicated that no such cognitive knowledge was required.

5. For flexibility, 46% of the respondents indicated that students were required to demonstrate cognitive understanding on a written test. The remaining respondents, 54%, indicated that no such cognitive knowledge was
required.

6. For frequency of exercise, 39.8% of the respondents indicated that students were required to demonstrate cognitive understanding on a written test. The remaining 60.2% respondents indicated that no such cognitive knowledge was required.

7. For intensity of exercise, 39.1% of the respondents indicated that students were required to demonstrate cognitive understanding on a written test. The remaining 60.9% respondents indicated that no such cognitive knowledge was required.

8. For obesity, only 22.5% of the respondents indicated that students were required to demonstrate cognitive understanding on a written test. The remaining 77.5% respondents indicated that no such cognitive knowledge was required.

9. For the overload principle, 27.8% of the respondents indicated that students were required to demonstrate cognitive understanding on a written test. The remaining 72.2% respondents indicated that no such cognitive knowledge was required.

10. Coronary heart disease risk factors included such things as age, gender, family history of heart disease, diabetes, smoking, hypertension, obesity, diet, stress behavior, and exercise habits. With respect to these risk factors, 26.9% of the respondents indicated that students
were required to demonstrate cognitive understanding on a written test. The remaining respondents, 73.1%, indicated that no such cognitive knowledge was required.

11. For stretching, 50.1% of the respondents indicated that students were required to demonstrate cognitive understanding on a written test. The remaining respondents, 49.9%, indicated that no such cognitive knowledge was required.

12. For target heart rate, 40.5% of the respondents indicated that students were required to demonstrate cognitive understanding on a written test. The remaining respondents, 59.5%, indicated that no such cognitive knowledge was required.

13. For warm up, 44.6% of the respondents indicated that students were required to demonstrate cognitive understanding on a written test. The remaining respondents, 55.4%, indicated that no such cognitive knowledge was required.

14. A number of physical educators indicated other miscellaneous topics in which students were required to demonstrate cognitive knowledge. Between 1 and 2% of the respondents required cognitive assessment in the areas of: (a) health and safety, (b) physiology and kinesiology, and (c) nutrition. All other topics requiring written cognitive response were reported by less than 1% of the respondents. See Table 5.
Table 5
Percentage Values for Fitness Parameters With Cognitive Aspects

<table>
<thead>
<tr>
<th>Fitness Parameter</th>
<th>% Requiring Written Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Composition</td>
<td>28.5%</td>
</tr>
<tr>
<td>Cardiovascular Endurance</td>
<td>50.6%</td>
</tr>
<tr>
<td>Cooldown</td>
<td>31.7%</td>
</tr>
<tr>
<td>Duration of Exercise</td>
<td>37.6%</td>
</tr>
<tr>
<td>Flexibility</td>
<td>46%</td>
</tr>
<tr>
<td>Frequency of Exercise</td>
<td>39.8%</td>
</tr>
<tr>
<td>Intensity of Exercise</td>
<td>39.1%</td>
</tr>
<tr>
<td>Obesity</td>
<td>22%</td>
</tr>
<tr>
<td>Overload Principle</td>
<td>27.8%</td>
</tr>
<tr>
<td>Risk Factors</td>
<td>26.9%</td>
</tr>
<tr>
<td>Stretching</td>
<td>50.1%</td>
</tr>
<tr>
<td>Target Heart Rate</td>
<td>40.5%</td>
</tr>
<tr>
<td>Warm-up</td>
<td>44.6%</td>
</tr>
<tr>
<td>Other (Miscellaneous)</td>
<td>&lt;2%</td>
</tr>
</tbody>
</table>

Analysis of Socioeconomic Status

Comparison for frequencies of fitness education variables among socioeconomic (SES) groupings were conducted. It was hypothesized that the greater the average
SES of the school's population, the greater would be the emphasis on fitness education. Each individual fitness parameter (13 in all) was compared against four SES groups. The SES groups were defined as follows: (a) the lowest SES group (G1) had an average annual income of between $10,000 and $19,000; (b) the low-middle SES group (G2) had an average annual income between $20,000 and $34,000; (c) the high-middle SES group (G3) had an average annual income between $35,000 and $49,000; and (d) the high SES group (G4) which had an average annual income of $50,000 or more. Of all the comparisons between SES and individual fitness parameters, the following did not show any significant differences: (a) body composition; (b) frequency of exercise; (c) intensity of exercise; (d) obesity; and (e) coronary heart disease risk factors. The remaining eight fitness parameters did show significant differences. Each one is addressed individually below.

1. Cardiovascular endurance showed significant differences between the various levels of SES. Specifically, the lowest SES group (G1) was found to have significantly lower cognitive emphasis than any other group. As well, the highest SES group (G4) showed significantly higher cognitive emphasis than all other groups. It should be noted, however, that G4 represented only 3.3% of the entire response population.

2. The only significant difference with the parameter
cool-down was found in SES G1. This group was found to have significantly less cognitive emphasis than all other groups.

3. The parameter of duration of exercise showed significant differences between SES G1 and all other groups. Again, it was found that G1 showed significantly less cognitive emphasis compared to other groups.

4. The parameter flexibility indicated that SES G1 showed significantly less cognitive emphasis than all other SES groups.

5. With respect to the overload principle, G3 showed significantly higher cognitive emphasis than all other SES groups.

6. The parameter stretching showed significant differences between G1, G3, and G4. Where G3 and G4 showed higher cognitive emphasis, G1 showed less emphasis.

7. In the area of target heart rate, significant differences existed between G1 and G4. Where G1 showed very low cognitive emphasis, G4 showed very high emphasis. Again, it should be noted that G4 represents only 3.3% of the total response population.

8. With respect to warm up, G1 showed significantly less cognitive emphasis than other groups. See Table 6.

Analysis of Educational Frequency

This analysis compared the frequency of fitness
Table 6

Chi Square Values for Fitness Parameters With Socioeconomic Status

<table>
<thead>
<tr>
<th>Fitness Parameter</th>
<th>D.F.</th>
<th>Chi Sq.</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Composition</td>
<td>3</td>
<td>5.45173</td>
<td>.14155</td>
</tr>
<tr>
<td>Cardiovascular Endurance</td>
<td>3</td>
<td>16.87393</td>
<td>.00075*</td>
</tr>
<tr>
<td>Cooldown</td>
<td>3</td>
<td>16.72886</td>
<td>.00080*</td>
</tr>
<tr>
<td>Duration of Exercise</td>
<td>3</td>
<td>14.04845</td>
<td>.00284*</td>
</tr>
<tr>
<td>Flexibility</td>
<td>3</td>
<td>15.42819</td>
<td>.00149*</td>
</tr>
<tr>
<td>Frequency of Exercise</td>
<td>3</td>
<td>3.99004</td>
<td>.26254</td>
</tr>
<tr>
<td>Intensity of Exercise</td>
<td>3</td>
<td>7.69859</td>
<td>.05267</td>
</tr>
<tr>
<td>Obesity</td>
<td>3</td>
<td>2.86108</td>
<td>.41354</td>
</tr>
<tr>
<td>Overload Principle</td>
<td>3</td>
<td>16.24597</td>
<td>.00101*</td>
</tr>
<tr>
<td>Risk Factors</td>
<td>3</td>
<td>5.47463</td>
<td>.14016</td>
</tr>
<tr>
<td>Stretching</td>
<td>3</td>
<td>16.48872</td>
<td>.00090*</td>
</tr>
<tr>
<td>Target Heart Rate</td>
<td>3</td>
<td>20.11106</td>
<td>.00016*</td>
</tr>
<tr>
<td>Warm-up</td>
<td>3</td>
<td>15.32279</td>
<td>.00156*</td>
</tr>
<tr>
<td>Other (Miscellaneous)</td>
<td>3</td>
<td>0.89869</td>
<td>.82574</td>
</tr>
</tbody>
</table>

*Significant at the .05 level

education variables among required physical education groupings. Specific variables within required physical education included (a) frequency of class days per week (one to five days per week), (b) amount of class time per
day (from 30 to 60 minutes per day), and (c) number of years physical education was required during secondary school (Freshman, Sophomore, Junior, and/or Senior Years). The investigator hypothesized that significant differences would exist in emphasis on fitness education between schools varying in class frequency per week, class time per day, and class years for required physical education. Simple comparisons were done comparing frequency of days, class time, and class year(s) individually with respect to emphasis on fitness education. It was found that no significant differences existed between any individual parameter and fitness education. See Table 7.

Comparison of Geographical Regions

Questionnaire responses in this study were coded according to state geographic regions. These regions were established on the basis of (a) postal zip codes, (b) population density, and (c) socioeconomic level. Accordingly, the State of Michigan was divided into eleven geographical regions, identified as follows: (1) Flint area (R1); (2) Gaylord area (R2); (3) Saginaw area (R3); (4) Jackson area (R4); (5) Traverse City area (R5); (6) Grand Rapids area (R6); (7) Kalamazoo area (R7); (8) Lansing area (R8); (9) Detroit area (R9); (10) Royal Oak area (R10); and (11) Iron Mountain area (R11).
Table 7
Chi Square Values for Fitness Parameters With Educational Frequency

<table>
<thead>
<tr>
<th>Fitness Parameter</th>
<th>D.F.</th>
<th>Chi Sq.</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Composition</td>
<td>3</td>
<td>.84855</td>
<td>.83788</td>
</tr>
<tr>
<td>Cardiovascular Endurance</td>
<td>3</td>
<td>4.27893</td>
<td>.23288</td>
</tr>
<tr>
<td>Cooldown</td>
<td>3</td>
<td>.77561</td>
<td>.88529</td>
</tr>
<tr>
<td>Duration of Exercise</td>
<td>3</td>
<td>2.11734</td>
<td>.54841</td>
</tr>
<tr>
<td>Flexibility</td>
<td>3</td>
<td>1.35048</td>
<td>.71630</td>
</tr>
<tr>
<td>Frequency of Exercise</td>
<td>3</td>
<td>1.35423</td>
<td>.71630</td>
</tr>
<tr>
<td>Intensity of Exercise</td>
<td>3</td>
<td>1.88503</td>
<td>.59661</td>
</tr>
<tr>
<td>Obesity</td>
<td>3</td>
<td>1.14620</td>
<td>.76593</td>
</tr>
<tr>
<td>Overload Principle</td>
<td>3</td>
<td>1.23428</td>
<td>.74479</td>
</tr>
<tr>
<td>Risk Factors</td>
<td>3</td>
<td>1.223428</td>
<td>.77479</td>
</tr>
<tr>
<td>Stretching</td>
<td>3</td>
<td>2.99184</td>
<td>.39289</td>
</tr>
<tr>
<td>Target Heart Rate</td>
<td>3</td>
<td>2.90852</td>
<td>.40595</td>
</tr>
<tr>
<td>Warm-up</td>
<td>3</td>
<td>1.43860</td>
<td>.69651</td>
</tr>
<tr>
<td>Other (Miscellaneous)</td>
<td>3</td>
<td>2.49912</td>
<td>.47545</td>
</tr>
</tbody>
</table>

*Significant at the .05 level

Comparisons of frequency of fitness variables among geographical regions were done. Each region was compared against all others with respect to the individual parameters of fitness education previously cited. It was
hypothesized that significant differences in fitness education would exist between the various regions. Only one significant difference was found to exist between all eleven regions and all fourteen fitness parameters. This difference was with respect to the parameter cooldown. Interestingly, in 10 of the 11 geographical regions, significantly less emphasis was placed on this one fitness parameter. In spite of this one difference, it can be generally stated that almost no differences in emphasis on fitness education were found between the various state regions. See Table 8.

Comparison of Class Size

This section dealt with emphasis on fitness education as it related to secondary school class size. Comparison of frequency of fitness education variables among school class size were computed. Classifications of school by size were based entirely upon the number of students per school. Such guidelines are established on an annual basis by the Michigan Department of Education, and at the time of this were as follows: (a) Class A schools enrolled 1150 or more students; (b) Class B schools enrolled between 587 and 1149 students; (c) Class C schools enrolled between 311 and 586 students, and (d) Class D schools enrolled less than 311 students. It was hypothesized by the investigator that significant differences in emphasis on fitness education
would exist, and no differences were found. See Table 9.

Table 8
Chi Square Values for Fitness Parameters
With Geographical Regions

<table>
<thead>
<tr>
<th>Fitness Parameter</th>
<th>D.F.</th>
<th>Chi Sq.</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Composition</td>
<td>10</td>
<td>8.63912</td>
<td>.566</td>
</tr>
<tr>
<td>Cardiovascular Endurance</td>
<td>10</td>
<td>9.62306</td>
<td>.474</td>
</tr>
<tr>
<td>Cooldown</td>
<td>10</td>
<td>21.71855</td>
<td>.016*</td>
</tr>
<tr>
<td>Duration of Exercise</td>
<td>10</td>
<td>11.52525</td>
<td>.318</td>
</tr>
<tr>
<td>Flexibility</td>
<td>10</td>
<td>11.47503</td>
<td>.321</td>
</tr>
<tr>
<td>Frequency of Exercise</td>
<td>10</td>
<td>10.96925</td>
<td>.359</td>
</tr>
<tr>
<td>Intensity of Exercise</td>
<td>10</td>
<td>11.91048</td>
<td>.291</td>
</tr>
<tr>
<td>Obesity</td>
<td>10</td>
<td>16.17434</td>
<td>.097</td>
</tr>
<tr>
<td>Overload Principle</td>
<td>10</td>
<td>6.53362</td>
<td>.768</td>
</tr>
<tr>
<td>Risk Factors</td>
<td>10</td>
<td>6.11317</td>
<td>.805</td>
</tr>
<tr>
<td>Stretching</td>
<td>10</td>
<td>11.05235</td>
<td>.353</td>
</tr>
<tr>
<td>Target Heart Rate</td>
<td>10</td>
<td>11.14112</td>
<td>.346</td>
</tr>
<tr>
<td>Warm-up</td>
<td>10</td>
<td>12.49956</td>
<td>.253</td>
</tr>
<tr>
<td>Other (Miscellaneous)</td>
<td>10</td>
<td>12.16254</td>
<td>.274</td>
</tr>
</tbody>
</table>

*Significant at the .05 level
Table 9
Chi Square Values for Fitness Parameters
With Class Size

<table>
<thead>
<tr>
<th>Fitness Parameter</th>
<th>D.F.</th>
<th>Chi Sq.</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Composition</td>
<td>4</td>
<td>6.14937</td>
<td>.188</td>
</tr>
<tr>
<td>Cardiovascular Endurance</td>
<td>4</td>
<td>6.63909</td>
<td>.156</td>
</tr>
<tr>
<td>Cooldown</td>
<td>4</td>
<td>6.30171</td>
<td>.177</td>
</tr>
<tr>
<td>Duration of Exercise</td>
<td>4</td>
<td>6.91290</td>
<td>.140</td>
</tr>
<tr>
<td>Flexibility</td>
<td>4</td>
<td>4.86993</td>
<td>.300</td>
</tr>
<tr>
<td>Frequency of Exercise</td>
<td>4</td>
<td>7.61715</td>
<td>.106</td>
</tr>
<tr>
<td>Intensity of Exercise</td>
<td>4</td>
<td>6.44286</td>
<td>.168</td>
</tr>
<tr>
<td>Obesity</td>
<td>4</td>
<td>1.82622</td>
<td>.767</td>
</tr>
<tr>
<td>Overload Principle</td>
<td>4</td>
<td>2.94289</td>
<td>.567</td>
</tr>
<tr>
<td>Risk Factors</td>
<td>4</td>
<td>.59030</td>
<td>.964</td>
</tr>
<tr>
<td>Stretching</td>
<td>4</td>
<td>8.37722</td>
<td>.078</td>
</tr>
<tr>
<td>Target Heart Rate</td>
<td>4</td>
<td>7.83802</td>
<td>.097</td>
</tr>
<tr>
<td>Warm-up</td>
<td>4</td>
<td>5.30344</td>
<td>.257</td>
</tr>
<tr>
<td>Other (Miscellaneous)</td>
<td>4</td>
<td>1.23340</td>
<td>.872</td>
</tr>
</tbody>
</table>

*Significant at the .05 level

Analysis of Faculty Variations

Respondents were asked to identify the number of full time and part time physical educators employed by their
respective institutions. Respondents were allowed to indicate as many as eight full time and/or part time staff persons. Comparison of frequency of fitness education variables were done among the following groupings: (a) full time staff, (b) part time staff, and (c) full time and part time staff. It was hypothesized that schools with larger numbers of physical educators would show significantly greater emphasis on fitness education than schools with less educators.

**Full Time Faculty**

The only significant difference found in full time faculty was with the parameter stretching. In this area schools with four or more physical educators placed more emphasis on stretching. See Table 10.

**Part Time Faculty**

Part time faculty showed little differences. Significant differences in fitness education for part time faculty were found in the areas of (a) body composition, and (b) obesity. With respect to both body composition and obesity, it was found in general that schools with only part time physical educators placed less emphasis on these two areas. See Table 11.
Table 10
Chi Square Values for Fitness Parameters
With Full Time Faculty

<table>
<thead>
<tr>
<th>Fitness Parameter</th>
<th>D.F.</th>
<th>Chi Sq.</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Composition</td>
<td>7</td>
<td>6.68656</td>
<td>.462</td>
</tr>
<tr>
<td>Cardiovascular Endurance</td>
<td>7</td>
<td>4.19345</td>
<td>.757</td>
</tr>
<tr>
<td>Cooldown</td>
<td>7</td>
<td>4.25847</td>
<td>.749</td>
</tr>
<tr>
<td>Duration of Exercise</td>
<td>7</td>
<td>12.64128</td>
<td>.081</td>
</tr>
<tr>
<td>Flexibility</td>
<td>7</td>
<td>6.06920</td>
<td>.531</td>
</tr>
<tr>
<td>Frequency of Exercise</td>
<td>7</td>
<td>4.80051</td>
<td>.683</td>
</tr>
<tr>
<td>Intensity of Exercise</td>
<td>7</td>
<td>7.67927</td>
<td>.361</td>
</tr>
<tr>
<td>Obesity</td>
<td>7</td>
<td>10.10316</td>
<td>.182</td>
</tr>
<tr>
<td>Overload Principle</td>
<td>7</td>
<td>6.44278</td>
<td>.489</td>
</tr>
<tr>
<td>Risk Factors</td>
<td>7</td>
<td>3.79260</td>
<td>.803</td>
</tr>
<tr>
<td>Stretching</td>
<td>7</td>
<td>15.84596</td>
<td>.026*</td>
</tr>
<tr>
<td>Target Heart Rate</td>
<td>7</td>
<td>10.51557</td>
<td>.161</td>
</tr>
<tr>
<td>Warm-up</td>
<td>7</td>
<td>13.46552</td>
<td>.061</td>
</tr>
<tr>
<td>Other (Miscellaneous)</td>
<td>7</td>
<td>6.81848</td>
<td>.448</td>
</tr>
</tbody>
</table>

*Significant at the .05 level

Full and/or Part Time Faculty

This section compared emphasis on fitness education
between schools varying in the number of full time only,
Table 11
Chi Square Values for Fitness Parameters
With Part Time Faculty

<table>
<thead>
<tr>
<th>Fitness Parameter</th>
<th>D.F.</th>
<th>Chi Sq.</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Composition</td>
<td>7</td>
<td>18.55908</td>
<td>.009*</td>
</tr>
<tr>
<td>Cardiovascular Endurance</td>
<td>7</td>
<td>4.49567</td>
<td>.721</td>
</tr>
<tr>
<td>Cooldown</td>
<td>7</td>
<td>7.80904</td>
<td>.349</td>
</tr>
<tr>
<td>Duration of Exercise</td>
<td>7</td>
<td>4.11349</td>
<td>.766</td>
</tr>
<tr>
<td>Flexibility</td>
<td>7</td>
<td>5.87313</td>
<td>.554</td>
</tr>
<tr>
<td>Frequency of Exercise</td>
<td>7</td>
<td>6.05167</td>
<td>.533</td>
</tr>
<tr>
<td>Intensity of Exercise</td>
<td>7</td>
<td>9.56674</td>
<td>.214</td>
</tr>
<tr>
<td>Obesity</td>
<td>7</td>
<td>15.38207</td>
<td>.031*</td>
</tr>
<tr>
<td>Overload Principle</td>
<td>7</td>
<td>8.96970</td>
<td>.254</td>
</tr>
<tr>
<td>Risk Factors</td>
<td>7</td>
<td>11.09260</td>
<td>.134</td>
</tr>
<tr>
<td>Stretching</td>
<td>7</td>
<td>6.01513</td>
<td>.537</td>
</tr>
<tr>
<td>Target Heart Rate</td>
<td>7</td>
<td>7.14829</td>
<td>.413</td>
</tr>
<tr>
<td>Warm-up</td>
<td>7</td>
<td>5.14097</td>
<td>.642</td>
</tr>
<tr>
<td>Other (Miscellaneous)</td>
<td>7</td>
<td>17.35619</td>
<td>.015*</td>
</tr>
</tbody>
</table>

*Significant at the .05 level

part time only, and full and/or part time physical educators. It was found that no significant differences in emphasis on fitness education existed with respect to various types and numbers of physical educators. No dif-
ferences existed in any fitness parameters whether schools had varying numbers of full time educators, part time educators or any combination of full and part time educators. See Table 12.

Table 12
Chi Square Values for Fitness Parameters With Full and/or Part Time Faculty

<table>
<thead>
<tr>
<th>Fitness Parameter</th>
<th>D.F.</th>
<th>Chi Sq.</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Composition</td>
<td>2</td>
<td>3.15886</td>
<td>.206</td>
</tr>
<tr>
<td>Cardiovascular Endurance</td>
<td>2</td>
<td>.44601</td>
<td>.800</td>
</tr>
<tr>
<td>Cooldown</td>
<td>2</td>
<td>.93381</td>
<td>.626</td>
</tr>
<tr>
<td>Duration of Exercise</td>
<td>2</td>
<td>.23459</td>
<td>.889</td>
</tr>
<tr>
<td>Flexibility</td>
<td>2</td>
<td>.19125</td>
<td>.908</td>
</tr>
<tr>
<td>Frequency of Exercise</td>
<td>2</td>
<td>.35252</td>
<td>.838</td>
</tr>
<tr>
<td>Intensity of Exercise</td>
<td>2</td>
<td>.92014</td>
<td>.631</td>
</tr>
<tr>
<td>Obesity</td>
<td>2</td>
<td>3.94264</td>
<td>.139</td>
</tr>
<tr>
<td>Overload Principle</td>
<td>2</td>
<td>2.51469</td>
<td>.284</td>
</tr>
<tr>
<td>Risk Factors</td>
<td>2</td>
<td>2.02055</td>
<td>.346</td>
</tr>
<tr>
<td>Stretching</td>
<td>2</td>
<td>.13389</td>
<td>.935</td>
</tr>
<tr>
<td>Target Heart Rate</td>
<td>2</td>
<td>1.49415</td>
<td>.473</td>
</tr>
<tr>
<td>Warm-up</td>
<td>2</td>
<td>.22870</td>
<td>.891</td>
</tr>
<tr>
<td>Other (Miscellaneous)</td>
<td>2</td>
<td>.84279</td>
<td>.656</td>
</tr>
</tbody>
</table>

*Significant at the .05 level
Comparison of Public and Private Education

This analysis compared frequency of fitness education variables among public and private school groupings. It was hypothesized that significant differences in emphasis on fitness education would exist between these two systems. No significant differences in emphasis on fitness education existed between public and private secondary school education. See Table 13.

Analysis of Facility Variations

This section compared frequency of fitness education variables among physical education facility groupings. A variety of both indoor and outdoor facilities were studied to see if facility differences would significantly influence fitness education. It was hypothesized that differences in facilities would not significantly effect emphasis on fitness education. No significant differences were found between facilities and fitness education. See Table 14.

Comparison of Evaluation Tests

This analysis compared the frequency of fitness education variables among the grouping of physical fitness tests used by physical educators in evaluating students. There were four fitness test categories available for
Table 13
Chi Square Values for Fitness Parameters With Public and Private Education

<table>
<thead>
<tr>
<th>Fitness Parameter</th>
<th>D.F.</th>
<th>Chi Sq.</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Composition</td>
<td>1</td>
<td>0.00073</td>
<td>.978</td>
</tr>
<tr>
<td>Cardiovascular Endurance</td>
<td>1</td>
<td>1.63949</td>
<td>.200</td>
</tr>
<tr>
<td>Cooldown</td>
<td>1</td>
<td>0.23359</td>
<td>.628</td>
</tr>
<tr>
<td>Duration of Exercise</td>
<td>1</td>
<td>0.83880</td>
<td>.359</td>
</tr>
<tr>
<td>Flexibility</td>
<td>1</td>
<td>0.10093</td>
<td>.750</td>
</tr>
<tr>
<td>Frequency of Exercise</td>
<td>1</td>
<td>0.04447</td>
<td>.832</td>
</tr>
<tr>
<td>Intensity of Exercise</td>
<td>1</td>
<td>0.58001</td>
<td>.446</td>
</tr>
<tr>
<td>Obesity</td>
<td>1</td>
<td>2.27472</td>
<td>.131</td>
</tr>
<tr>
<td>Overload Principle</td>
<td>1</td>
<td>0.05946</td>
<td>.807</td>
</tr>
<tr>
<td>Risk Factors</td>
<td>1</td>
<td>0.88868</td>
<td>.345</td>
</tr>
<tr>
<td>Stretching</td>
<td>1</td>
<td>1.23092</td>
<td>.267</td>
</tr>
<tr>
<td>Target Heart Rate</td>
<td>1</td>
<td>0.03010</td>
<td>.862</td>
</tr>
<tr>
<td>Warm-up</td>
<td>1</td>
<td>0.33184</td>
<td>.564</td>
</tr>
<tr>
<td>Other (Miscellaneous)</td>
<td>1</td>
<td>0.33162</td>
<td>.564</td>
</tr>
</tbody>
</table>

*Significant at the .05 level

selection by the respondents. These included (1) the AAHPERD Health Related Fitness Test, (2) the AAHPERD Youth Fitness Test, (3) an alternative or self developed test, and (4) no tool for measuring physical fitness at all. All
<table>
<thead>
<tr>
<th>Fitness Parameter</th>
<th>D.F.</th>
<th>Chi Sq.</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Composition</td>
<td>1</td>
<td>1.09481</td>
<td>.259</td>
</tr>
<tr>
<td>Cardiovascular Endurance</td>
<td>1</td>
<td>3.58894</td>
<td>.058</td>
</tr>
<tr>
<td>Cooldown</td>
<td>1</td>
<td>.10945</td>
<td>.740</td>
</tr>
<tr>
<td>Duration of Exercise</td>
<td>1</td>
<td>.55208</td>
<td>.457</td>
</tr>
<tr>
<td>Flexibility</td>
<td>1</td>
<td>1.49356</td>
<td>.221</td>
</tr>
<tr>
<td>Frequency of Exercise</td>
<td>1</td>
<td>.10973</td>
<td>.740</td>
</tr>
<tr>
<td>Intensity of Exercise</td>
<td>1</td>
<td>.11598</td>
<td>.733</td>
</tr>
<tr>
<td>Obesity</td>
<td>1</td>
<td>.40644</td>
<td>.523</td>
</tr>
<tr>
<td>Overload Principle</td>
<td>1</td>
<td>2.20101</td>
<td>.155</td>
</tr>
<tr>
<td>Risk Factors</td>
<td>1</td>
<td>2.21236</td>
<td>.136</td>
</tr>
<tr>
<td>Stretching</td>
<td>1</td>
<td>.00301</td>
<td>.956</td>
</tr>
<tr>
<td>Target Heart Rate</td>
<td>1</td>
<td>3.24771</td>
<td>.071</td>
</tr>
<tr>
<td>Warm-up</td>
<td>1</td>
<td>.00914</td>
<td>.932</td>
</tr>
<tr>
<td>Other (Miscellaneous)</td>
<td>1</td>
<td>2,34206</td>
<td>.125</td>
</tr>
</tbody>
</table>

*Significant at the .05 level

Fourteen fitness categories were compared across all four test selection choices. Comparisons showed which test selections showed significantly greater and/or less emphasis on fitness education.
The results of this analysis indicated that significant differences existed across all fitness parameters. This included (a) body composition, (b) coronary heart disease risk factors, (c) cardiovascular endurance, (d) cooldown, (e) frequency of exercise, (f) intensity of exercise, (g) duration of exercise, (h) flexibility, (i) obesity, (j) the overload principle, (k) stretching, (l) target heart rate, and (m) warm up. It was found that institutions using no form of evaluation tool showed significantly less emphasis on health related fitness education. See Table 15.

Discussion

The purpose of this research was to examine a variety of factors that were hypothesized to have significant relationships with the quality of fitness education in the Michigan secondary school system. Accordingly, this section discusses issues cited previously in the review of literature and attempts to correlate these with findings in the data addressed in this chapter.

In 1964, a joint committee of the AMA and AAHPER conducted an investigation on the need for fitness education with strong support for vigorous exercise in the educational system (AMA & AAHPER, 1964). Five years later, the question was raised by Brunner (1969) as to how the physical education of 1969 would be remembered twenty years
<table>
<thead>
<tr>
<th>Fitness Parameter</th>
<th>D.F.</th>
<th>Chi Sq.</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Composition</td>
<td>3</td>
<td>11.97794</td>
<td>.007*</td>
</tr>
<tr>
<td>Cardiovascular Endurance</td>
<td>3</td>
<td>19.65384</td>
<td>.0002*</td>
</tr>
<tr>
<td>Cooldown</td>
<td>3</td>
<td>21.52941</td>
<td>.00008*</td>
</tr>
<tr>
<td>Duration of Exercise</td>
<td>3</td>
<td>11.19482</td>
<td>.010*</td>
</tr>
<tr>
<td>Flexibility</td>
<td>3</td>
<td>24.18949</td>
<td>.00002*</td>
</tr>
<tr>
<td>Frequency of Exercise</td>
<td>3</td>
<td>16.50790</td>
<td>.0008*</td>
</tr>
<tr>
<td>Intensity of Exercise</td>
<td>3</td>
<td>9.40766</td>
<td>.024*</td>
</tr>
<tr>
<td>Obesity</td>
<td>3</td>
<td>16.57312</td>
<td>.0008*</td>
</tr>
<tr>
<td>Overload Principle</td>
<td>3</td>
<td>14.78223</td>
<td>.002*</td>
</tr>
<tr>
<td>Risk Factors</td>
<td>3</td>
<td>12.81606</td>
<td>.005*</td>
</tr>
<tr>
<td>Stretching</td>
<td>3</td>
<td>18.99958</td>
<td>.0002*</td>
</tr>
<tr>
<td>Target Heart Rate</td>
<td>3</td>
<td>27.54875</td>
<td>.00000*</td>
</tr>
<tr>
<td>Warm-up</td>
<td>3</td>
<td>17.09150</td>
<td>.0006*</td>
</tr>
<tr>
<td>Other (Miscellaneous)</td>
<td>3</td>
<td>1.767276</td>
<td>.623</td>
</tr>
</tbody>
</table>

*Significant at the .05 level

Later. In spite of the passing of over two decades, physical education specialists are still voicing concern over the discipline’s contribution to lifelong learning. Numerous individuals in the field have expressed the
opinion that curriculum (Powell et al., 1984; Taylor & Chiogioji, 1987). Also, when the United States Department of Education (USDE) published its findings on educational disciplines in need of critical reform for the future of American education, physical education was not deemed essential (USDE, 1983).

To compound this situation, it has become increasingly evident that the fitness levels of American youth have declined, not improved, during the past two decades. Such areas as obesity and low national fitness scores (Ross & Gilbert, 1985), and an increased prevalence of coronary heart disease risk factors (Gilliam et al., 1977), all support justifiable cause for concern.

Amidst the background of this information, however, there is evidence of individual schools and/or local educational districts that have begun attempts at reform (Jenkins & Staub, 1985; Kirkpatrick, 1987; Kopperud, 1986). Examination of such programs provides evidence of several key common denominators. Emphasis on the development of a positive student self image appears repeatedly. Other commonalities include emphasis on wellness and lifestyle commitment, activity (exercise) sessions, and the use of some form of health-related evaluation for grading purposes.

Existing research which would provide evidence to support the implementation of such curriculum intervention
is lacking. However, although limited, there has been some research that supports intervention. For example, Slava et al. (1984) found that the introduction of a conceptual, fitness related physical education program did increase long term knowledge, long term behavioral compliance, as well as improved attitudes towards fitness. Rider et al. (1986) examined the effects of personal fitness courses on cognitive, attitudinal, and physical fitness parameters. These researchers concluded that such a course resulted in significant improvements in all areas. Finally, in 1981, Laurie examined the effects of a conceptual physical fitness class on its participants. The researcher concluded that such a course increased (a) fitness knowledge, (b) confidence in one's ability to plan an exercise program, and (c) compliant behavior.

Investigation in this research project examined a variety of factors hypothesized to be significantly relevant to the quality of fitness education. The following discussion centers on these findings, while at the same time reflects upon some of the themes of the literature review.

The first area this researcher analyzed was the extent to which curriculum content was specifically related to emphasis on fitness education. Three psychomotor classes were selected from a group of over thirty classes as having special emphasis on fitness. These classes were (a)
aerobics (b) weight training, and (c) physical fitness. Analysis of the percentage of schools offering these classes for either required and/or elective physical education revealed that a large number of institutions do indeed offer such classes. In fact, 87.5% of Michigan secondary schools reported offering a physical fitness class for required physical education. As well, 66.7% offered weight training, while 40% offered some form of aerobics for required physical education credit. Percentages for these classes for elective physical education were slightly lower; specifically 38% offered aerobics, 63% offered a physical fitness class, and 67% offered a weight training class. Such percentages might suggest that a large number of schools are indeed offering courses with strong emphasis on fitness and wellness. However, when the same respondents were asked to indicate how often students were required to demonstrate cognitive understanding of essential fitness related concepts, the percentage of positive responses was significantly lower. This discrepancy speaks to a number of major issues in physical education. Although it is evident that a majority of schools offered fitness oriented classes, what is the actual content of such classes? As well, what are students held accountable for in terms of demonstrating knowledge of fitness concepts that are essential for safe, beneficial and life-long health related fitness issues? Are students
actually receiving and/or retaining such knowledge? However limited, it has been demonstrated in previously cited literature that participation in physical fitness courses with such emphasis does result in improved knowledge, self-image, health related behavior, confidence in exercise planning, etc. Also, this concept has been reinforced by the example of individual schools and programs who's initiatives in educational reform have proven effective. If a majority of American youth showed no need for such intervention, then perhaps such reformation would be less critical. But such is not the case. The general direction of the average students' fitness level in America is declining, not increasing or maintaining a status-quo.

Another area examined was that of the relationship between average student socio-economic status and the quality of fitness education. As previously reported, this was one of only two areas that were shown to be significantly relevant. It is evident from this research that in a majority of instances, fitness education is emphasized less in schools with poor students. This research did not attempt to discover the why of this situation. Perhaps the reasons are multi-factoral. Is it possible that poorer families in America have less education, resulting in less positive health related interest and/or behavior? Is it possible that poorer families put less pressure on the
educational system, in the form of parent-teacher associations, so as to influence curriculum reform? Is it possible that poorer families are so overwhelmed with the social problems of crime, drug addiction, and family breakdown, that the question of whether or not one's children are receiving adequate fitness education pales in significance? Or, is it possible that school systems with a wealthier constituency can attract the best educators? These difficult questions have no easy answers. Interestingly, a number of quasi-related issues that might otherwise appear to be linked with socio-economic status have proven non-significant. As an example, one might assume that wealthier school systems might well afford themselves better physical education facilities, or more physical educators. But in analyzing the data correlating both of these factors, neither the number of physical educators nor any increased variety of physical education facilities showed any indication of impacting the quality of fitness education. The evidence points repeatedly to individual or systemic initiative and leadership.

Analysis of variations in frequency and duration of physical education also proved insignificant with respect to fitness education. Surprisingly, this evidence conflicts with the early research of Johnson (1968) and others, who found that increased frequency of physical education did impact student fitness levels. But did the
types of training involved in these early fitness education research projects differ from the average physical fitness class of 1990?

Three other areas also proved insignificant with respect to health related fitness education. These included (1) State geographical regions, (2) variations in school class size, and (3) public versus private education. As to geographical regions, the state was divided into eleven areas, and in all areas only one of the thirteen health related fitness parameters examined showed any significance. This parameter was cooldown, and emphasis on this parameter was found to be lower as compared to the already low emphasis found on the other fitness parameters. The investigator does not know why this discrepancy existed. Variations in school class size also proved insignificant. This corroborates with other evidence to suggest that it did not seem to matter how large an institution was, nor how many facilities were available, nor how many physical educators were on staff. What did seem to matter was the trend or direction that individual programs set as a priority. Finally, public versus private education also proved insignificant.

In examining this information, one cannot help but reflect that if such educational emphasis is indeed beneficial, would it not be in the best interest of all high school students to mandate participation as a
requirement for graduation. After all, is not the purpose of secondary education to prepare and enable the future leaders of this nation to lead productive and healthy lives. The responsibility remains on the educational system to investigate just how much impact lifestyle intervention can truly have. With many American youth having difficulty with literacy function, can an already overburdened—and, some would say, underpaid—educational system rise to meet the challenge of lifestyle modification? Ultimately, the government and leadership of American society must be faced with the task of prioritizing future educational goals. In doing so, it would seem prudent to ask just how important is good health. This discussion has not yet touched on the implications that massive curriculum reformation might have on the economics of health care. It is no secret that health care costs in this country are continuing to escalate at alarming rates.

At least one state, Florida, has thought enough of such potential implications to pass legislation requiring completion of a personal fitness course as a mandatory secondary school graduation requirement. Perhaps this action will provide pilot information for curriculum reform across the entire nation. If in this era of massive federal deficit and budget constraint physical education can be shown to have productive and cost effective impact, perhaps in two decades from now professionals in the field
will be voicing the problems of success, not lamenting those of failure.

One final area of discussion deals with the issue of student evaluation. As mentioned earlier, it is evident that school programs cited as progressive in health related fitness areas all use some form of evaluation tool in measuring student progress. In fact, two of these model programs mentioned the use of AAHPERD's Health Related Physical Fitness Test (1988) in student evaluation (Kopperud, 1986; Jenkins & Staub, 1985). In examining the data collected from Michigan secondary schools, it was found that in eleven of the thirteen health related parameters examined, those institutions using some form of evaluation tool showed significantly greater emphasis on fitness education. This marked difference would suggest a number of things, including the fact that professionals in charge of such programming consider objective measurement and evaluation of student performance as vital to program success. Whatever the motive, it is evident that individual programs and/or school districts placing strong emphasis on program content and student evaluation are having a positive impact. If the research correlating improvements in lifestyle modification with conceptually oriented physical fitness classes is valid, then one might readily hypothesize that participants in such systems should show long term improvements in many areas, including
(a) increased self-esteem, (b) increases in compliant behavior, (c) improvements in health related areas such as obesity and other coronary risk factors, and (d) lower long term health care costs. Such hypothetical possibilities provide positive incentive for further investigation.

In summary, the investigator wishes to re-emphasize that evidence existed to suggest that physical education programs with strong leadership and emphasis on health related fitness show measurable superiority over the status quo. Also, the fact that student socio-economic status is a relevant factor in health related fitness education should lend itself to further investigation as to how this imbalance might be rectified. As always, reforms are necessary, but how long must we wait?
CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this study was to survey the curriculum content of secondary school physical education. The primary goal was to determine the extent of health related fitness education in Michigan schools. This chapter provides a summary of findings and conclusions, and gives recommendations regarding further investigation.

Healthy lifestyle choices, including exercise, are increasingly more available to the American population. Yet in spite of this availability, current research would suggest that fitness levels of the present-day adolescent population are declining (Ross & Gilbert, 1985).

This study investigated the relationship between secondary school physical education and factors related specifically to the emphasis placed on health-related fitness. Physical educators at all state registered secondary schools were sent a questionnaire. This questionnaire was designed to analyze the physical education curriculum content. It was divided into six major areas. These included (1) demographics, (2) facilities, (3)
required physical education, (4) elective physical education, (5) curriculum content, and (6) student evaluation. Specific areas of investigation included (a) cognitive aspects, (b) socioeconomic aspects, (c) required and/or elective physical education, (d) state geographical regions, (e) school size classification, (f) faculty status, (g) public versus private education, (h) faculty availability, and (i) student evaluation methods.

Findings

A number of issues were addressed in this study. Of note is the fact that a large majority of Michigan's high schools are currently offering classes directly related to health and fitness. As previously cited, 87.5% of schools offer a physical fitness class, 66.7% offer weight training, and 40% offer some form of aerobics training. The psychomotor aspects of fitness appear to be adequate. See Tables 3 and 4. However, when one examines what students are required to learn cognitively in these classes (by demonstration in testing/evaluation procedures), it is evident that health-related emphasis is less than desirable.

It is also apparent that many factors that one might assume relevant are in fact not. Data from this study showed the following factors to be non-significant. These include (a) geographical regions, (b) private versus public
education, (c) facilities, (d) faculty numbers, (e) frequency of physical education and (f) school class size.

The two factors found to be significant were (1) socioeconomic status [SES], and (2) student evaluation tools. With respect to SES, it was found that in 11 of 13 health-related areas examined, the low SES group had significantly less emphasis. For student evaluation, it was found that schools not using any formal evaluation tool has significantly less health related emphasis on curriculum.

Conclusions

Socioeconomic status and evaluation methods were both found to be relevant to the quality of fitness education in the Michigan physical education curriculum. The inequality of low socioeconomic status and lack of emphasis on cognitive aspects of fitness education is a serious matter and cannot be ignored without cost. The lack of standard use of evaluation tools for student evaluation is also important. If the discipline of physical education is to survive as a viable part of American education, such alarming discrepancies must be addressed. Clearly, a need exists for the State of Michigan to re-examine its direction for the discipline of health related physical education. It should be noted, however, that since the completion of this study, the State of Michigan has attempted to
reassess the curriculum model of physical education (State of Michigan Department of Education, 1991). This reassessment does include guidelines for cognitive aspects of physical education. It does not in any way address the specific issues of standardization of evaluation tests or socioeconomic issues.

Recommendations

The investigator in this study would recommend further research into the area of health related physical education in grades K through twelve. The specific issues of socioeconomic status and standardization of student evaluation tools should be given special investigatory emphasis. Such research would help corroborate existing information, as well as to provide some indication of the impact of the newly defined State physical education guidelines.
Appendix A

Questionnaire
RESEARCH QUESTIONNAIRE OF SECONDARY SCHOOL PHYSICAL EDUCATION
CURRICULUM CONTENT

I. Demographics
A. Your school's class division is:
   ___ Class A (1150+)
   ___ Class B (587-1149)
   ___ Class C (311-586)
   ___ Class D (<311)

B. Your school employs how many FULLTIME physical educators?
   ___ 0
   ___ 1
   ___ 2
   ___ 3
   ___ 4
   ___ More than 4—please specify ____________

C. Your school employs how many PARTTIME physical educators?
   ___ 0
   ___ 1
   ___ 2
   ___ 3
   ___ 4
   ___ More than 4—please specify ____________

D. Your estimate of the socio-economic status of the average student is:
   ___ ($10,000-19,999)
   ___ ($20,000-34,999)
   ___ ($35,000-49,999)
   ___ ($50,000+)

E. Your school is:
   ___ Public
   ___ Private

II. Facilities
A. Indoor
   ___ Indoor gymnasium
   ___ Reg. Basketball court
   ___ Swimming pool
   ___ Weight room
   ___ Activities area
   ___ Gym locker rooms
   ___ Showers
   ___ Racquet courts
   ___ Other(s) ____________

B. Outdoor
   ___ Track(asphalt)
   ___ Track(cinder)
   ___ Football field
   ___ Soccer field
   ___ Baseball diamond
   ___ Fitness trail(exercise stations)
   ___ Cross country trail
   ___ Tennis courts
   ___ Other(s) ____________

III. Schedule for Required Physical Education
A. Duration of required classes
   ___ No Required P.E.
   ___ 1/2 Semester
   ___ Full Semester
   ___ Full Year

B. Number of days per week for required P.E. classes
   ___ 1 day
   ___ 2 days
   ___ 3 days
   ___ 4 days
   ___ 5 days

C. Duration of class time per day
   ___ 30 min.
   ___ 45 min.
   ___ 50 min.
   ___ 60 min.
   ___ Other—Please specify ____________

D. Year(s) in school that P.E. is required
   ___ Freshman
   ___ Sophomore
   ___ Junior
   ___ Senior
   ___ Other—please specify ____________

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IV. Schedule for Elective Physical Education

A. Duration of elective classes
   - No elective P.E.
   - 1/2 semester
   - Full semester
   - Full year

B. Number of days per week for elective P.E. classes
   - 1 day
   - 2 days
   - 3 days
   - 4 days
   - 5 days

C. Duration of class time per day
   - 30 min.
   - 45 min.
   - 50 min.
   - 60 min.
   - Other—please specify

D. Year(s) in school P.E. is elective
   - Freshman
   - Sophomore
   - Junior
   - Senior
   - Other—please specify

V. Curriculum Content for Required and Elective P.E. Classes

A. Required P.E. Activities
   - Archery
   - Aerobics
   - Badminton
   - Basketball
   - Bowling
   - Cycling
   - Fencing
   - Golf
   - Gymnastics
   - Hockey(field)
   - Hockey(ice)
   - Jogging
   - Judo
   - Karate
   - Outdoor Education
   - Physical Fitness
   - Racquetball
   - Rockclimbing
   - Sailing
   - Skating(ice)
   - Soccer
   - Softball
   - Swimming
   - Tennis
   - Track and Field
   - Volleyball
   - Weight Training
   - Other(s) Specify

B. Elective P.E. Activities
   - Archery
   - Aerobics
   - Badminton
   - Basketball
   - Bowling
   - Cycling
   - Fencing
   - Golf
   - Gymnastics
   - Hockey(field)
   - Hockey(ice)
   - Jogging
   - Judo
   - Karate
   - Outdoor Education
   - Physical Fitness
   - Racquetball
   - Rockclimbing
   - Sailing
   - Skating(ice)
   - Soccer
   - Softball
   - Swimming
   - Tennis
   - Track and Field
   - Volleyball
   - Weight Training
   - Other(s) Specify

C. Do students select activity choices for Required P.E.?
   - Yes
   - No

D. Do students select activity choices for Elective P.E.?
   - Yes
   - No

over
VI. Student Evaluation

A. Basis for student evaluation in Required P.E.
   - Skills (practical)
   - Written (cognitive)
   - Physical fitness
   - Other—please specify

B. Basis for student evaluation in Elective P.E.
   - Skills (practical)
   - Written (cognitive)
   - Physical fitness
   - Other—please specify

C. Specific evaluation of cognitive (written knowledge) skills
   1. Indicate in which of the following areas students are tested in
      written evaluations with respect to activity skills
         - Rules specific to activity
         - Scoring
         - Officiating
         - Strategy
         - Sportsmanship
         - Other(s)

   2. Indicate in which of the following areas students are tested in
      written evaluations with respect to physical fitness
         - Body composition
         - Cardiorespiratory endurance
         - Cool-down
         - Duration of exercise
         - Flexibility
         - Frequency of exercise
         - Intensity of exercise
         - Obesity
         - Overload principle
         - Risk factors
         - Stretching
         - Target heart rate
         - Warm-up
         - Other(s)

   3. Does your school use any of the following standardized tests to
      evaluate student physical fitness levels?
         - AAHPERD Health Related Fitness Test
         - AAHPERD Youth Fitness Test (President's Council)
         - Other(s)—please specify
Appendix B

Cover Letter
Dear Physical Educator,

I am a graduate student in Physical Education at Western Michigan University. As part of the degree process, I have embarked on an attempt to research the present secondary school physical education curriculum in the state of Michigan. Accordingly, my research advisors and I have put together a research questionnaire that is designed to produce data on a number of important criteria relevant to our profession. Equally important is the fact that we have sent this questionnaire to you, the physical education specialist, in order that we might get feedback from the individual most responsible for this aspect of the educational process.

While we have attempted to include relevant information, we have also made a special effort to make the questionnaire reasonably short and easy to answer. In this way we hope that you might spare just a few moments from your busy schedule to complete it. Returned questionnaires will not only provide for better research results, but will hopefully enable us to reflect objectively on a number of important issues in physical education exclusively within Michigan.

At no point in our research process is any individual or school ever identified. Thus the information you provide is absolutely confidential. As well, we are interested in making available to you the results of our study. Anyone interested in acquiring research results need simply fill out the form blank included in the questionnaire packet. To complete the questionnaire, simply check the appropriate answers and return it by mail in the enclosed, preposted envelope.

We look forward to receiving your questionnaire, and we thank you in advance for your cooperation in this endeavor.

Sincerely,

Robert Salmon
Graduate Student, HPER Department

Sincerely,

Mary Dawson
Associate Professor
HPER Department

Sincerely,

Roger Zabik
Chairman
HPER Department

Sincerely,

Debra Berkey
Assistant Professor
HPER Department
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