THE RELATIONSHIP BETWEEN SELECTED PHYSICAL ACTIVITY BACKGROUND FACTORS AND THE PHYSICAL PERFORMANCE AND EVALUATION MEASURES USED IN THE FOUNDATIONS OF PHYSICAL EDUCATION COURSE AT MICHIGAN STATE UNIVERSITY

Thesis for the Degree of M. A.

MICHIGAN STATE UNIVERSITY

Jan Van Duzer Rohrs

1962

ABSTRACT

THE RELATIONSHIP BETWEEN SELECTED PHYSICAL ACTIVITY BACKGROUND FACTORS AND THE PHYSICAL PERFORMANCE AND EVALUATION MEASURES USED IN THE FOUNDATIONS OF PHYSICAL EDUCATION COURSE AT MICHIGAN STATE UNIVERSITY

by Jan VanDuzer Rohrs

The purposes of this study were (1) to determine the physical activity background factors of the freshmen women enrolled in the required introductory course, Foundations of Physical Education, at Michigan State University; (2) to determine if selected background factors were interrelated; and (3) to determine the relationship between selected physical activity background factors and the physical performance and evaluation measures used in the Foundations of Physical Education Course.

Two hundred freshmen women were randomly selected from the 1818 students enrolled in the Fall term, 1959, Foundations of Physical Education Course at Michigan State University. Scores from four performance tests (sit-ups, deep knee bend, standing broad jump, and chair step) were used in determining each subject's Physical Performance

Level. An Activity Questionnaire was designed to determine the physical activity background factors and an Evaluation Form was used to determine the subjects' reaction to the Foundations Course.

Major findings included:

1. Over one-half of the subjects were without regular physical education classes during the two years previous to this investigation. Fifty-seven per cent had two or less years of high school physical education.

2. The majority reacted favorably to their high school physical education classes.

3. Less than one-half of the subjects (41%) participated in a sports club during any part of their high school years while 69.8% participated in an intramural program.

4. Skill level was highest in team sports, especially volleyball, basketball, and softball.

5. One-half of the subjects would like to have had a recreational sport included in their high school physical education curriculum.

6. During the year previous to this investigation, the subjects participated most often in leisure time activities which were social in nature and required little activity.

7. The physical recreation activities in which the subjects participated most often were swimming, dancing, boating and/or canoeing, water skiing and hiking during

the warm months and dancing, ice skating, and bowling during the cool months.

Significant relationships exist between:

1. Total Skill Level Rating and a) number of years of high school physical education, b) participation in intramurals, c) participation in a sports club, and d) the total amount (frequency and vigorousness) of activity in leisure time activities (Leisure Time Activity Rating).

2. Non-carry-over skill level (skill in activities not participated in during adult life) and the number of years of high school physical education.

3. Leisure Time Activity Rating and a) participation in intramurals, and b) participation in a sports club.

4. Number of years of high school physical education and a) participation in intramurals, and b) participation in a sports club.

5. Physical Performance Level and the Leisure Time Activity Rating.

6. Overall reaction (course rating) to the Foundations Course and a) Physical Performance Level, and b) inclusion of a similar course or unit in the high school curriculum.

7. Evaluation of the amount of activity in the Foundations Course and a) Total Skill Level Rating, and b) the Leisure Time Activity Rating.

Approved: _____ Date: _____
Thesis Advisor

THE RELATIONSHIP BETWEEN SELECTED PHYSICAL ACTIVITY BACKGROUND FACTORS AND THE PHYSICAL PERFORMANCE AND EVALUATION MEASURES USED IN THE FOUNDATIONS OF PHYSICAL EDUCATION COURSE AT MICHIGAN STATE UNIVERSITY

by

Jan VanDuzer Rohrs

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF ARTS

Department of Health, Physical Education, and Recreation

1962

ACKNOWLEDGEMENTS

The author is particularly grateful to Dr. Janet A. Wessel, Thesis Advisor, for the many helpful ideas in the planning and execution of this investigation. The co-operation shown by the staff members of the Women's Physical Education Department at Michigan State University in contacting the subjects is also greatly appreciated.

Jan V. Rohrs

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

This was a preliminary study designed (1) to determine the physical activity background factors of the freshmen women enrolled in the required introductory course, Foundations of Physical Education, at Michigan State University; (2) to determine if selected physical activity background factors were interrelated; and (3) to determine the relationship between selected physical activity background factors and the physical performance and evaluation measures used in the Foundations of Physical Education Course.

Need for the Study

"Physical education as an integral part of organized education is the social process of change in the behavior of the human organism induced by participating in big muscle play and related activities. The direction in which physical education endeavors to change people is its objectives. Once we decide on what direction we want to change people, the curriculum then becomes the medium for consciously controlling or purposefully directing the process

designed to produce the desired changes in behavior."[1] "The need for emphasis on curriculum planning in physical education is becoming increasingly more important."[2] Curriculum planning has been defined as the orderly study and improvement of the instructional program in the light of criteria provided by objectives.[3]

Curriculum planning is a continuous process. The curriculum is never completed.[4] It becomes a continued study of the needs and interests of the individuals and the selection of activities to meet these needs and interests. Information about the previous physical education program assists the teacher in appraising needs. Previous experiences also affect planning[5,6,7] as interests may be dependent

---

[1]Charles C. Cowell, Seminar Guide in Physical Education (Lafayette, Indiana: Purdue University, 1956), p. 19.

[2]Leslie W. Irwin and James H. Humphrey, Principles and Techniques of Supervision in Physical Education (St. Louis: The C. V. Mosby Company, 1954), p. 159.

[3]Edward A. Krug, Curriculum Planning (New York: Harper and Brothers, 1957), p. 254.

[4]Jay B. Nash, The Administration of Physical Education (New York: A. S. Barnes and Company, 1931), p. 306.

[5]Clyde Knapp and E. Patricia Hagman, Teaching Methods for Physical Education (New York: McGraw-Hill Book Company, Inc., 1953), p. 88.

[6]Clyde Knapp and Ann E. Jewett, Physical Education: Student and Beginning Teaching (New York: McGraw-Hill Book Company, Inc., 1957), p. 232.

[7]Jay B. Nash, op. cit., p. 306.

upon past experiences.[8] In curriculum planning, study should be made of the characteristics of the particular pupils involved.[9]

From the above quotations and ideas it can be seen that educators stress the importance of determining the needs and interests of the students before planning the curriculum. Due to this fact, it was felt that knowledge of the previous physical education programs and past experiences of the freshmen women involved in the Foundations Course would prove useful in planning and evaluating the present physical education curriculum. It was also felt that students with certain physical activity background factors might be inclined to react differently to the Foundations of Physical Education Course because of the nature of the course content and the teaching methods used.

Definition of Terms

Foundations of Physical Education Course (Foundations Course) is the introductory physical education course required of all freshmen women students at Michigan State University. Both the structure and material in the course emphasize the development of the student's self-awareness

---

[8]Leslie Irwin and James Humphrey, op. cit., p. 168.

[9]Clyde Knapp and E. Hagman, op. cit., p. 87.

and self-evaluation.

Freshmen women.- First term women students at Michigan State University during the Fall term, 1959.

Physical activity background factors will refer to: (1) the number of years of high school physical education; (2) reaction to high school physical education classes; (3) degree of activity in the high school physical education classes; (4) the desire for either more or less vigorous activity during the high school physical education classes; (5) the inclusion of a course or unit similar to the Foundations of Physical Education Course in the high school curriculum; (6) participation in a sports club or intramurals during the high school years; (7) Total Skill Level Rating; (8) skill level in both carry-over activities (activities which are useful in adult life and for which equipment and facilities are generally accessible) and non-carry-over activities (activities which are not participated in by most people during their adult life); and (9) Leisure Time Activity Rating.

Total Skill Level Rating refers to an evaluation of the subject's total skill in physical activities based upon a combination of the self-ratings of her skill in thirty-five physical activities.

Leisure Time Activity Rating is a rating of the relative amount of activity in the leisure time activities of the subject during the year previous to this investigation. The rating is based upon the energy cost of and participation in various leisure time activities.

High school years will refer, throughout this study, to the years between enrollment in the ninth grade and matriculation at Michigan State University.

Physical performance measures refers to four physical performance tests administered during the first two weeks of the Foundations Course. These were the standing broad jump, sit-ups (for 30 seconds), deep knee bends (for 30 seconds), and two minute chair step with pulse count one to one and one-half minutes after cessation of exercise.

Evaluation measures refers to two items of a five item questionnaire calling for responses on a five point scale. One of these items was concerned with the overall reaction to the Foundations of Physical Education Course, and the other item indicated students' responses to the amount of activity in the course.

Purposes of the Study

The purposes of this study are:

1) To determine the physical activity background factors of the freshmen women enrolled in the Foundations of Physical Education Course.

2) To determine if there are significant relationships among various physical activity background factors. The factors to be tested are:

Total Skill Level Rating compared with:

a) Number of years of high school physical education.

b) Participation in intramurals.

c) Participation in a sports club.

d) Leisure Time Activity Rating.

Leisure Time Activity Rating compared with:

a) Number of years of high school physical education.

b) Participation in intramurals.

c) Participation in a sports club.

Number of years of high school physical education compared with:

a) Reaction to high school physical education.

b) Enjoyment of high school physical education.

c) Degree of activity in the high school physical education classes.

d) Desire for either more or less vigorous activity during the high school physical education classes.

e) Participation in a sports club.

f) Participation in intramurals.

3) To determine if there are significant relationships between the physical performance and evaluation measures used in the Foundations of Physical Education Course and selected background factors. The factors to be tested are:

Physical Performance Level compared with:

a) Total Skill Level Rating.

b) Leisure Time Activity Rating.

c) Number of years of high school physical education.

Overall reaction to the Foundations Course compared with:

a) Reaction to the high school physical education classes.

b) Inclusion of a course or unit similar to the Foundations Course in the high school curriculum.

c) Participation in a sports club.

d) Participation in intramurals.

e) Total Skill Level Rating.

f) Leisure Time Activity Rating.

g) Physical Performance Level.

h) Number of years of high school physical education.

c)

d)

e)

f)

Evaluation of the amount of activity in the Foundations Course compared with:

a) Degree of activity in the high school physical education classes.

b) Desire for either more or less vigorous activity during the high school physical education classes.

c) Total Skill Level Rating.

d) Physical Performance Level.

e) Leisure Time Activity Rating.

f) Number of years of high school physical education.

CHAPTER II

THEORETICAL BACKGROUND

This chapter has been divided into four parts: discussions of a) recreation, b) skill, c) physical performance, and d) evaluation of the Foundations of Physical Education Course. The emphasis in the discussions of recreation, skill, and physical performance will be upon their pertinence to the present investigation.

Recreation

Machines are now performing a great portion of the work that was once an integral part of the everyday living patterns of the American people. Emphasis is being placed upon the need for finding alternative forms of exercise. Thomas Woody remarked, "...when all labor is done by machine, as it may someday be, man will still need healthy muscles and vital organs, as a condition of healthy life. Such a sturdy system, if not developed by the normal labor of the day, must be gained through various substitute forms of exercise."[1] Former Vice President Richard M. Nixon

---

[1]State of Illinois, Report of the Governor's

also noted that the nation needs to be aware of the trend toward less exercise in our everday living patterns. He remarked, "We are not a nation of softies but we could become one, if proper attention is not given to the trend of our time, which is toward the invention of all sorts of gadgetry to make life easy and in so doing to reduce the opportunity for normal physical health-giving exercise."[2]

Thurman B. Rice and Fred V. Hein offer the following suggestion:

> Automobiles, elevators, escalators, washing machines, vacuum cleaners, and a host of other products of the machine age, have eliminated from modern life much of the physical activity that was once a part of daily living. They offer both advantages and disadvantages. They can make us a lazy, sedentary people, or they can free us to replace irksome physical labor with enjoyable physical recreation...[3]

Nash, Moench and Saurborn said, "This (recreation) becomes more and more essential as work, routinized and mechanized ceases to give satisfaction to the individual."[4]

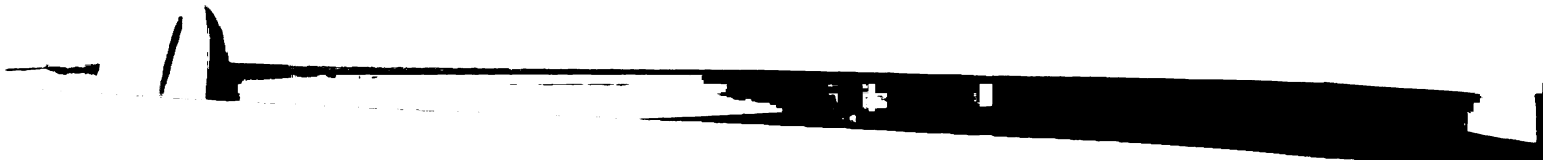
Recreation refers to various non-vocational leisure time activities which offer an outlet for creativity.

Conference on Youth Fitness held at Robert Allerton State Park, Monticello, Illinois, May 5-7, 1957, p. 54.

[2] Ibid., p. 30.

[3] Ibid., p. 64.

[4] Jay B. Nash, Francis J. Moench, Jeannette B. Saurborn, Physical Education: Organization and Administration (New York: A. S. Barnes and Company, 1951), p. 67.



"Recreation comes in many forms to different people and in different forms to the same people at different times."[5] The individual's choice of recreation is conditioned by numerous factors, in combination or singly. These include acquired attitudes, early home environment, talent, skill, education for leisure, exposure, availability of participation opportunities, and professional leadership.[6] "Recreation varies not only with the personality characteristics, needs, and environment of the participant but also with his exposure to recreational resources, his skill, and with his motivation."[7]

Changes in our society have produced more "push-button" living requiring less and less physical activity. This, coupled with the increase in leisure time, makes it seem desirable for students to develop adequate recreational skills in physical activities. Skill is taken into account when selecting recreational physical activities.

Skill

Skill can be defined as the ability to use one's knowledge effectively; technical proficiency; a developed

---

[5]National Recreation Workshop, Recreation for Community Living (Chicago: Athletic Institute, 1952), p. 28.

[6]Ibid., p. 28.

[7]Nash, Moench and Saurborn, op. cit., p. 67.

or acquired ability. Nash, Moench and Saurborn say that skill is "a habit done with a high degree of perfection. (A golfer might acquire a bad habit of slicing, but it would not be a skill)."[8]

The physical education program, besides meeting the immediate needs of students for physical activity, should help them develop recreational skills which will be useful in their leisure time both now and in their later life. In selecting specific physical skills for recreation, the following factors should be met: Enjoyment, companionship, number of participants, vigor, skill, competition, and availability of facilities. Most activities taught in physical education programs have some recreational value. When this quality is to be specifically developed, however, activities like tennis, swimming, or golf which are high in recreational content, should be taught, rather than say, calisthenics or marching, the recreational possibilities of which are low.

Authorities seem to disagree as to the exact ages for learning skills. Nash, Moench and Saurborn say, "Skill learning years refers to the decade running from 4 to 14, during which the child participates in play activities over long periods of time, thus acquiring skills in the various

---

[8]Nash, Moench and Saurborn, op. cit., p. 67.

areas in which he practices."[9] According to a fact noted in the Report of the Governor's Conference on Youth Fitness, "During 'seven to seventeen' more than 80% of all physical skills essential for sports participation are learned. Those are the power building years also."[10] Richard H. Pohndorf, in a speech entitled "Some Guidelines to Fitness" said, "In this age group (6 - 25), everyone should learn sufficient skills and appreciations in individual and dual activities which are beneficial at the time and which can be continued throughout life."[11] Although a difference of opinion does exist, it may be safe to assume that the high school years would be included in the "skill learning years".

If the physical education program is the place to develop these skills and the high school years are included in the "skill learning years", it might prove interesting to note the opportunities presented by high schools for learning or developing recreational skills.

A Recreational Skills Inventory designed to determine students' skill status and participation in physical activities was administered to women students

---

[9] Ibid., pp. 67-68.

[10] State of Illinois, op. cit., p. 34.

[11] Ibid., p. 61.

enrolled in the physical education classes at Ohio State University during the Winter Quarter, 1960. The results of this study indicated that the majority of the women students do not enter college with a sufficient number of adult recreational skills. "1626 or 68% had fewer than four adult recreational skills."[12]

The following are the per cent of students rating themselves as having intermediate or better skill in the listed activities: (N = 2382)

Swimming, 45%	Softball, 23%
Ballroom Dancing, 39%	Bowling, 20%
Volleyball, 37%	Badminton, 17%
Basketball, 30%	Exercises, 15%
Square Dance, 28%	Horseback Riding, 15% [13]

Of the first six activities, three are team sports, which are not usual adult recreational activities, and one is ballroom dancing, in which participation usually diminishes after young adulthood.

Zimmerman[14] found in a study at Southern Illinois University (1952) that softball, basketball, and volleyball

---

[12]Mary Jane Haskins, "Recreational Skills Inventory of Women Students in the Required Physical Education Program," paper presented at the Midwest Association for Physical Education of College Women, George Williams College Camp, Williams Bay, Wisconsin, May 13, 1960, p. 6.

[13]Ibid., pp. 18-19.

[14]Helen M. Zimmerman, "Physical Activity Experience and Interests of College Women," The Research Quarterly, 25:109-118, 1954.

predominated in the high school class programs of the college freshmen and that they had had very little instruction in individual and dual sports (activities which would tend to best lend themselves to participation in adult years).

The results of a questionnaire given to freshmen and sophomore women at the University of Washington (1952) have been reported by Broer and Holland.[15] They found that basketball, volleyball, and softball are by far the activities most taught in the high schools attended by these students. Beise[16] found the same to be true of the University of Michigan freshmen women. She concluded that these women had experience in team games in high school; had very little experience in individual activities in high school; and had better than average skill in the activities offered in the high school.

The above four studies are representative of the many that have been carried out to determine the skill status of college women. The results indicate that college women have few recreational skills and that the majority of

---

[15]Marion R. Broer and Dolly A. J. Holland, "Physical Education Interests and Needs of University of Washington Women in Service Classes", The Research Quarterly, 25:387-397, 1954.

[16]Dorothy Beise, "A Comparative Analysis of the Physical Education Background, Interests and Desires of College Students as an Evaluation Procedure", The Research Quarterly, 11:120-128, 1940.

the activities presented in the high school physical education classes of these women were team sports (activities which do not readily lend themselves to adult recreational participation).

Do skill and participation go hand in hand? In 1940, Baker[17] studied 1150 girls and women between the ages of fifteen and twenty-five using the questionnaire technique. She found that the range of participation in activities was small and concentrated on a few physical activities and that familiarity tended to increase participation.

Kappes,[18] in a study at the University of Oklahoma (1952) with 739 women as subjects, found a high degree of correlation between enjoyment of specific activities and estimated skill in such activities (r = .82). She suggests, "that if 'carry-over' attitudes toward activity are to be achieved, opportunities to develop satisfying skills will be helpful".

---

[17]Mary C. Baker, "Factors Which May Influence the Participation in Physical Education of Girls and Women 15-25 Years of Age", The Research Quarterly, 11:126-131, 1940.

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

Haskins[19] found that the possession of recreational skills results in increased activity and that the amount of participation in physical activities increases proportionally with the student's degree of skill.

Thus, on the basis of these studies, we may conclude that the possession of skill does result in increased participation and that enjoyment of an activity is related to the amount of skill in the activity.

Physical Performance

"The expression 'physical fitness' like many other expressions has several varied uses and meanings. In some instances it refers to organic condition - the fundamental condition of the cardiovascular, respiratory, digestive and other organic mechanisms. In others it refers to physique properties - height, weight, bone structure, fat, etc. In others it refers to basic motor qualities - strength, endurance, speed, agility, flexibility, etc. In still others, it refers to motor ability - the ability to run, jump, climb, throw, lift, swim, etc. It is also used in a general sense to include all of these and others. It should be noted, however, that all of these factors are interrelated. For example, strength relates to weight,

---

[19]Mary Jane Haskins, op. cit., p. 2.

cardiovascular condition relates to endurance, height relates to agility, and fat relates to the ability to run."[20] "Physical fitness cannot be bestowed or bought. It must, like honor, be earned. Like every privilege, it requires personal responsibility for its maintenance. Periodic exercise, self direction and self discipline are necessary."[21]

Clarke[22] reports that physical exercise of the right kind and amount develops vitality, stamina, vigor and skills related to the development of these qualities. Other factors which influence physical fitness are sleep, diet, and the avoidance of infection; but vigorous physical activity must be included as an essential source of organic power. There is general agreement among physiologists concerning the importance of systematic physical exercise in relation to fitness. Such activity is the only known means for acquiring the ability to engage in tasks demanding sustained effort.

The right kind and amount of exercise will develop muscular strength and endurance, body flexibility and

---

[20]James C. MacLeay, "Physical (Motor) Fitness of University of Illinois Freshman Men", Quoted in State of Illinois, op. cit., p. 55.

[21]Richard H. Pohndorf, "Some Guidelines to Fitness", Quoted in State of Illinois, op. cit., p. 61.

[22]H. Harrison Clarke, Application of Measurement to Health and Physical Education (Englewood Cliffs, N. J.: Prentice-Hall Inc., 1959), p. 16.

circulatory-respiratory endurance. "One of the most fundamental of physiological laws is that the functional efficiency of an organ or system improves with use and regresses with disuse."[23] Clarke reports, "Frequently repeated muscular exercise, practiced in accordance with sound principles and extended over long periods of time, result in striking alterations and modifications of the body organs."[24] Wessel states, "Muscles rely for their strength, size, tone, and endurance on frequent and repetitive use. To grow stronger, they must work under increasing loads. Without use - alternating contraction (work) with relaxation (rest) - muscles lose their elasticity and strength."[25]

Cureton in a summary of unpublished graduate thesis abstracts on the effects of physical education upon college men states:

> The benefits of sports to individuals has been known for a long time, but only recently have studies been made that would give specific evidence that changes are brought about by participation in these activities. The studies do not offer proof that physical education activities make permanent changes, but enough evidence is shown that some temporary changes are made. However, one can not help but be convinced that there are certain benefits to be gained by engaging in

---

[23]Laurence E. Moorehouse and Augustus T. Miller, quoted in State of Illinois, op. cit., p. 2.

[24]H. Harrison Clarke, op. cit., p. 16.

[25]Janet A. Wessel, Movement Fundamentals: Figure, Form, Fun (Englewood Cliffs, N. J.: Prentice-Hall Inc., 1959), p. 23.

> specific physical education activities. The studies showed quite clearly that no one activity produces all-around physical fitness. A combination of activities is needed to produce an optimum state of fitness. The studies also showed that to receive maximum benefits, it is necessary to participate constantly, for a relative long period of time, for several weeks, months or even years, with a strong effort.[26]

Whittle[27] studied two groups of eighty-one, twelve year old boys who were comparable in such maturity factors as chronological age, skeletal age, weight and height, and Wetzel developmental level. One group of these boys had participated for at least three years in a good physical education program; the other had little or no physical education in the elementary school. Pronounced differences were found between the two groups in various affective factors. The boys in the good program had a higher mean on the Rogers Physical Fitness Index test (Mean 121 - "good" program, Mean 103 - "poor" program), the Methany-Johnson Test of Motor "Educability", the Indiana Motor Fitness Test, and the vertical jump. A further disclosure of the Whittle study was that boys in each group who participated a "lot" in out-of-class physical activity showed strong superiority over those who participated a "little".

---

[26]Thomas K. Cureton (ed.), Effects of Physical Education and Athletics Upon College Men (Urbana, Ill.: 1955), p. 15.

[27]H. Douglas Whittle, "Effects of Elementary School Physical Education upon Some Aspects of Physical, Motor, and Personality Development of Boys Twelve Years of Age" (microcarded Ph.D. dissertation, University of Oregon, 1956).

Utilizing the Roger's Physical Fitness Index tests (PFI), Clarke[28] reported that male students entering the University of Oregon with four years of high school physical education had a higher average than those entering with two years or less.

Graybeal[29] conducted an experiment at the University of Minnesota using two groups of freshmen women. One group participated in the regular physical education program, the other did not. Dr. Graybeal concluded that, on the basis of this experiment, substantial improvement may be expected from required physical education courses in attitudes toward health and physical activity, in information concerning health and physical activity, in general big muscle ability, and in physical efficiency as measured by the pulse rate tests (Schneider Cardiovascular Test).

These words of Plato (380 B. C.) seem appropriate in summarizing the above research and theory. "Lack of activity destroys the good condition of every human being,

---

[28]H. Harrison Clarke, "Physical Fitness of University of Oregon Male Freshman", Physical Fitness News Letter, No. 4 (March 1955), quoted in Clarke, op. cit., p.57.

[29]Elizabeth Graybeal, The Measurement of Outcomes of Physical Education for College Women (Minneapolis: University of Minnesota Press, 1937).

while movement and methodical physical exercise save it and preserve it."[30] We might conclude from the research cited that individuals who actively participate in more physical activities will have a higher level of physical performance than those who do not participate as actively.

Evaluation of the Foundations Course

A previous study concerned with the evaluation of the Foundations of Physical Education Course at Michigan State University was an investigation by Gerland[31] completed in 1960. Gerland used the same subjects and evaluation form as employed in the present investigation. Her purpose was to determine the relationship between favorable and unfavorable evaluation of the Foundations Course and concept of self, attitudes toward physical activity, and selected environmental and physical recreation background factors.

Using the chi square statistical technique, she found a significant relationship ($p = .001$) between favorable and unfavorable acceptance of the Foundations Course

---

[30] Lester M. Frawley, Warren R. Johnson, and Benjamin H. Massey, Physical Education and Healthful Living (Englewood Cliffs, N. J.: Prentice-Hall Inc., 1954), p. 4.

[31] Lavaughn Rae Gerland, "A Study to Determine the Influence of the Foundations of Physical Education Course upon Concept of Physical Self and Attitudes Toward Physical Activity Among College Women" (Unpublished Master's Thesis, Michigan State University, 1960).

and the students' evaluations of the various phases of the course; i.e., amount of physical activity in the course, influence in planning future courses in physical education, experience of physical change due to activity and knowledge gained in the Foundations Course, and application of material to daily living.

She found no significant relationship between favorable and unfavorable acceptance of the Foundations Course and five selected background factors; i.e., Michigan residence and non-residence, size of high school, excused and non-excused from high school physical education program, and type of locality of home town.

No significant relationship was found between favorable and unfavorable acceptance of the Foundations Course and physical recreation factors; i.e., importance of physical recreation as part of students total recreation program, skill in recreational activities, and leisure time spent in recreational activities.

The results of this study tend to indicate that there is no relationship between overall evaluation of the Foundations Course and various background and physical recreation factors. However, closer examination of the relationships tested indicated that of the five background factors, three were concerned with environment, and the

other two were general questions about the high school physical education requirement. None of these tested factors were concerned with the actual physical education background of the subjects.

Summary and Predictions

Changes in our society have produced more "push-button" living requiring less and less physical activity. This, coupled with the increase in leisure time, makes it seem desirable for students to develop adequate recreational skills in physical activities as skill in an activity leads to participation in that activity. It is expected that significant relationships will exist between skill level and (1) participation in intramurals, (2) participation in a sports club, and (3) the amount of activity in the leisure time activities of the subject.

The physical education program is the place to develop skill and the high school years are included in the "skill learning years". Thus the greater the number of years of high school physical education, the greater the opportunity to develop skills in various physical activities. However, it has been pointed out that the majority of the activities presented in the high school physical education programs were team sports which are non-carry-over activities, i.e. activities which do not readily lend themselves to adult

recreational participation. Therefore, a significant relationship should exist between the number of years of high school physical education and non-carry-over skill level.

In the discussion of physical performance, it was noted that systematic physical exercise leads to an increase in the fitness or performance level of the individual. Because of this, the performance level of an individual should be related to the number of years of high school physical education, the amount of activity in the leisure time activities, and total skill level.

The one previous study dealing with the evaluation of the Foundations of Physical Education Course at Michigan State University reported no significant differences between various background factors concerned with environment and high school physical education requirements and the overall reaction to the Foundations Course.

CHAPTER III

METHODOLOGY

This chapter has been divided into four parts. The first part deals with the selection of the subjects, the second with a discussion of the three measures used in this investigation, namely: Physical Performance Tests, Activity Questionnaire, and the Evaluation Form. Section three, Methods of Analyzing Data, describes the methods used in determining the Physical Performance Level, Total Skill Level Rating, and Leisure Time Activity Rating of the subjects. The methods of statistical analysis are named in the final section.

Subjects

Two hundred freshmen women were randomly selected from the 1818 students enrolled in the fall term, 1959, Foundations of Physical Education Course at Michigan State University. The class lists were obtained after fall term registration and the names were numbered from one to 1818 consecutively. To obtain a sample of two hundred, every one hundredth name was omitted from the selection list and then every ninth name was selected as part of the sample.

By using this method of sample selection, there were representatives from every class section of the Foundations Course. All staff members involved in teaching the Foundations Course had some students who served as subjects.

Measures

Physical Performance Tests

Eight Physical Performance Tests were administered to all enrolled students during the first two weeks of the Foundations of Physical Education Course. The tests were: push-ups, deep knee bends, sit-ups, standing broad jump, standing flexion, grip strength, chair step, and wall pass for accuracy.

Each instructor was responsible for supervising the push-up, deep knee bend and sit-up tests for her classes. The course instructors, along with senior and graduate women physical education majors enrolled in a testing course, participated as testers in a two day mass testing of standing broad jump, chair step, grip strength, standing flexion, and wall pass for accuracy. Directions follow for administering the four tests (sit-up, deep knee bend, standing broad jump, and chair step) included in determing the Physical Performance Level of the subjects. It was felt that testing conditions for the other four performance tests were not sufficiently controlled, so those tests were omitted.

The following directions are quoted verbatim from a mimeographed handout entitled "Physical Performance Tests and Measures of Motor Ability: General Directions."[1]

> Sit-Up Test: Subject assumes a back-lying position on a mat, with knees bent just enough to allow the feet to be flat on the mat. Partner holds feet in position after they are properly placed. Subject's hands are placed on her shoulders with elbows over bust. On signal 'Ready, Go', the subject curls trunk up until her elbows touch her knees, then immediately uncurls back to the starting position - but without lowering head to mat. The hands must remain on shoulders throughout the test. The score is the number of correct sit-ups performed in thirty seconds, up and down counting as one sit-up movement.
>
> Deep Knee Bend Test: Subject stands erect with one foot slightly ahead of the other. The heel of the forward foot is about opposite the toes of the back foot. Arms are bent with elbows close to the sides (in thrust position). On a signal 'Ready, Go', subject squats down and simultaneously extends both arms forward at shoulder height to help maintain balance. Buttock touches heel. Return to erect position and repeat as rapidly as possible. Score is the number of times knees are extended in thirty seconds.
>
> Standing Broad Jump Test: Subject stands on the beat board, toes curled over the edge, and jumps forward on the mat as far as possible. The take-off is with both feet simultaneously. The distance jumped is measured from the beat board to the heel - (or other part of the body in case balance is lost) nearest the beat board. ...Score is the best jump of three trials, recorded to the closest inch.
>
> Chair Stepping Test: The subject steps up on the 16" bench with the left foot and leg. Next with the right foot and leg. The subject is now standing on the bench with both knees extended. The subject steps down to the floor with the left foot and then steps down with the right foot. The exercise is repeated at the rate of 30 four count routines per minute for two minutes.

---

[1] "Physical Performance Tests and Measures of Motor Ability: General Directions" (Department of Health, Physical Education and Recreation, Michigan State University, 1959), (mimeographed).

AT THE END OF THE TWO MINUTES THE SUBJECT SITS DOWN ON THE BENCH....Scoring: Pulse count from 1' to 1'30" after exercise.

Activity Questionnaire

Activity questionnaires, designed to determine the physical activity background of the subjects, were distributed during the sixth week of the Foundations Course.[2] Each subject had been assigned a number which was penciled in the lower right corner of her questionnaire. No attempt was made to identify completed questionnaires by name.

A letter of explanation, giving the purposes of the study and asking for subject cooperation, was attached to the questionnaire.[3]

The members of the sample were asked to fill out the questionnaire and return it at the next class meeting. Completed questionnaires were available for 189 subjects or 94.5 per cent of the sample. The other eleven subjects failed to finish the Foundations Course.

Evaluation Form

Four weeks after completion of the Foundations of Physical Education Course, the subjects were given a five

---

[2]See Appendix A for questionnaire.

[3]See Appendix A for letter.

item form on which they were asked to indicate their reaction to the Foundations Course. The evaluation form called for responses on a five point scale - Very Favorable, Favorable, Indifferent, Unfavorable, or Very Unfavorable.

Two of the items of the five item form were used in this study. They were: (1) Rate your general overall reaction to the Foundations Course you had last term; and (2) Evaluate the amount of physical activity in the course.

Methods of Analyzing Data

The author devised certain methods unique to this study for determining the Physical Performance Level, Total Skill Level Rating, and the Leisure Time Activity Rating of the subjects. These methods are described below.

Physical Performance Level

Raw scores from the four physical performance tests (sit-ups, deep knee bend, standing broad jump, and chair step) were converted to percentile scores using a percentile table devised especially for use in the Foundations of Physical Education Course. (See Table 1, page 31).

Percentile scores enabled the investigator to combine and average the scores of the four tests for each

Table 1.--Percentile table for Physical Performance Tests

Percentile Rank	Deep Knee Bends 30" Number	Sit-Ups 30" Number	Two Minute Chair Step 30" count	Standing Broad Jump Inches
100	32	26	41	87
95	29	23	47	78
90	27		54	75
85	26	21	55	73
80	25	20	57	71
75				69
70	24	19	60	67
65				66
60	23	18	62	65
55				64
50	22		63	63
45		17	64	61
40	21		65	60
35				59
30	20	16	68	58
25		15	69	57
20	19	14	70	56
15	18	13	72	55
10	17	12	80	53
5	15	9	88	50
0	6	0	less than 2'	40

subject. This average percentile score was used to determine the Physical Performance Level of the subject. An average percentile score between seventy and one hundred would place the subject in the high Physical Performance Level. A score between sixty and sixty-nine in the above average level, between thirty-six and fifty-nine in the average level, between twenty-six and thirty-five in the below average level. An average percentile score below twenty-five would give the subject a low Physical Performance rating.

Total Skill Level Rating

The activity questionnaire included a list of thirty-five physical activities in which girls of high school age participate. This list included twenty activities that could be considered carry-over activities (activities which are useful in adult life and for which equipment and facilities are generally accessible) and twelve activities classified as non-carry-over activities (activities which are not participated in by most people during their adult life). The carry-over activities were:

Archery	Golf	Social Dance
Badminton	Horseback Riding	Square Dance
Bowling	Ice Skating	Swimming
Camping	Life Saving	Table Tennis
Canoeing	Roller Skating	Tennis
Diving	Sailing	Water Skiing
Folk Dance	Skiing	

The non-carry-over activities were:

Basketball	Softball
Fencing	Speedball
Field Hockey	Stunts and Tumbling
Lacrosse	Tap Dance
Modern (Creative) Dance	Track and Field
Soccer	Volleyball

The instructions read: "Circle your skill level (how good you are) in each activity listed." Skill level

was assessed on a good, average, little, or none basis for each activity.

This investigator is aware that the self rating of skill can lack objectivity. Some tend to overrate and some to underrate their skill in any particular activity. However, this may be a more satisfactory method of comparing skill and the selected background factors because the subject would tend to rate her skill on the basis of enjoyment and what she has seen in others, rather than compare her skill with that of experts.

Beise[4] believes that self rating may be a more satisfactory means of comparing skill and interest than having a student rated objectively by a given test. If a student received satisfaction from an activity because of her skill, it would be a satisfaction based on a relative degree of skill, not on her skill when compared with the top ranking players or even with average ranking players.

A study[5] recently completed at Ohio State University compared student's self ratings of their level of skill with instructor ratings. The relationship afforded a

---

[4]Dorothy Beise, op. cit., p. 127.

[5]Mary Jane Haskins, op. cit., p. 1.

correlation of r = .72 and a contingency coefficient of C = .74 which indicates a high level of agreement between the two ratings.

To determine the Total Skill Level Rating, the subject's self rating for each activity was assigned a point value (Good - 3 points, Average - 2 points, Little - 1 point, and None - no points). The point values were totaled and these totals were ranked from high to low. Approximately twenty per cent of the total scores were placed in each of five categories - High, Above Average, Average, Below Average, and Low. The category in which a subject's total point value fell determined her Total Skill Level Rating. This same procedure was followed to assign carry-over and non-carry-over skill level ratings.

Leisure Time Activity Rating

In order to determine the relative amount of activity in the leisure time activities of the subjects, the following procedures were used. First, the subjects were asked to indicate the amount of their participation on an Often, Some, Little, None basis in thirty-seven activities. These activities had previously been rated as Active, Moderately Active, or Light with regard to the energy cost for that activity. The investigator then devised the following scheme for use in assigning a numerical value to the

indications of participation to allow for ranking of the subjects in order of amount of activity. See Table 2 below.

Table 2.--Numerical values assigned to activity rating and amount of participation

Activity Rating	Often	Some	Little
Active	9	6	3
Moderate	6	4	2
Light	3	2	1

If a subject rated her participation as often in an activity considered active, she received a numerical value of nine for that activity. If her amount of participation was some in a moderately active activity, she received a value of four. A value of one was given for little participation in an activity rated as light, and so on, as shown in Table 2, above.

To determine the Leisure Time Activity Rating, the numerical values for each subject were totaled and the subjects were ranked from high to low on the basis of these values. Approximately one-third of the subjects will be placed in each of three groups, Active, Moderately Active, and Light Activity on the basis of position in the ranked list.

Statistical Methods

The major portion of this investigation involved relationships between certain factors. As the various measures provided only categorized (nominal scale) information, the chi square (X^2) test for two or more classes for each variable was employed to test the existence of relation.

Questionnaire and physical performance test results were reported in percentages.

CHAPTER IV

RESULTS

For reading ease and continuity, this chapter has been divided into three sections, each section corresponding to one of the three major purposes of this study. Results specific to the purpose under discussion and tangential results where relevant will be reported in the appropriate section. Additional results may be found in the Appendices.

Physical Activity Background Factors

It will be remembered that the first stated purpose of this investigation was to determine the physical activity background factors of the freshmen women enrolled in the Foundations of Physical Education Course. These factors were: (1) number of years of high school physical education; (2) reaction to high school physical education classes; (3) degree of activity in the high school physical education classes; (4) the desire for either more or less vigorous activity during the high school physical education classes; (5) the inclusion of a course or unit similar to the Foundations of Physical Education Course in the high

school curriculum; (6) participation in a sports club or intramurals during the high school years; (7) Total Skill Level Rating; (8) skill level in both carry-over and non-carry-over activities; and (9) Leisure Time Activity Rating.

The Activity Questionnaire, designed to determine the physical activity background factors of the subjects, furnished the results that follow. Unless otherwise stated, N = 189.

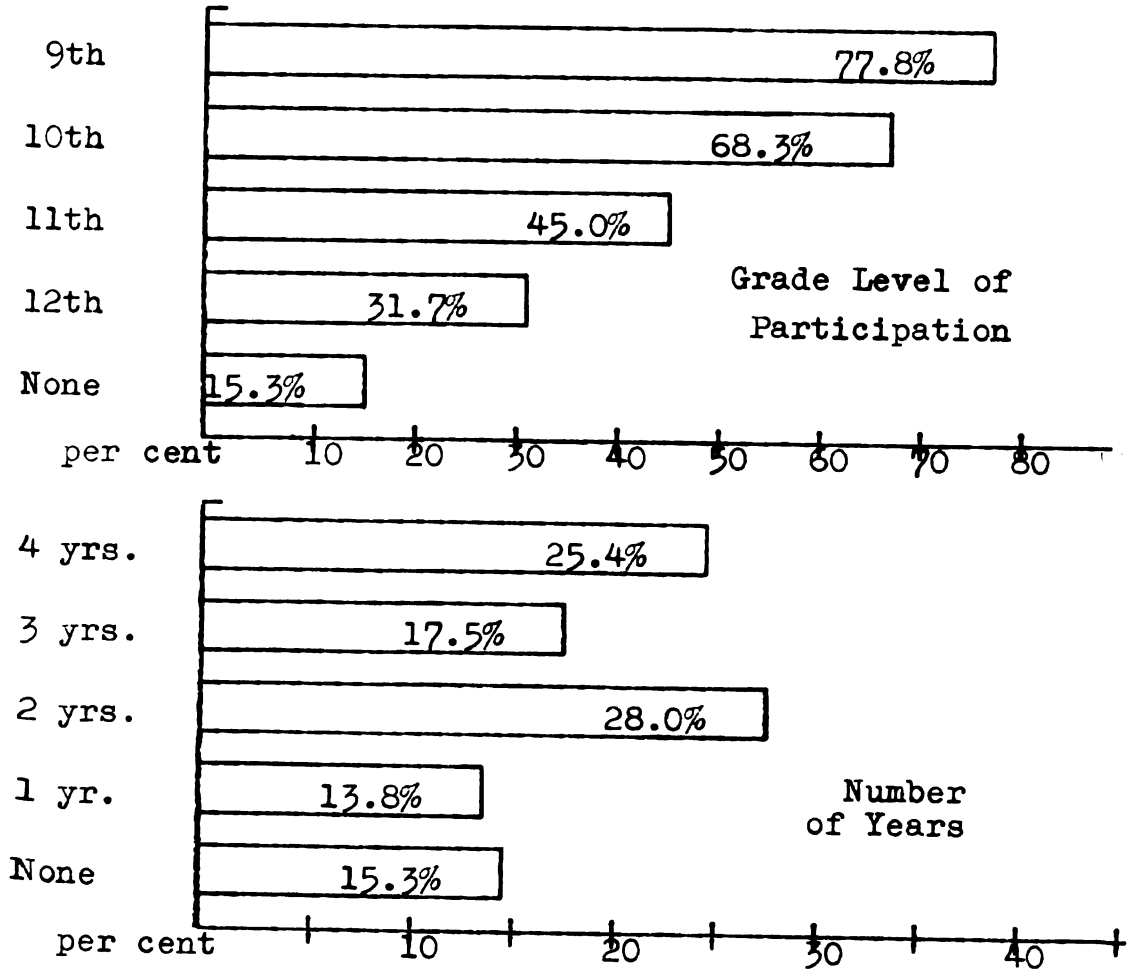
(1) Number of years of high school physical education

Of the 189 subjects, 92.6% (175) indicated that girls physical education classes were offered in their high school curriculum. Figure 1, page 39, shows first, the percentage of subjects who participated in the physical education classes at each grade level and second, the number of years of high school physical education the subjects received.

The majority of the subjects who had physical education courses during their high school years, had them only during the first two high school years. This indicates that many of the subjects of this investigation were without regular physical education classes during the two years previous to this study. Also of note is that 57.1% (108) had two years or less of high school physical education. Of these, 15.3% (29) had no formal instruction in physical

education during their high school years. Although 92.6% of the subjects indicated that their high school offered girls physical education classes, only 84.7% (160) of the subjects participated in physical education classes at some time during their high school years.

Figure 1.--Grade level of participation and number of years of high school physical education



(2) Reaction to high school physical education classes

Two of the questions on the Activity Questionnaire were intended to give some indication of the subjects' attitude toward their high school physical education classes. First: Do you feel that your high school physical education classes were excellent, very good, good, fair, or poor? and second: Did you enjoy your high school physical education classes? Table 3 indicates the results obtained on these two questions.

Table 3.--Reaction to high school physical education classes

Do you feel that your high school physical education classes were:			Did you enjoy your high school physical education classes?		
Excellent	6.3%	12	Very Much	21.2%	40
Very Good	23.3%	44	Much	29.6%	56
Good	34.4%	65	Some	26.5%	50
Fair	18.0%	34	Little	5.3%	10
Poor	10.1%	19	None	9.0%	17
No Answer	7.9%	15	No Answer	8.5%	16

Very good or excellent responses were given by 29.6% (56) of the subjects as their feeling toward their high school physical education classes, while 28.1% (53) said that their physical education classes were fair or poor. The majority, 50.8% (96) indicated that they

enjoyed the physical education classes offered by their high school. Only 14.3% (27) indicated that they received little or no enjoyment.

(3) Degree of activity in the high school physical education classes

The question: Did you have vigorous physical activities in your high school physical education classes? produced the following responses. Of the subjects, 47.1% (89) answered vigorous or very vigorous, 32.8% (62) answered moderate, and 10.6% (20) said that they had had somewhat vigorous or very little vigorous activity in their high school physical education classes.

In answer to the question: Would you like to have had more vigorous physical activity during your high school years? a majority of the subjects, 60.3% (114) answered yes, while 34.9% (66) said no.

(4) Course or unit similar to the Foundations Course

Two questions: Did you have a course or unit in posture and/or body mechanics? and Did you have a course or unit in body conditioning and/or exercises? were asked of the subjects. Of the 189 subjects, 19.6% (37) signified that they had had a course or unit in posture and/or body mechanics and 40.7% (77) a course or unit in body conditioning

and/or exercise. Thirty-one of these subjects indicated that they had had both types of units.

A yes answer to either of the two questions was taken to indicate that the subject had had a course or unit in someway similar to the Foundations of Physical Education Course. Thus, 43.9% (83) of the subjects indicated that they had had a course or unit similar to the Foundations Course.

(5) Participation in a sports club or intramurals

Over one-half (59.3%) of the subjects indicated that they had not participated in any type of a sports club during their high school years. This meant that only 40.7% (77) of the subjects had taken part in some type of a sports connected club such as GAA, Leaders Club, Pep Club, Cheerleading, Dance, Swimming, Bowling, Ski Club, etc. during any part of their high school years.

Of the 69.8% (132) that implied that they had participated in some form of organized intramurals, 124 or 94% indicated that their participation had been in a team sport intramural activity, while 53.3% (70) had participated in an individual or dual sport activity. The fact that more of the subjects had participated in team sport activities is also reflected in the fact that skill level is higher in this area, as will be shown later. Also, the

nature of a team sport more readily lends itself to an intramural program and participation by a greater number of people.

(6) Skill Level

As previously noted, the Activity Questionnaire included a list of thirty-five physical activities in which girls of high school age participate. Of these, twenty are considered to be carry-over activities and twelve are non-carry-over activities.

A ranked list of the activities, based upon the percentage of subjects who signified that they had average or better skill in the listed activities, appears in Table 4, page 44. Also shown in Table 4 are the number and per cent of girls with average or better skill in the activity, the type (Team Sport, Recreational Sport, Dancing, or Aquatic) and the classification (carry-over or non-carry-over) of the listed activities.

In only seven of the thirty-two activities did 50% of the subjects rate their skill as average or above. These seven activities are volleyball (77.8%), basketball (72.5%), softball (67.2%), social dance (57.7%), badminton (56.1%), swimming (54.0%), and table tennis (50.3%). Noteworthy is the fact that the three activities which appear at the top of the list are team sports and are

Table 4.--Per cent of subjects with average skill or above, type and classification of the listed activities

Rank	Activity	Per Cent	Type	Classification*
1	Volleyball	77.8 (147)	Team	NCO
2	Basketball	72.5 (137)	Team	NCO
3	Softball	67.2 (127)	Team	NCO
4	Social Dance	57.7 (109)	Dance	CO
5	Badminton	56.1 (106)	Rec.	CO
6	Swimming	54.0 (102)	Aquatic	CO
7	Table Tennis	50.3 (95)	Rec.	CO
8	Square Dance	47.6 (90)	Dance	CO
9	Tennis	33.9 (64)	Rec.	CO
10	Bowling	31.7 (60)	Rec.	CO
11	Folk Dance	30.7 (58)	Dance	CO
12.5	Soccer	29.1 (55)	Team	NCO
12.5	Stunts and Tumbling	29.1 (55)	Other	NCO
14	Field Hockey	27.5 (52)	Team	NCO
15	Roller Skating	27.0 (51)	Rec.	CO
16	Ice Skating	24.9 (47)	Rec.	CO
17.5	Archery	22.8 (43)	Rec.	CO
17.5	Camping	22.8 (43)	Rec.	CO
19	Horseback Riding	21.7 (41)	Rec.	CO
20	Modern Dance	19.6 (37)	Dance	NCO
21	Life Saving	19.0 (36)	Aquatic	CO
22	Track and Field	18.5 (35)	Other	NCO
23	Diving	16.9 (32)	Aquatic	CO
24	Water Skiing	14.3 (27)	Aquatic	CO
25	Canoeing	13.8 (26)	Aquatic	CO
26.5	Golf	8.5 (16)	Rec.	CO
26.5	Speedball	8.5 (16)	Team	NCO
28.5	Skiing	7.4 (14)	Rec.	CO
28.5	Tap Dance	7.4 (14)	Dance	NCO
30	Sailing	6.3 (12)	Aquatic	CO
31	Fencing	5.8 (11)	Other	NCO
32	Lacrosse	1.6 (3)	Team	NCO

* CO = Carry-over activity
NCO = Non-carry-over activity

usually considered non-carry-over activities. It will be remembered that these three activities, volleyball, basketball and softball are the same ones that Zimmerman[1], Broer and Holland[2], and Beise[3] reported as the most commonly taught activities in the high school physical education programs. The four other activities are carry-over activities, i.e. activities which are useful in adult life and for which equipment and facilities are generally accessible.

By combining all activities of a given type, and averaging the number of subjects who rated their skill as average or above in these activities, Team Sports with 47.1% (89) again have the highest percentage. This is followed by Dancing, 32.8% (62); Recreational Sports, 28.0% (53); and Aquatics, 20.6% (39).

(7) Total Skill Level Rating

After determining the total point value for the subject's self rating of skill as described on page 34, the point values were ranked and skill level ratings were assigned. Appearing in Table 5, page 46 are the number of subjects in each of the five rating categories for total skill, carry-over skill, and non-carry-over skill. Approximately 20% of the subjects were placed in each category.

---

[1]Helen M. Zimmerman, op. cit.

[2]Marion Broer and Dolly Holland, op. cit.

[3]Dorothy Beise, op. cit.

Table 5.--Number and percentage of subjects in skill level rating categories

Category	Total Skill		Carry-Over		Non-Carry-Over	
High	38	(20.1%)	39	(20.6%)	36	(19.0%)
Above Average	36	(19.0%)	40	(21.2%)	39	(20.6%)
Average	38	(20.1%)	32	(16.9%)	42	(22.2%)
Below Average	37	(19.6%)	38	(20.1%)	40	(21.2%)
Low	40	(21.2%)	40	(21.2%)	32	(16.9%)

It is appropriate, at this point, to discuss the results of two other questions from the Activity Questionnaire. These questions were: What single activity did you enjoy participating in during your physical education classes? and, List three physical activities not offered in your high school physical education classes that you would like to have had included. Table 6, page 47 presents the percentage of responses to these questions in each of six categories. (A complete list of the responses appears in Appendix B).

The activities offered in the high school physical education programs would tend to influence the responses to these questions. However, it is interesting to note that of the 174 responses to the first question, 52.3% (91) designated some type of a team sport. This may indicate one of two things, first, the subjects actually preferred

team sports to other types of activities or second, the majority of the activities presented in the high school programs were team sports, and so a greater proportion of 'team sport enjoyed most' responses would be expected. Upon examining the proportion of 'team sport' responses to the second question, 4.6% (21) of the 455 responses, the second of the above mentioned propositions appears to be the most logical.

Table 6.--Single activity enjoyed and activity would like to have had included in high school physical education classes

Type of Activity	Activity Enjoyed 174 Responses	Like to Have Had 455 Responses
Team Sports	52.3%	4.6%
Aquatic Activities	14.9%	17.4%
Recreational Sports	13.2%	50.1%
Gymnastics, Exercises, etc.	10.9%	13.2%
Dancing	5.7%	12.3%
Other Activities	2.9%	2.4%

(8) Leisure Time Activities

Incorporated in the Activity Questionnaire was a list of thirty seven leisure-time activities. These activities had previously been rated as active, moderate, or light activity on the basis of the calorie cost of the

activity. The subjects were asked to denote the amount of their leisure time, often, some, little, none, they had spent performing the various activities in the warm months and the cool months during the previous year.

The fifteen activities most often performed by the subjects during the warm and the cool months are shown in Table 7, page 49. These two lists display the following four trends. First, is the appearance of the so-called seasonal activities, activities which are most commonly executed during certain seasons of the year. For example, leisure time activities which appear only on the often participation list for the warm months are swimming, boating and/or canoeing, water skiing, and hiking. These activities, although sometimes performed during the cooler months, are commonly thought of as activities for the warm months (late spring, summer, and early fall). The same holds true for ice skating, bowling, team sports, and playing cards, activities appearing on the often participation list for the cooler months (late fall, winter, and early spring).

Secondly, is the rise in the percentage of often participation as a spectator at sport events, from 46.6% in the warm months to 67.0% in the cool months. This could be attributed to the fact that two of the more popular spectator sports (football and basketball) are performed during the cool months.

Table 7.--Leisure time activities most often performed during the warm and the cool months

Rank	Activity	Per Cent	Amount Activity	Type
	Warm Months			
1	Swimming	64.0	Active	Aquatic
2	Listening to radio, records	60.8	Light	Social
3.5	Dancing	52.9	Active	Social
3.5	Going to movies, concerts	52.9	Light	Social
5	Spectator, sports events	46.6	Light	Social
6	Telephoning friends	41.8	Light	Social
7	Reading	40.3	Light	Hobby
8	Cooking	28.6	Light	Hobby
9	Boating and/or Canoeing	28.0	Moderate	Aquatic
10.5	Playing musical instrument	25.4	Light	Hobby
10.5	Water Skiing	25.4	Active	Aquatic
12	Watching TV	24.9	Light	Social
13	Sewing	23.8	Light	Hobby
14	Raising animals	22.2	Light	Hobby
15	Hiking	21.2	Active	Recreation
	Cool Months			
1	Spectator, sports events	67.0	Light	Social
2	Listening to radio, records	65.1	Light	Social
3	Going to movies, concerts	60.8	Light	Social
4	Dancing	53.4	Active	Social
5	Reading	47.6	Light	Hobby
6	Telephoning friends	40.3	Light	Social
7	Ice Skating	30.2	Active	Recreation
8	Playing musical instrument	29.6	Light	Hobby
9	Watching TV	26.4	Light	Social
10	Cooking	23.3	Light	Hobby
11	Sewing	21.2	Light	Hobby
12	Raising animals	20.6	Light	Hobby
13	Team sports	20.0	Active	Team
14	Playing cards	18.0	Light	Social
15	Bowling	17.5	Moderate	Recreation

Ten of the activities from the participation list for the warm months and eleven of the cool month activities are leisure time activities that are considered to be light in activity. Of these activities, several involve only sitting (listening to the radio, records; watching TV; sewing; playing cards; going to movies, concerts; spectator sports events; telephoning friends; and reading). Only four of the fifteen activities on the warm month list and three of the cool month leisure time activities are rated as active activities. This might be a reflection of a trend toward a sedentary way of life, feared by the people concerned with the health and well-being of our nation.

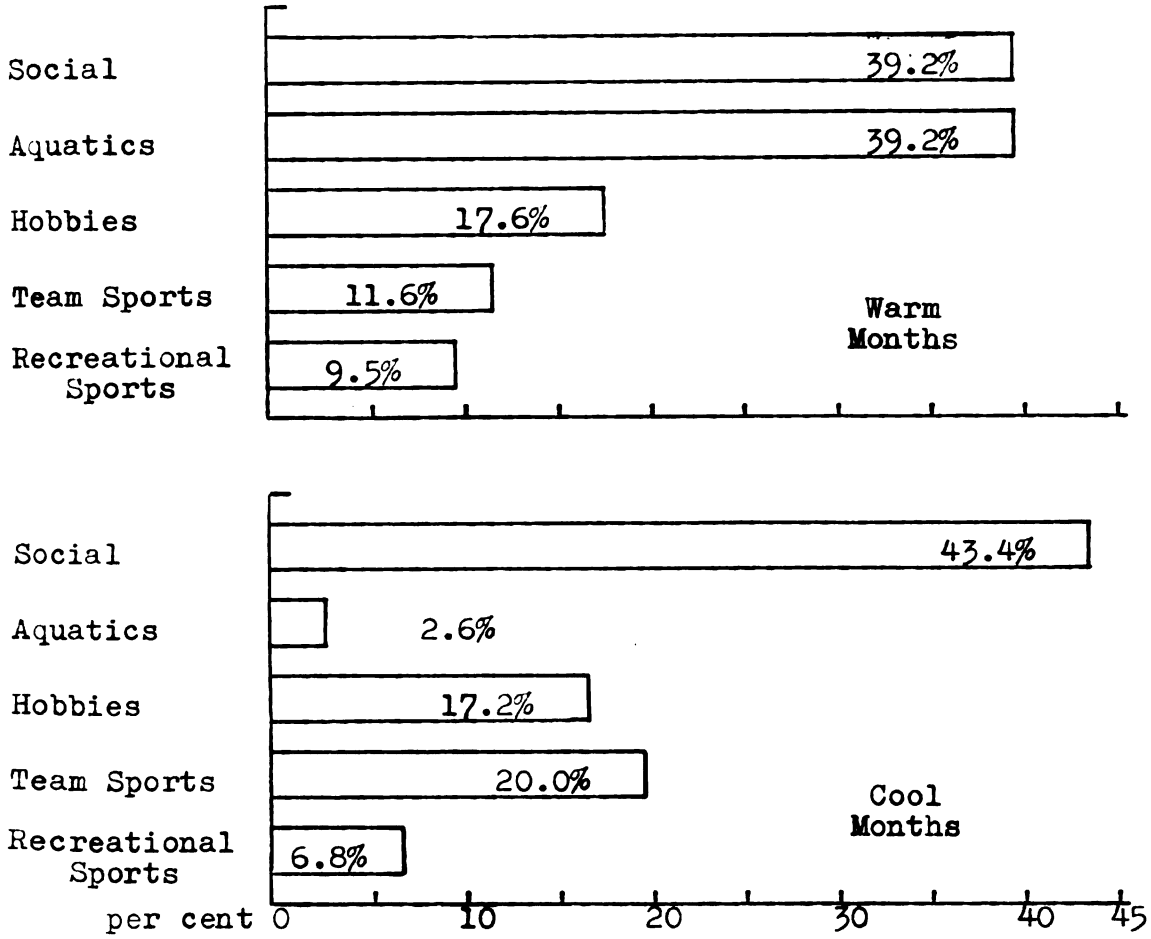
Predominate in the two lists are leisure time activities which are social in nature. This high percentage of often participation in social activities is not out of line with what might be expected from the high school age group.

This high percentage of participation in social activities and the drop in participation in aquatic activities during the cool months is quite evident in the graphic presentation of the average percentage of often participation in leisure time activities, Figure 2, page 51.

(9) Leisure Time Activity Rating

In order to determine the relative amount of

Figure 2.--Average percentage of 'Often' participation in leisure time activities during the warm and the cool months



activity in the leisure time activities (Leisure Time Activity Rating) during the year previous to this investigation, the numerical values for the amount of activity and extent of participation in the leisure time activities as described on pages 34 and 35, were assigned. The total values were ranked from high to low and approximately one-third of the subjects were placed in each of three groups, active,

moderately active, or light activity on the basis of position in the ranked list. Fifty-nine subjects or 31.2% were given Active and Light Activity ratings while 37.6% (71) were rated as Moderately Active.

Relationships Among Various Physical Activity Factors

The second major purpose of this investigation was to determine if there are significant relationships among various physical activity background factors. The factors tested will be discussed in the following order:

Total Skill Level Rating compared with (1) the number of years of high school physical education, (2) participation in a sports club, (3) participation in intramurals, and (4) Leisure Time Activity Rating.

Leisure Time Activity Rating compared with (1) number of years of high school physical education, (2) participation in intramurals, and (3) participation in a sports club.

Number of years of high school physical education compared with (1) reaction to high school physical education classes, (2) amount of activity in high school physical education, (3) desire for either more or less physical activity in physical education classes, (4) participation in intramurals, and (5) participation in a sports club.

Chi squares (X^2) were computed and the .05 level of significance was chosen to indicate the existence of

significant or non-significant relationships between the variables listed above. Shown in Table 8, page 54, are the computed chi squares, the degrees of freedom, and the probability of the above mentioned comparisons.

As can be noted in Table 8, page 54, significant relationships exist between the number of years of high school physical education and the Total Skill Level Rating and non-carry-over skill level. However, no significant relationship was found to exist between the number of years of high school physical education and carry-over skill level.

In both of the significant relationships, the greater the number of years of high school physical education the higher the skill level. This is not out of line with what was predicted as a result of the background reading. As was pointed out in Chapter II, the high school years are included in the skill learning years. Therefore, it is expected that persons with greater opportunity to develop skills in physical activities during this period would have a higher total skill level. The fact was also noted that many high school physical education programs offer mainly non-carry-over activities and thus skill is expected to be higher in these activities.

Previous studies were reported in which skill in a physical activity led to participation in that activity.

Table 8.--Relationships among various physical activity background factors

Relationship Tested	X^2	df	p
Total Skill Level Rating and:			
Number of years of high school physical education	21.59	8	.01*
Participation in intramurals	24.49	4	.001*
Participation in a sports club	17.82	4	.005*
Leisure Time Activity Rating	41.33	8	.001*
Leisure Time Activity Rating and:			
Number of years of high school physical education	11.45	8	.20
Participation in intramurals	8.51	2	.02*
Participation in a sports club	6.79	2	.05*
Number of years of high school physical education and:			
Reaction to high school physical education classes	42.11	8	.001*
Enjoyment of high school physical education classes	30.08	8	.001*
Degree of activity in high school physical education classes	42.40	8	.001*
Desire for either more or less vigorous activity during high school physical education classes	29.26	4	.001*
Participation in a sports club	20.63	4	.001*
Participation in intramurals	35.46	4	.001*
Non-carry-over skill level	52.02	8	.001*
Carry-over skill level	11.11	8	.20

* Significant relationship

On the basis of this, it was predicted that there would be significant relationships between the Total Skill Level Rating and three variables dealing with participation (participation in intramurals, participation in a sports club, and Leisure Time Activity Rating). As predicted, these three tested relationships were significant. In the case of participation in intramurals and participation in a sports club, the higher the Total Skill Level Rating, the greater the participation in the activity. It was also found that the higher the skill level rating, the more active the Leisure Time Activity Rating.

Although a significant relationship was predicted, no significant relationship exists between the Leisure Time Activity Rating and the number of years of high school physical education. As predicted, significant relationships exist between the Leisure Time Activity Rating and participation in intramurals and participation in a sports club. The more active the Leisure Time Activity Rating, the greater the participation in intramurals and in a sports club.

As shown in Table 8, page 54, all of the relationships tested between the number of years of high school physical education and the various background factors were statistically significant. The relationships tested included two concerned with reaction to the high school physical

education classes, namely evaluation of the physical education classes and enjoyment of the high school physical education classes.

Significant relationships existed between the number of years of high school physical education and the degree of activity in these classes and the desire for either more or less vigorous activity. The greater the number of years of high school physical education, the more vigorous the activity and the less the desire for more vigorous activity.

The relationships between the number of years of high school physical education and participation in intramurals and participation in a sports club are both significant at the .001 level. This could very well be due to the fact that high schools that offer more physical education would also offer a greater number of opportunities to participate in extra-class sport's activities.

Physical Performance and Evaluation Measures

The third major purpose of this investigation was to determine if there are significant relationships between selected physical activity background factors and the physical performance and evaluation measures used in the Foundations of Physical Education Course. Following first is

a discussion of the Physical Performance Level and its relationship to various activity background factors and then a discussion of the relationships between the evaluation measures and selected physical activity background factors.

Physical Performance

As described in Chapter III, pages 30 and 31, the raw scores from the four physical performance tests were converted to percentile scores. The frequency distribution of the physical performance percentile scores is presented in Table 9.

Table 9.--Frequency distribution of physical performance percentile scores

Percentile Rank	Deep Knee Bends	Sit-ups	Two Minute Chair Step	Standing Broad Jump
90 - 100	24	6	19	24
80 - 89	36	14	15	23
70 - 79	19	12	22	25
60 - 69	21	16	14	19
50 - 59	15	1	7	25
40 - 49	19	12	30	18
30 - 39	16	19	16	12
20 - 29	13	35	24	10
10 - 19	21	49	37	17
0 - 9	5	25	5	16

After combining and averaging the percentile scores for each subject, the Physical Performance Level for the subject was assigned. The frequency distribution of the Physical Performance Levels appears in Table 10.

Table 10.--Frequency distribution of Physical Performance Levels

Percentile	Physical Performance Level	Frequency	Per cent
70 - 100	High	22	11.6%
60 - 69	Above Average	26	13.8%
36 - 59	Average	79	41.8%
26 - 35	Below Average	34	18.0%
0 - 25	Low	28	14.8%

It has been pointed out that systematic physical exercise leads to an increase in performance level. Therefore, significant relationships are expected between the Physical Performance Level and (1) the number of years of high school physical education, (2) Leisure Time Activity Rating, and (3) Total Skill Level Rating. As can be seen in Table 11, page 59, no significant relationship existed between the Physical Performance Level and the number of years of high school physical education or with the Total Skill Level Rating. A relationship significant at the .02 level existed between the Physical Performance Level and

Table 11.--Relationship between selected physical activity background factors and the physical performance and evaluation measures

Relationship Tested	X^2	df	p
Physical Performance Level and:			
Total Skill Level Rating	12.65	8	.20
Number of years of high school physical education	9.57	8	.30
Leisure Time Activity Rating	11.87	4	.02*
Overall reaction to the Foundations Course and:			
Evaluation of high school physical education classes	4.29	6	.70
Enjoyment of high school physical education classes	2.77	6	.90
Participation in intramurals	.72	3	.90
Participation in a sports club	1.71	3	.70
Inclusion of a course or unit similar to Foundations Course in the high school curriculum	9.05	3	.05*
Total Skill Level Rating	5.35	6	.50
Leisure Time Activity Rating	5.03	6	.60
Number of years of high school physical education	20.09	12	.10
Physical Performance Level	12.66	6	.05*
Evaluation of the amount of activity in the Foundations Course and:			
Degree of activity in high school physical education classes	2.89	6	.90
Desire for either more or less vigorous activity during high school physical education classes	1.48	3	.70
Total Skill Level Rating	14.50	6	.025*
Leisure Time Activity Rating	17.71	6	.01*
Number of years of high school physical education	18.77	12	.10
Physical Performance Level	5.71	6	.50

*Significant Relationship

the Leisure Time Activity Rating. The higher the Physical Performance Level, the more active the subject in her leisure time.

Evaluation of the Foundations Course

The frequency of responses to the two questions from the Evaluation Form used in this investigation are shown in Table 12.

Table 12.--Frequency distribution of responses to the Evaluation Form

Rate your general overall reaction to the Foundations Course you had last term.			
	Very Favorable	41	21.7%
	Favorable	114	60.3%
	Indifferent	16	8.5%
	Unfavorable	15	7.9%
	Very Unfavorable	3	1.6%
Evaluate the amount of physical activity in the course.			
	Very Favorable	23	12.2%
	Favorable	116	61.4%
	Indifferent	27	14.3%
	Unfavorable	21	11.1%
	Very Unfavorable	2	1.1%

As shown in Table 11, page 59, only two significant relationships existed between general overall reaction

to the Foundations Course and the various factors. These two were with the Physical Performance Level and with the inclusion of a course or unit similar to the Foundations Course in the high school curriculum.

Of the six relationships tested with the evaluation of the amount of activity in the Foundations Course, two were significant. These two were with the Total Skill Level Rating and with the Leisure Time Activity Rating.

CHAPTER V

SUMMARY AND RECOMMENDATIONS

The purposes of this study were (1) to determine the physical activity background factors of the freshmen women enrolled in the required introductory course, Foundations of Physical Education, at Michigan State University; (2) to determine if selected background factors were interrelated; and (3) to determine the relationship between selected physical activity background factors and the physical performance and evaluation measures used in the Foundations of Physical Education Course.

Two hundred freshmen women were randomly selected from the 1818 students enrolled in the Fall term, 1959, Foundations of Physical Education Course at Michigan State University. Scores from four performance tests (sit-up, deep knee bend, standing broad jump, and chair step) were used in determining each subject's Physical Performance Level. An Activity Questionnaire was designed to determine the physical activity background factors and an Evaluation Form was used to determine the subjects' reaction to the Foundations Course.

Major findings included:

1. Over one-half of the subjects were without regular physical education classes during the two years previous to this investigation. Fifty-seven per cent had two or less years of high school physical education.

2. The majority reacted favorably to their high school physical education classes.

3. Less than one-half of the subjects (41%) participated in a sports club during any part of their high school years while 69.8% participated in an intramural program.

4. Skill level was highest in team sports, especially volleyball, basketball, and softball.

5. One-half of the subjects would like to have had a recreational sport included in their high school physical education curriculum.

6. During the year previous to this investigation, the subjects participated most often in leisure time activities which were social in nature and required little activity.

7. The physical recreation activities in which the subjects participated most often were swimming, dancing, boating and/or canoeing, water skiing and hiking during the warm months and dancing, ice skating and bowling during the cool months.

Significant relationships exist between:

1. Total Skill Level Rating and a) number of years of

high school physical education, b) participation in intramurals, c) participation in a sports club, and d) the total amount (frequency and vigorousness) of activity in leisure time activities (Leisure Time Activity Rating).

2. Non-carry-over skill level (skill in activities not participated in during adult life) and the number of years of high school physical education.

3. Leisure Time Activity Rating and a) participation in intramurals, and b) participation in a sports club.

4. Number of years of high school physical education and a) participation in intramurals, and b) participation in a sports club.

5. Physical Performance Level and the Leisure Time Activity Rating.

6. Overall reaction (course rating) to the Foundations Course and a) Physical Performance Level, and b) inclusion of a similar course or unit in the high school curriculum.

7. Evaluation of the amount of activity in the Foundations Course and a) Total Skill Level Rating, and b) the Leisure Time Activity Rating.

Recommendations

It is recommended, as a result of this investigation, that in planning the college physical education curriculum, more attention should be given to the recreational activities. The skill level of the sample was low

in this area and the subjects expressed the desire for instruction in various recreational activities. Less emphasis could be placed upon the three team sport activities, volleyball, basketball, and softball, in which the majority of the subjects rated their skill as average or better.

It is further recommeded that in another investigation of this type certain changes in method be made. First, a greater variety of performance tests should be used in determining the Physical Performance Level. Second, the terms used in the Activity Questionnaire for rating the participation in leisure time activities should be defined in terms of number of times participated during a certain length of time. Thirdly, it is suggested that the Evaluation Form be revised and should include more response categories to provide greater dispersion of the responses.

A suggested project for future research is a longitudinal study to determine the relationship of skill and interests to the leisure time activity patterns of female subjects. A study of the changes in the activity patterns and interests of the subjects after completion of the Foundations Course, at the end of the physical education requirement, the year following graduation from college, and finally at the time when a home and family have been established, is suggested.

REFERENCES

Books

Clarke, H. Harrison. Application of Measurement to Health and Physical Education. Englewood Cliffs, N. J.: Prentice-Hall Inc., 1959.

Cowell, Charles C. Seminar Guide in Physical Education. Lafayette, Ind.: Purdue University, 1956.

Cureton, Thomas K. (ed.). Effects of Physical Education and Athletics Upon College Men. Urbana, Ill.: 1955.

Frawley, Lester M., Johnson, Warren R., and Massey, Benjamin H. Physical Education and Healthful Living. Englewood Cliffs, N. J.: Prentice-Hall Inc., 1954.

Graybeal, Elizabeth. The Measurement of Outcomes of Physical Education for College Women. Minneapolis: University of Minnesota Press, 1937.

Irwin, Leslie W. and Humphrey, James H. Principles and Techniques of Supervision in Physical Education. St. Louis: The C.V. Mosby Company, 1954.

Knapp, Clyde and Hagman, E. Patricia. Teaching Methods for Physical Education. New York: McGraw-Hill Book Company, Inc., 1953.

Knapp, Clyde and Jewett, Ann E. Physical Education: Student and Beginning Teaching. New York: McGraw-Hill Book Company, Inc., 1957.

Krug, Edward A. Curriculum Planning. New York: Harper and Brothers, 1957.

Nash, Jay B. The Administration of Physical Education. New York: A.S. Barnes and Company, 1931.

Nash, Jay B., Moench, Francis J., and Saurborn, Jeannette B. Physical Education: Organization and Administration. New York: A.S. Barnes and Company, 1951.

National Recreation Workshop. Recreation for Community Living. Chicago: The Athletic Institute, 1952.

Wessel, Janet A. Movement Fundamentals: Figure, Form, Fun. Englewood Cliffs, N. J.: Prentice-Hall Inc., 1959.

Articles

Baker, Mary. "Factors Which May Influence the Participation in Physical Education of Girls and Women," The Research Quarterly, 11:126-131, 1940.

Beise, Dorothy. "A Comparative Analysis of the Physical Education Background, Interests and Desires of College Students as an Evaluation Procedure," The Research Quarterly, 11:120-128, 1940.

Broer, Marion R. and Holland, Dolly A.J. "Physical Education Interests and Needs of University of Washington Women in Services Classes," The Research Quarterly, 25:387-397, 1954.

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

Zimmerman, Helen M. "Physical Activity Experience and Interests of College Women," The Research Quarterly, 25:109-118, 1954.

Reports

State of Illinois. Report of the Governor's Conference on Youth Fitness, held at Robert Allerton Park, Monticello, Illinois, May 5,6,7, 1957.

Unpublished Material

Gerland, Lavaughn Rae. "A Study to Determine the Influence of the Foundations of Physical Education Course Upon

Concept of Physical Self and Attitudes Toward Physical Activity Among College Women." Unpublished Master's thesis, Michigan State University, 1960.

Haskins, Mary Jane. "Recreational Skills Inventory of Women Students in the Required Physical Education Program." Paper presented at the Midwest Association for Physical Education of College Women, George Williams College Camp, Williams Bay, Wisconsin, May 13, 1960.

"Physical Performance Tests and Measures of Motor Ability: General Directions." Department of Health, Physical Education and Recreation, Michigan State University, 1959. (mimeographed).

Whittle, H. Douglas. "Effects of Elementary School Physical Education upon Some Aspects of Physical, Motor and Personality Development of Boys Twelve Years of Age." Microcarded Ph.D. dissertation, University of Oregon, 1956.

November 1959

Dear Freshman,

You have been selected to represent the 1800 girls enrolled in the Foundations of Physical Education class. We ask your cooperation in filling out the following questionnaire to the best of your knowledge. It should take only a few minutes of your time.

Through your answers, we hope to determine the physical education background of a typical Freshman girl. Also, we expect to find out what activities a Freshman girl enjoys doing, her recreational habits, her skill level and her attitudes toward physical activity.

This is a survey to aid us in evaluating and improving our physical education instructional program. Please return the questionnaire to your physical education instructor during your next class period. Thank you for your cooperation.

Cordially yours,

Dorothy Kerth

Dorothy A. Kerth, Chairman
Instructional Services

ACTIVITY QUESTIONNAIRE

CIRCLE the answer that best discribes your feelings.

1. Did you have physical education for girls in your high school?
   YES NO

2. Circle each year you had physical education.
   9 10 11 12 None

3. Do you feel that your high school physical education classes were
   Excellent Very good Good Fair Poor

4. Did you enjoy your high school physical education classes?
   Very much Much Some Little None

5. What was your reaction toward your physical education classes?
   Worthwhile Acceptable Not Acceptable No Program Did not Participate

6. Did you have vigorous physical activities in your high school physical education classes?
   Very Vigorous Vigorous Moderate Somewhat Vigorous Very little Vigorous Activity

7. Would you like to have had more vigorous physical activity during your high school years?
   YES NO

8. Did you have a course or unit in posture and/or body mechanics?
   YES NO

9. Did you have a course or unit in body conditioning and/or exercise? YES NO

10. Would you like to have had in your high school physical education class a course or unit similiar to the course you are now taking Foundations of Physical Education?
    YES NO

11. If so, at what grade level or levels would it be best to offer such a course or unit?
    9 10 11 12 None

12. What single activity did you particularly enjoy participating in during your physical education classes?

    _____

13. Give the month and year of your graduation from high school.

    Month _____ Year _____

14. List three physical activities not offered in your high school physical education classes that you would like to have had included.

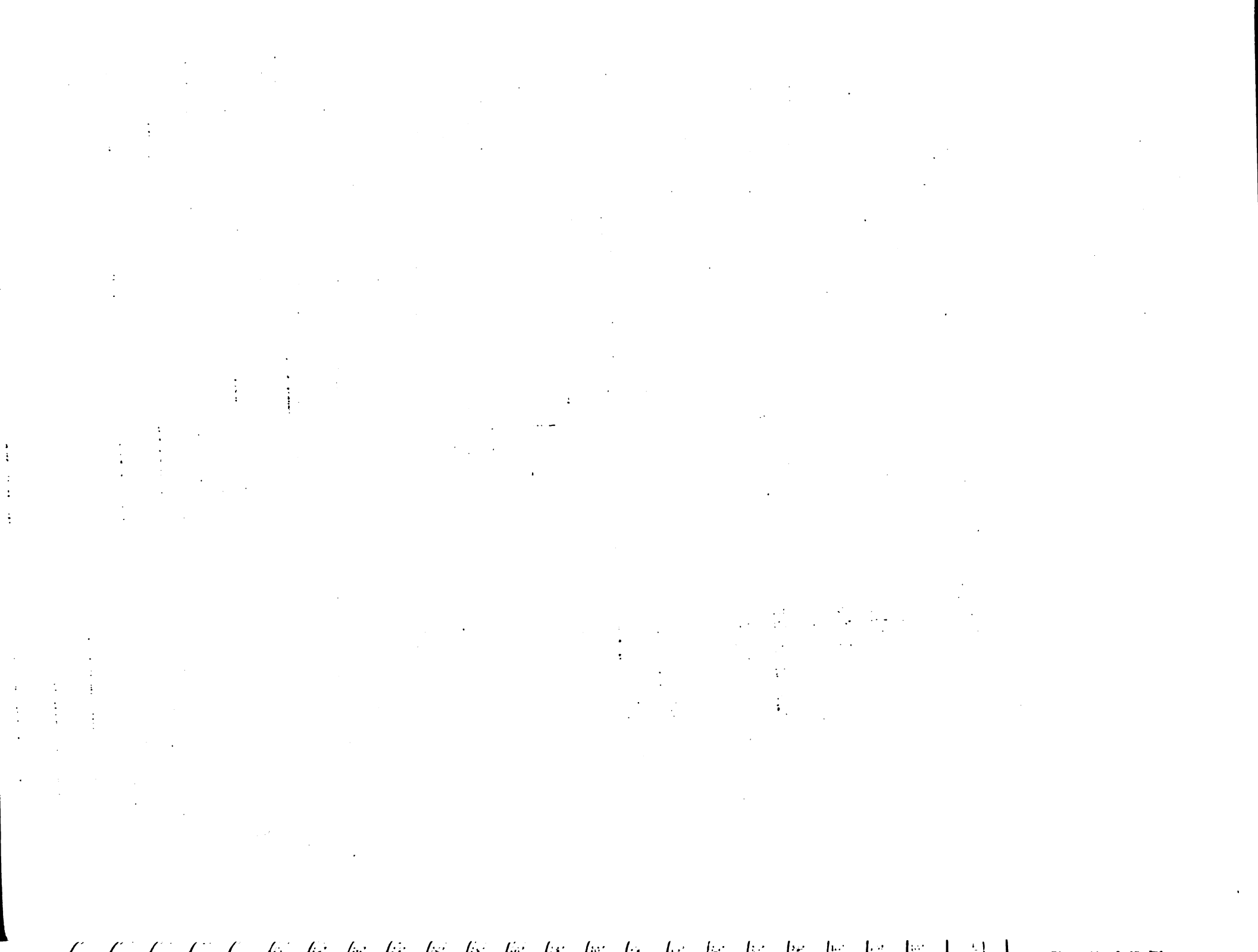
    _____ _____ _____

15. Did you participate in any of the following activities during High School? (Check year or years of participation).

	9	10	11	12
Intramurals: team sports (softball, basketball, volleyball, etc.)				
Intramurals: individual and dual sports (tennis, badminton, etc.)				
Sports Club (GAA, Leaders Club)				
Cheerleading, Pep Club, Twirling				
Dance Club				
Swimming Club				
Varsity Sports				
Playdays				
Others (list)				

16. Did you participate in:

	What activities	Number of times per Month.
Community Recteation Program		
Girl Scouts		
4-H		
Country Club		
Other (list)		

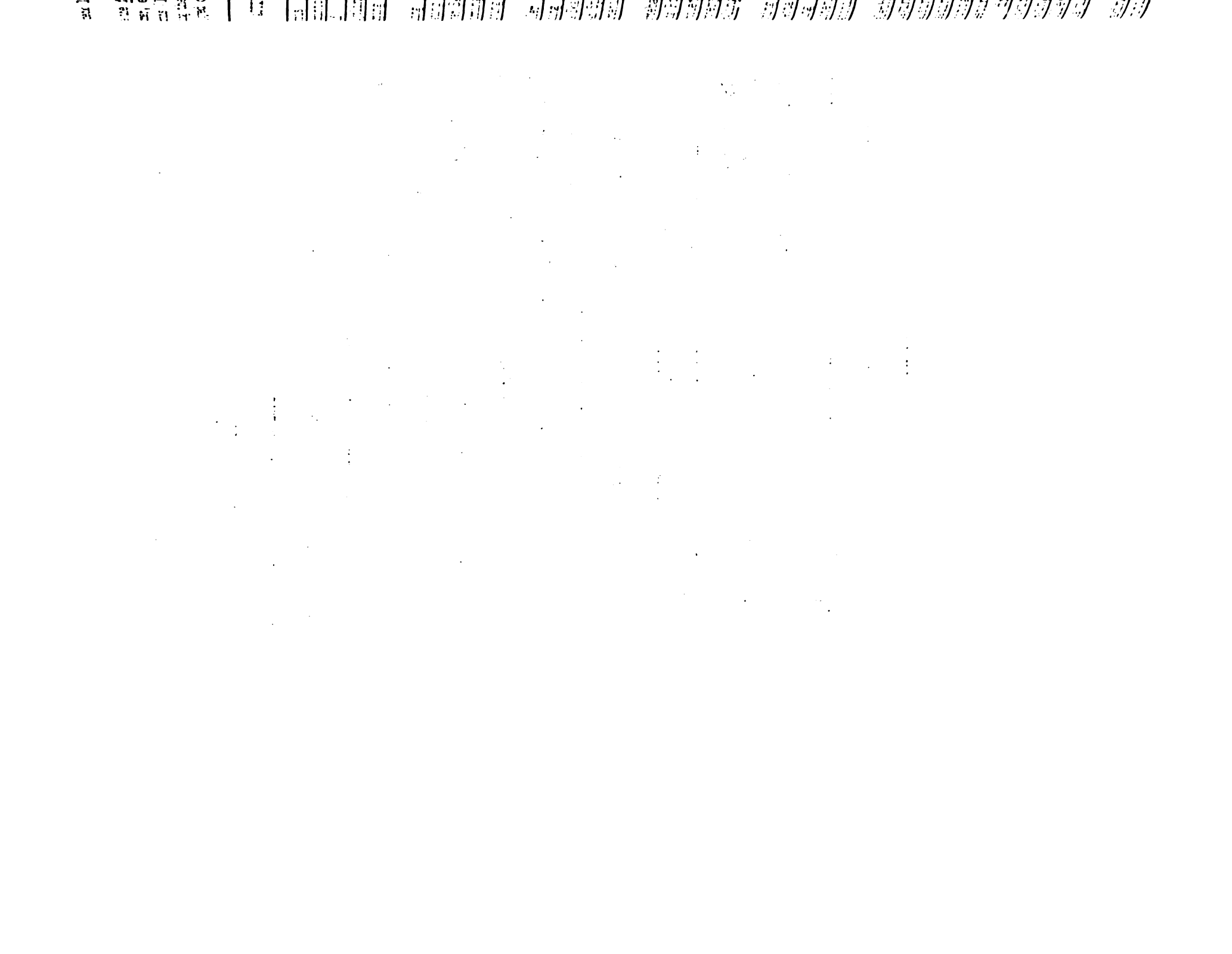


Listed below is a list of activities that may be included in a girls high school physical education program. Will you check the grade level or levels the activities were offered for girls in your high school physical education classes. If the activity was not offered leave the space blank.

Circle your skill level (how good you are) in <u>each</u> activity listed.

ACTIVITIES	GRADE LEVEL				SKILL LEVEL
	9	10	11	12	
1. Basketball					Good Average Little None
2. Field Hockey					Good Average Little None
3. Lacrosse					Good Average Little None
4. Softball					Good Average Little None
5. Soccer					Good Average Little None
6. Speedball					Good Average Little None
7. Volleyball					Good Average Little None
8. Archery					Good Average Little None
9. Badminton					Good Average Little None
10 Bowling					Good Average Little None
11 Fencing					Good Average Little None
12 Golf					Good Average Little None
13 Skiing					Good Average Little None
14 Stunts and Tumbling					Good Averge Little None
15 Tennis					Good Average Little None
16 Track and Field					Good Average Little None
17 Aquatics - Swimming					Good Average Little None
18 Life Saving					Good Average Little None
19 Diving					Good Average Little None
20 Water Skiing					Good Average Little None
21 Canoeing					Good Average Little None
22 Sailing					Good Average Little None

ACTIVITIES	GRADE LEVEL				SKILL LEVEL
	9	10	11	12	
23. Camping					Good Average Little None
24. Ping Pong					Good Average Little None
25. Horseback Riding					Good Average Little None
26. Ice Skating					Good Average Little None
27. Roller Skating					Good Average Little None
28. Social Dance					Good Average Little None
29. Folk Dance					Good Average Little None
30. Tap Dance					Good Average Little None
31. Square Dance					Good Average Little None
32. Modern (Creative)					Good Average Little None
33. Posture or Body Mechanics					Good Average Little None
34. Exercises					Good Average Little None
35. Adapted Physical Education					Good Average Little None
Others: List by name					Good Average Little None
					Good Average Little None
					Good Average Little None



A check list of your recreational habits. What you do in your leisure time.

Use the first column for all activities you did in the warm months (late spring, summer, early fall) and the second column for all activities you did in the cool months (late fall, winter, early spring). Check the amount of time you spent doing the activity. In the third column check the activities you particularly enjoyed doing.

ACTIVITY	WARM MONTHS	COOL MONTHS	Activities Enjoyed Doing
Tennis	Often Some Little	Often Some Little	
Badminton	Often Some Little	Often Some Little	
Golf	Often Some Little	Often Some Little	
Bicycling	Often Some Little	Often Some Little	
Camping	Often Some Little	Often Some Little	
Hiking	Often Some Little	Often Some Little	
Boating and/or Canoeing	Often Some Little	Often Some Little	
Water Skiing	Often Some Little	Often Some Little	
Swimming	Often Some Little	Often Some Little	
Dancing	Often Some Little	Often Some Little	
Roller Skating	Often Some Little	Often Some Little	
Skiing	Often Some Little	Often Some Little	
Ice Skating	Often Some Little	Often Some Little	
Team Sports (basketball, etc.)	Often Some Little	Often Some Little	
Gardening	Often Some Little	Often Some Little	
Horseback Riding	Often Some Little	Often Some Little	
Ping Pong (Table Tennis)	Often Some Little	Often Some Little	
Croquet	Often Some Little	Often Some Little	
Archery	Often Some Little	Often Some Little	
Bowling	Often Some Little	Often Some Little	
Acting, being in plays	Often Some Little	Often Some Little	
Spectator sports events	Often Some Little	Often Some Little	
Going to movies, concerts	Often Some Little	Often Some Little	
Listening to radio, records	Often Some Little	Often Some Little	
Watching TV	Often Some Little	Often Some Little	
Telephoning friends	Often Some Little	Often Some Little	
Playing cards	Often Some Little	Often Some Little	
Raising animals, pets	Often Some Little	Often Some Little	
Reading	Often Some Little	Often Some Little	
Photography	Often Some Little	Often Some Little	
Meeting friends at Union, drugstore, etc.	Often Some Little	Often Some Little	
Cooking	Often Some Little	Often Some Little	
Sewing	Often Some Little	Often Some Little	
Collecting things	Often Some Little	Often Some Little	
Playing a musical instrument	Often Some Little	Often Some Little	
Making things (Arts and Crafts)	Often Some Little	Often Some Little	
Writing stories, poems	Often Some Little	Often Some Little	

1.

2.

3.

4.

5.

APPENDIX B

Activity Questionnaire Results

1. Did you have physical education for girls in your high school?

Yes	92.6%	(175)	No	7.4%	(14)

2. Circle each year you had physical education.

9th	77.8%	(147)	12th	31.7%	(60)
10th	68.3%	(129)	None	15.3%	(29)
11th	45.0%	(85)			

Number of years of high school physical education.

None	15.3%	(29)	3 yrs	17.5%	(33)
1 yr	13.8%	(26)	4 yrs	25.4%	(48)
2 yrs	28.0%	(53)			

3. Do you feel that your high school physical education classes were:

Excellent	6.3%	(12)	Fair	18.0%	(34)
Very Good	23.3%	(44)	Poor	10.1%	(19)
Good	34.4%	(65)	No Answer	7.9%	(15)

4. Did you enjoy your high school physical education classes?

Very Much	21.2%	(40)	Little	5.3%	(10)
Much	29.6%	(56)	None	9.0%	(17)
Some	26.5%	(50)	No Answer	8.5%	(16)

5. What was your reaction toward your physical education classes?

Worthwhile	39.7%	(75)	No Program	6.3%	(12)
Acceptable	39.7%	(75)	Did not Participate	4.2%	(8)
Not Acceptable	6.3%	(12)	No Answer	3.7%	(7)

6. Did you have vigorous physical activities in your high school physical education classes?

Very Vigorous	12.7%	(24)	Very Little Vigorous Activity	3.2%	(6)
Vigorous	34.4%	(65)			
Moderate	32.8%	(62)	No Answer	9.5%	(18)
Somewhat	7.4%	(14)			

7. Would you like to have had more vigorous physical activities during your high school years?

Yes	60.3%	(114)	No	34.9%	(66)
			No Answer	4.8%	(9)

8. Did you have a course or unit in posture and/or body mechanics?

Yes	19.6%	(37)	No	77.8%	(147)
			No Answer	2.6%	(5)

9. Did you have a course or unit in body conditioning and/or exercise?

Yes	40.7%	(77)	No	55.6%	(105)
			No Answer	3.7%	(7)

10. Would you like to have had in your high school physical education class, a course or unit similar to the course you are now taking, Foundations of Physical Education?

Yes	80.4%	(152)	No	16.9%	(32)
			No Answer	2.6%	(5)

11. If so, at what grade level or levels would it be best to offer such a course or unit?

9th	38.1%	(72)	12th	16.4%	(31)
10th	34.9%	(66)	None	13.8%	(26)
11th	25.4%	(48)			

13. Give the month and year of your graduation from high school.

June 1959	85.2%	(161)	Other	6.9%	(13)
May 1959	7.9%	(15)			

12. What single activity did you particularly enjoy participating in during your physical education classes? N = 174

Basketball	22.4%	(39)	Recreation	1.1%	(2)
Volleyball	18.4%	(32)	Soccer	1.1%	(2)
Swimming	14.9%	(26)	Apparatus	.6%	(1)
Softball	5.2%	(9)	Archery	.6%	(1)
Tennis	5.2%	(9)	Bowling	.6%	(1)
Badminton	4.6%	(8)	Cheerleading	.6%	(1)
Tumbling	4.0%	(7)	Fencing	.6%	(1)
Exercises	2.9%	(5)	Golf	.6%	(1)
Field Hockey	2.9%	(5)	Group Games	.6%	(1)
Modern Dance	2.9%	(5)	Square Dance	.6%	(1)
Trampoline	2.9%	(5)	Stunts	.6%	(1)
Dancing	2.3%	(4)	Other	2.3%	(4)

14. List three physical activities not offered in your high school physical education classes that you would like to have had included. N = 455

Swimming	14.5%	(66)	Life Saving	(3)
Tennis	11.6%	(53)	Square Dance	(3)
Bowling	9.7%	(44)	Volleyball	(3)
Social Dance	8.1%	(37)	Folk Dance	(2)
Golf	7.9%	(36)	Horseback Riding	(2)
Archery	6.4%	(29)	Sailing	(2)
Skating (Ice)	6.4%	(29)	Skiing	(2)
Fencing	5.9%	(27)	Track	(2)
Exercises	4.2%	(19)	Canoeing	(1)
Modern Dance	2.9%	(13)	Football (Girls)	(1)
Posture	2.9%	(13)	Handball	(1)
Gymnastics	2.6%	(12)	Ping Pong	(1)
Tumbling	2.4%	(11)	Recreation Games	(1)
Field Hockey	1.5%	(7)	Soccer	(1)
Diving	1.3%	(6)	Tap Dance	(1)
Basketball	1.1%	(5)	Trampoline	(1)
Foundations		(4)	Water Skiing	(1)
Lacrosse		(4)	Others	(9)
Badminton		(3)		

Did you participate in any of the following activities during High School?

Activity	1 yr.	2 yrs.	3 yrs.	4 yrs.
Intramurals: team sports	32	33	21	38
Intramurals: individual and dual sports	19	28	14	9
Sports Club: GAA, Leaders Club	21	22	17	19
Cheerleading, Pep Club, or Twirling	15	23	12	26
Dance Club	10	2	2	1
Swimming Club	18	9	8	5
Varsity Sports	7	10	8	12
Playdays	23	12	5	8
Other:				
Bowling Club	-	-	1	1
Hiking Club	-	1	-	-
Lifesaving Club	-	1	-	-
Marching Band	-	1	3	11
Rifle Club	1	-	-	-
Skating Club	-	1	-	-
Ski Club	1	3	-	-
Sports Night	1	-	-	-

Participation in community activities.

Community Recreation Program	39
Girl Scouts	64
4-H	34
Country Club	24
Other	29

Skill Level Ratings

Activity	Good		Average		Little		None	
	#	%	#	%	#	%	#	%
Basketball	47	24.9	90	47.6	33	17.5	19	10.1
Field Hockey	19	10.1	33	17.5	21	11.1	116	61.4
Lacrosse	-	--	3	1.6	5	2.6	181	95.8
Softball	52	27.5	75	39.7	40	21.2	22	11.6
Soccer	13	6.9	42	22.2	24	12.7	110	58.2
Speedball	2	1.1	14	7.4	16	8.5	157	83.1
Volleyball	61	32.3	86	45.5	21	11.1	21	11.1
Archery	12	6.3	31	16.4	24	12.7	122	64.5
Badminton	55	29.1	51	27.0	26	13.8	57	30.2
Bowling	20	10.6	40	21.2	41	21.7	88	46.6
Fencing	2	1.1	9	4.8	9	4.8	169	89.4
Golf	3	1.6	13	6.9	26	13.8	147	77.8
Skiing	6	3.2	8	4.2	15	7.9	160	84.7
Stunts & Tumbling	20	10.6	35	18.5	43	22.8	91	48.2
Tennis	10	5.3	54	28.6	44	23.3	81	42.9
Track and Field	8	4.2	27	14.3	28	14.8	126	66.7
Swimming	43	22.8	59	31.2	18	9.5	69	36.5
Life Saving	13	6.9	23	12.2	19	10.1	134	71.0
Diving	6	3.2	26	13.8	37	19.6	120	63.5
Water Skiing	13	6.9	14	7.4	23	12.2	139	73.5
Canoeing	10	5.3	16	8.5	24	12.7	139	73.5
Sailing	3	1.6	9	4.8	8	4.2	169	89.4
Camping	24	12.7	19	10.1	17	9.0	129	68.3
Ping Pong	38	20.1	57	30.2	16	8.5	78	41.4
Horseback Riding	13	6.9	28	14.8	24	12.7	124	65.6
Ice Skating	15	7.9	32	16.9	25	13.2	117	61.9
Roller Skating	12	6.3	39	20.6	17	9.0	121	64.0
Social Dance	45	23.8	64	33.9	10	5.3	70	37.0
Folk Dance	19	10.1	39	20.6	28	14.8	103	55.6
Tap Dance	10	5.3	4	2.1	22	11.6	153	81.0
Square Dance	38	20.1	52	27.5	27	14.3	72	38.1
Modern Dance	16	8.5	21	11.1	17	9.0	135	71.4
Posture, Body Mech.	16	8.5	43	22.8	17	9.0	113	59.8
Exercises	47	24.9	73	38.6	17	9.0	52	27.5
Adapted Phys. Ed.	8	4.2	19	10.1	6	3.2	156	82.6

Participation in Leisure Time Activities During the Warm and Cool Months

Activity	Warm Months				Cool Months			
	Often		Some		Often		Some	
	#	%	#	%	#	%	#	%
Tennis	27	14.3	68	36.0	1	.5	7	3.7
Badminton	34	18.0	62	32.8	5	2.6	19	10.1
Golf	9	4.8	21	11.1	-	--	2	1.1
Bicycling	31	16.4	66	34.9	7	3.7	14	7.4
Camping	23	12.2	34	18.0	3	1.6	4	2.1
Hiking	40	21.2	44	23.3	12	6.3	20	10.6
Boating, Canoeing	53	28.0	42	22.2	2	1.1	2	1.1
Water Skiing	48	25.4	29	15.3	1	.5	4	2.1
Swimming	121	64.0	32	16.9	12	6.3	28	14.8
Dancing	100	52.9	45	23.8	101	53.4	34	18.0
Roller Skating	7	3.7	38	20.1	8	4.2	43	22.8
Skiing	4	2.1	3	1.6	21	11.1	10	5.3
Ice Skating	6	3.2	9	4.8	57	30.2	46	24.3
Team Sports	22	11.6	31	16.4	38	20.1	43	22.8
Gardening	27	14.3	34	18.0	1	.5	2	1.1
Horseback Riding	23	12.2	28	14.8	7	3.7	17	9.0
Ping Pong	13	6.9	47	24.9	25	13.2	62	32.8
Croquet	16	8.5	40	21.2	2	1.1	3	1.6
Archery	1	.5	25	13.2	-	--	8	4.2
Bowling	17	9.0	48	25.4	33	17.5	61	32.3
Acting, in plays	9	4.8	17	9.0	20	10.6	33	17.5
Spectator sports events	88	46.6	40	21.2	127	67.2	34	18.0
Going to movies, concerts	100	52.9	44	23.3	115	60.8	41	21.7
Listening to radio, records	115	60.8	35	18.5	123	65.1	34	18.0
Watching TV	47	24.9	44	23.3	50	26.5	51	27.0
Telephoning friends	79	41.8	53	28.0	76	40.2	60	31.7
Playing cards	25	13.2	58	30.7	34	18.0	49	25.9
Raising animals	42	22.2	34	18.0	39	20.6	32	16.9
Reading	76	40.2	57	30.2	90	47.6	46	24.3
Photography	18	9.5	28	14.8	11	5.8	28	14.8
Meeting friends	39	20.6	38	20.1	30	15.9	59	31.2
Cooking	54	28.6	47	24.9	44	23.3	50	26.5

Leisure Time Activities (cont'd)

Activity	Warm Months				Cool Months			
	Often		Some		Often		Some	
	#	%	#	%	#	%	#	%
Sewing	45	23.8	32	16.9	40	21.2	36	19.0
Collecting things	13	6.9	27	14.3	16	8.5	22	11.6
Playing musical instrument	48	25.4	31	16.4	56	29.6	23	12.2
Making things	23	12.2	33	17.5	27	14.3	31	16.4
Writing stories, poems	11	5.8	20	10.6	15	7.9	22	11.6

APPENDIX C

Individual Physical Activity Background Factors

Key to Abbreviations of the Table

S Subject

1 Number of Years of High School Physical Education

2 Evaluation of High School Physical Education Classes

Ex	Excellent	G	Good	P	Poor
VG	Very Good	F	Fair	-	No Answer

3 Enjoyment of High School Physical Education Classes

VM	Very Much	S	Some	N	None
M	Much	L	Little	-	No Answer

4 Amount of Activity in High School PE Classes

VV	Very Vigorous	SV	Somewhat Vigorous
Vig	Vigorous	VLV	Very Little Vigorous Activity
Mod	Moderate		

5 Desired More Vigorous Activity in High School PE Classes

6 Similar Course or Unit in High School PE Classes

7 Participation in Intramurals

8 Participation in a Sports Club

Y	Yes	N	No

9 Amount of Activity in Leisure Time Activities

A	Active	M	Moderate	L	Light

10 Total Skill Level Rating

11 Non-Carry-Over Skill Level Rating

12 Carry-Over Skill Level Rating

13 Physical Performance Level

H	High	BAv	Below Average
AAv	Above Average	L	Low
Av	Average		

14 General Overall Reaction to Foundations Course

15 Evaluation of Amount of Activity in Foundations Course

VF	Very Favorable	U	Unfavorable
F	Favorable	VU	Very Unfavorable
I	Indifferent		

Individual Physical Activity Background Factors*

S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	4	VG	S	Vig	N	Y	Y	N	L	Av	Av	Av	Av	F	F
2	4	VG	VM	VV	Y	Y	Y	Y	A	H	Av	H	Av	F	U
3	2	Ex	VM	VV	Y	Y	Y	Y	M	AAv	AAv	AAv	Av	VF	F
4	1	G	VM	Vig	Y	N	N	Y	M	L	L	L	L	VF	VF
5	3	Ex	VM	VV	N	Y	Y	N	L	Av	Av	Av	BAv	F	VF
6	4	VG	M	Mod	N	Y	Y	Y	A	Av	AAv	AAv	Av	F	F
7	0	P	N	VLV	Y	N	Y	Y	M	L	L	BAv	AAv	F	F
8	0	-	-	-	Y	N	N	N	L	L	L	L	L	F	F
9	0	-	N	-	Y	N	Y	Y	A	AAv	H	BAv	L	F	F
10	2	G	M	Vig	N	Y	N	N	M	H	H	H	AAv	VF	I
11	3	G	VM	Mod	Y	N	N	Y	M	BAv	BAv	Av	Av	VF	F
12	2	G	M	Mod	Y	Y	Y	N	A	H	H	H	AAv	F	F
13	2	F	S	Mod	Y	N	N	N	A	H	H	AAv	BAv	F	VF
14	1	VG	S	Mod	Y	N	Y	N	M	H	AAv	H	Av	F	F
15	1	G	VM	Mod	Y	N	Y	N	L	BAv	BAv	BAv	BAv	F	F
16															
17	2	G	M	Vig	Y	N	N	N	A	AAv	AAv	AAv	Av	VF	F
18	2	G	N	Mod	N	Y	Y	Y	A	AAv	AAv	BAv	L	F	F
19	4	VG	S	Vig	N	Y	Y	Y	M	Av	Av	AAv	BAv	F	F
20	3	G	M	Vig	Y	N	Y	N	M	AAv	AAv	AAv	Av	F	VF
21	4	F	VM	VV	Y	Y	N	N	M	BAv	BAv	Av	AAv	VF	F
22	1	VG	M	Vig	N	N	Y	Y	L	H	H	AAv	BAv	F	VF
23	3	G	M	Mod	Y	Y	Y	Y	A	H	H	H	Av	I	U
24	2	G	M	Mod	Y	Y	Y	N	L	BAv	Av	Av	Av	F	F
25	4	Ex	VM	VV	Y	Y	Y	Y	M	AAv	AAv	H	H	F	F
26	4	VG	M	VV	N	N	Y	Y	L	AAv	Av	H	BAv	F	F
27	2	G	S	Mod	Y	Y	Y	N	L	BAv	Av	L	L	F	F
28															
29	1	G	VM	VV	Y	N	N	N	M	L	BAv	L	L	F	F
30	2	Ex	M	Vig	Y	Y	N	N	M	H	H	H	L	F	U
31	3	G	M	VV	N	N	Y	Y	L	AAv	Av	AAv	Av	VF	U
32	3	VG	M	Vig	N	N	Y	N	A	H	H	Av	L	F	F
33	2	VG	M	Vig	Y	Y	Y	N	A	H	AAv	H	AAv	VF	F
34	2	F	S	Vig	Y	N	N	Y	A	H	H	H	Av	VU	F
35	4	VG	M	Mod	Y	Y	Y	Y	L	AAv	Av	AAv	Av	F	F
36	2	VG	M	Vig	Y	Y	Y	Y	M	H	H	AAv	BAv	VF	F
37	4	VG	VM	Vig	-	Y	Y	Y	A	Av	L	H	H	F	U
38	2	G	L	Mod	Y	Y	Y	Y	A	H	AAv	AAv	H	F	F
39	1	P	S	Mod	Y	N	Y	N	L	Av	Av	Av	Av	VF	F
40	3	VG	VM	VV	N	N	Y	Y	A	H	H	H	H	F	F

* See page 82 for key to abbreviations of the Table.

S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
41	4	F	L	Mod	N	Y	Y	N	M	AAv	AAv	Av	H	U	I
42	1	F	L	Mod	Y	N	Y	N	L	L	L	L	L	VF	VF
43	2	G	M	SV	Y	Y	Y	N	M	AAv	AAv	AAv	AAv	VF	F
44	3	G	S	Mod	Y	N	N	Y	L	L	BAv	L	Av	F	VF
45	4	F	M	SV	Y	Y	Y	N	L	BAv	BAv	AAv	Av	F	F
46	2	VG	VM	VV	Y	N	Y	N	M	BAv	BAv	Av	H	VF	F
47	4	VG	S	Vig	N	Y	Y	N	L	Av	BAv	AAv	Av	F	F
48	4	F	S	SV	Y	N	Y	N	M	BAv	BAv	BAv	L	VU	I
49	4	VG	VM	Mod	Y	Y	Y	Y	L	Av	BAv	H	Av	F	U
50	2	G	M	Vig	N	N	Y	Y	M	BAv	BAv	BAv	BAv	F	F
51	2	F	S	Mod	N	N	Y	Y	M	BAv	L	AAv	Av	I	F
52	0	F	-	VLV	Y	N	N	N	L	BAv	BAv	L	L	VF	VF
53	1	P	S	SV	Y	N	N	N	L	L	L	L	L	F	F
54	2	VG	M	VV	Y	Y	Y	Y	A	H	H	H	Av	F	F
55	3	F	S	Mod	Y	Y	Y	N	A	AAv	H	Av	H	F	I
56	4	VG	M	Vig	Y	N	Y	N	M	Av	Av	Av	Av	U	U
57	4	VG	VM	Vig	Y	Y	Y	N	M	Av	AAv	BAv	BAv	F	I
58	3	G	M	Mod	N	N	Y	Y	L	Av	Av	AAv	Av	I	U
59	4	F	S	SV	Y	Y	Y	N	A	AAv	AAv	Av	BAv	F	F
60	2	G	S	Vig	N	N	N	N	L	L	L	BAv	Av	F	F
61	4	VG	M	--	N	N	N	Y	L	AAv	AAv	AAv	BAv	F	I
62	2	G	M	Mod	Y	N	N	N	A	AAv	H	Av	H	I	F
63	4	G	S	Mod	Y	N	Y	Y	A	AAv	AAv	Av	Av	F	I
64	0	F	S	Mod	Y	N	Y	N	A	AAv	AAv	Av	Av	I	F
65	0	VG	-	VV	Y	Y	Y	N	A	AAv	AAv	BAv	AAv	VF	F
66	3	G	M	Mod	Y	Y	Y	N	M	H	AAv	H	H	VF	U
67	2	G	S	Mod	N	N	Y	Y	L	Av	AAv	Av	H	F	U
68	0	-	-	--	-	-	N	Y	L	L	L	L	L	VF	F
69	3	-	VM	Vig	Y	Y	Y	N	M	BAv	BAv	AAv	Av	VF	F
70	1	G	M	Vig	Y	N	Y	Y	A	L	L	Av	BAv	F	U
71	0	F	-	--	-	-	N	N	L	L	L	L	BAv	F	F
72															
73	2	G	VM	Mod	Y	N	Y	N	M	L	L	BAv	AAv	F	I
74	3	G	S	Vig	N	Y	Y	N	M	AAv	AAv	H	Av	VF	F
75	2	G	M	Mod	Y	N	Y	N	L	L	L	BAv	L	F	F
76	0	F	M	VV	Y	Y	Y	N	M	AAv	AAv	AAv	AAv	F	F
77	0	G	M	Mod	Y	N	Y	Y	M	H	AAv	H	AAv	VF	I
78	4	Ex	VM	Vig	N	N	Y	Y	M	Av	AAv	Av	Av	I	U
79	4	G	S	Vig	Y	N	Y	Y	A	BAv	BAv	AAv	AAv	VF	F
80	4	G	VM	Mod	Y	N	Y	N	M	L	L	L	Av	F	F

* See page 82 for key to abbreviations of the Table.

S	1
81	3
82	4
83	2
84	1
85	3
86	0
87	0
88	3
89	2
90	3
91	3
92	0
93	4
94	2
95	1
96	0
97	2
98	
99	
100	2
101	1
102	2
103	4
104	0
105	2
106	4
107	4
108	1
109	1
110	1
111	2
112	0
113	
114	2
115	2
116	0
117	4
118	1
119	0
120	2

*

S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
81	3	Ex	VM	VV	N	Y	Y	N	M	BAv	BAv	BAv	L	VF	F
82	4	G	M	Vig	Y	Y	Y	Y	A	BAv	L	Av	Av	F	F
83	2	G	M	Vig	N	N	N	Y	L	Av	Av	AAv	Av	VF	VF
84	1	P	S	SV	Y	Y	Y	N	M	L	L	L	AAv	F	F
85	3	VG	S	--	N	Y	N	Y	L	Av	BAv	H	Av	VF	VF
86	0	-	-	--	Y	N	N	N	L	BAv	Av	L	Av	I	I
87	0	G	N	Mod	Y	N	N	N	L	Av	Av	BAv	Av	F	VF
88	3	G	S	Vig	N	Y	Y	Y	A	AAv	Av	H	AAv	VF	F
89	2	F	S	Mod	Y	N	Y	N	M	L	L	BAv	BAv	U	F
90	3	Ex	VM	Vig	N	N	Y	Y	A	Av	AAv	Av	L	F	F
91	3	VG	VM	Vig	N	Y	Y	Y	M	AAv	AAv	AAv	BAv	F	I
92	0	P	N	--	-	N	N	N	A	L	L	L	Av	VF	F
93	4	G	M	Mod	Y	N	Y	Y	A	Av	BAv	Av	AAv	F	F
94	2	G	S	Mod	Y	Y	N	N	M	Av	BAv	H	Av	VF	VF
95	1	P	N	VLV	Y	N	N	N	L	L	BAv	L	BAv	F	F
96	0	P	N	VLV	Y	N	N	N	L	BAv	Av	L	Av	F	F
97	2	P	N	Vig	Y	N	N	N	L	BAv	BAv	BAv	BAv	F	F
98															
99															
100	2	F	S	Mod	Y	N	Y	N	L	Av	AAv	BAv	AAv	F	F
101	1	P	L	Mod	Y	N	N	N	M	H	H	BAv	Av	VF	I
102	2	VG	VM	Mod	Y	N	Y	Y	M	AAv	AAv	AAv	H	F	F
103	4	Ex	VM	Vig	N	Y	N	Y	M	H	H	H	L	F	F
104	0	P	N	--	Y	N	N	N	L	Av	AAv	Av	BAv	I	F
105	2	G	M	Vig	Y	N	Y	Y	L	BAv	BAv	Av	BAv	F	VF
106	4	G	S	Vig	N	Y	Y	Y	A	H	H	H	Av	U	VU
107	4	VG	VM	VV	Y	N	Y	N	M	H	H	H	H	I	F
108	1	VG	M	Vig	Y	N	Y	Y	L	BAv	BAv	Av	Av	VF	VF
109	1	G	M	VV	N	N	Y	N	M	L	L	BAv	L	F	F
110	1	G	VM	Mod	Y	N	Y	Y	L	AAv	AAv	Av	Av	F	U
111	2	F	S	Vig	N	N	N	N	L	L	L	L	Av	F	F
112	0	P	N	--	Y	N	N	N	L	L	BAv	L	BAv	F	F
113															
114	2	G	M	Mod	Y	N	Y	N	M	BAv	L	Av	H	F	I
115	2	Ex	S	Vig	N	Y	N	Y	M	Av	AAv	Av	Av	VF	F
116	0	-	-	--	Y	-	N	N	M	L	L	L	Av	VF	F
117	4	VG	M	Mod	N	Y	Y	Y	M	AAv	Av	AAv	BAv	F	F
118	1	F	L	SV	Y	N	N	N	L	L	L	L	Av	F	F
119	0	-	-	--	Y	N	N	N	A	Av	AAv	BAv	AAv	U	U
120	2	P	N	Mod	Y	N	Y	N	M	H	H	Av	AAv	F	F

* See page 82 for key to abbreviations of the Table.

S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
121	3	VG	M	Mod	N	Y	N	Y	M	Av	Av	AAv	Av	I	F
122	4	F	S	Vig	N	Y	Y	Y	M	AAv	AAv	AAv	H	F	F
123	2	VG	VM	Vig	Y	Y	Y	Y	A	Av	Av	AAv	H	VF	F
124	4	VG	M	VV	N	Y	N	Y	A	H	H	H	H	VF	F
125	1	P	L	VLV	Y	Y	Y	Y	L	L	BAv	BAv	Av	F	F
126	4	VG	VM	Mod	Y	N	Y	Y	A	AAv	H	Av	Av	F	F
127	3	VG	VM	Vig	N	Y	Y	N	A	BAv	BAv	Av	H	F	VF
128	4	VG	M	Mod	N	Y	Y	Y	A	Av	BAv	AAv	Av	F	F
129	3	F	N	VV	N	N	Y	N	A	H	H	H	Av	F	F
130	4	VG	M	VV	N	Y	Y	Y	M	H	H	H	Av	F	F
131	0	P	-	SV	Y	Y	N	N	M	AAv	H	BAv	Av	F	F
132	3	G	VM	VV	Y	Y	Y	Y	M	Av	BAv	AAv	Av	F	I
133															
134	3	VG	M	Vig	N	Y	Y	N	L	BAv	L	AAv	BAv	F	I
135	4	F	L	Vig	N	Y	N	N	M	Av	Av	AAv	Av	VU	I
136	0	-	-	--	Y	N	N	N	L	Av	AAv	L	BAv	F	VF
137	4	G	S	Mod	N	Y	Y	N	M	Av	BAv	AAv	Av	U	F
138	2	P	L	Mod	Y	N	Y	Y	A	BAv	L	Av	Av	F	F
139	2	G	S	Mod	N	N	Y	N	A	Av	Av	Av	L	I	I
140	0	P	VM	SV	Y	N	N	N	A	L	L	BAv	Av	U	I
141	4	G	VM	Vig	Y	N	Y	Y	M	Av	BAv	AAv	H	F	F
142	3	G	M	Vig	Y	N	Y	N	A	H	H	H	H	F	F
143	4	G	VM	Mod	N	Y	Y	Y	A	H	H	Av	AAv	U	U
144	2	F	S	Mod	Y	Y	N	N	M	BAv	Av	BAv	BAv	F	F
145	4	Ex	M	Vig	N	Y	Y	Y	L	H	H	H	Av	F	VF
146	3	G	S	Vig	-	Y	Y	N	M	AAv	AAv	AAv	BAv	F	F
147	1	F	S	Vig	Y	Y	Y	Y	A	H	AAv	AAv	Av	F	F
148	2	-	VM	Vig	Y	N	N	Y	M	BAv	BAv	Av	BAv	I	I
149	1	F	S	Mod	Y	N	N	N	A	Av	AAv	BAv	BAv	F	F
150	3	F	S	Vig	N	N	N	N	A	H	H	H	Av	F	F
151	2	VG	S	Vig	N	Y	Y	N	A	Av	Av	Av	L	VF	U
152	4	VG	VM	Vig	Y	Y	Y	Y	L	AAv	AAv	AAv	Av	VF	U
153	1	G	M	Mod	N	N	Y	N	M	AAv	H	BAv	Av	F	F
154	2	G	M	Vig	N	N	Y	N	A	H	H	Av	BAv	F	U
155	4	G	M	Vig	N	Y	Y	Y	L	AAv	Av	H	Av	U	F
156	0	-	-	--	Y	N	N	N	A	L	L	L	Av	F	F
157	2	G	M	Vig	Y	Y	Y	N	M	BAv	Av	BAv	L	F	F
158	1	P	N	SV	Y	N	N	N	L	L	L	L	Av	F	U
159	1	VG	M	Vig	N	Y	Y	Y	A	H	AAv	H	Av	F	F
160	1	P	N	SV	Y	Y	Y	Y	L	L	BAv	L	AAv	U	U

* See page 82 for key to abbreviations of the Table.

S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
161	4	VG	S	Vig	N	Y	Y	Y	A	H	H	H	H	U	I
162	0	F	N	SV	N	N	N	N	M	L	L	L	BAv	F	F
163															
164	3	F	S	SV	Y	Y	Y	N	L	L	BAv	BAv	L	F	F
165	2	VG	M	Mod	Y	N	Y	Y	L	L	L	L	Av	I	I
166	2	G	S	Mod	Y	N	N	N	L	L	L	BAv	L	F	F
167	0	-	-	--	-	-	Y	N	L	L	L	L	L	U	I
168	0	-	-	--	-	-	N	N	L	L	L	L	BAv	F	F
169	0	-	-	--	-	N	N	N	M	H	H	H	AAv	F	F
170	4	G	M	Mod	N	N	Y	Y	A	H	H	H	L	U	F
171	1	G	M	Vig	N	N	Y	Y	A	H	H	H	BAv	VF	F
172	2	VG	VM	VV	N	Y	Y	Y	A	H	H	Av	Av	U	I
173	4	VG	VM	VV	N	N	Y	Y	M	AAv	H	AAv	Av	F	F
174	0	-	-	--	Y	N	N	N	L	L	L	L	Av	F	F
175															
176	3	P	S	Vig	N	Y	Y	N	L	Av	Av	BAv	Av	VF	F
177	4	G	S	Mod	N	N	Y	N	L	AAv	H	BAv	L	F	I
178	2	G	S	SV	Y	N	Y	Y	A	AAv	H	Av	H	VF	F
179	1	G	S	Mod	Y	Y	Y	N	A	H	H	H	Av	F	VU
180	3	G	M	Vig	Y	Y	N	Y	L	L	L	L	AAv	U	VF
181	4	F	N	Mod	N	N	Y	N	M	BAv	Av	BAv	Av	I	F
182	4	Ex	VM	VV	Y	Y	Y	N	L	BAv	BAv	BAv	AAv	F	F
183	2	G	S	Mod	-	N	Y	N	M	BAv	L	AAv	AAv	F	U
184															
185	2	G	M	Mod	N	Y	Y	N	M	L	L	BAv	Av	VF	I
186															
187	2	G	S	Mod	Y	Y	Y	N	M	BAv	BAv	Av	Av	F	F
188	4	VG	M	Vig	N	Y	Y	Y	A	AAv	AAv	AAv	H	F	F
189	2	G	M	Mod	Y	N	Y	N	A	BAv	Av	BAv	BAv	F	F
190	3	G	M	Vig	Y	N	Y	N	M	BAv	BAv	BAv	L	F	VF
191	3	F	L	Mod	Y	N	Y	N	A	BAv	BAv	Av	Av	I	F
192	0	F	S	VLV	Y	N	Y	N	M	L	L	L	BAv	F	VF
193	3	VG	VM	VV	N	N	Y	N	M	Av	Av	BAv	AAv	F	F
194	2	F	M	Vig	Y	N	Y	N	M	Av	AAv	BAv	Av	I	I
195	2	-	VM	Vig	Y	N	Y	N	M	BAv	BAv	BAv	Av	VF	F
196	3	F	N	Vig	N	Y	N	N	A	BAv	BAv	Av	L	F	F
197	4	G	S	Mod	Y	Y	Y	N	M	BAv	Av	BAv	AAv	F	I
198	1	F	S	Mod	Y	Y	N	N	M	L	L	BAv	BAv	F	VF
199	2	Ex	VM	Vig	N	Y	Y	N	A	Av	Av	Av	Av	F	F
200	0	G	-	Vig	Y	N	N	N	L	L	L	L	Av	F	F

* See page 82 for key to abbreviations of the Table.