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SCHOOL OF EDUCATION

EXPERIENCED TEACHER FELLOWSHIP PROGRAM  
IN HEALTH AND PHYSICAL EDUCATION

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## INTRODUCTION

This publication is an outgrowth of one of the components of the Experienced Teacher Fellowship Program (ExTFP) in Health and Physical Education at The University of Michigan in Ann Arbor during the period from August 26, 1968 through June 27, 1969. Funding of this program was under a grant award from the U.S. Office of Education under the Higher Education Act of 1965 (P.L. 89-329) Title V., Part C—Fellowships for Teachers.

One of the goals of the program was the preparation of qualified professional supervisory personnel to work in a specialist-consultant role with teachers responsible for programs of health and physical education in elementary and secondary schools. Additionally, the program was designed to provide an immediate program of graduate study leading to the Specialist in Education degree (Ed.S.) for qualified personnel whose training, experience, and professional interest would be directed toward the improvement of health and physical education of children in the elementary and secondary schools.

The specific objectives of the program were:

1. To nurture a professional enthusiasm for career work in health and physical education in the schools.
2. To assist each student in the comprehension of his or her role as an agent of educational change in the areas of program development and instructional effectiveness.
3. To achieve in-depth study in the field of health and physical education.
4. To achieve breadth of study in a substantive area (cognate courses outside the field of education).
5. To achieve reinforcement of individual strengths and reduction of weaknesses through elective courses selected jointly by the student and his advisor in view of the student's needs and professional goals.
6. To provide opportunities in the form of field experiences and internships in selected cooperating schools in which the nature and scope of responsibilities would relate to the student's course program by providing him with experiences which he had not previously had, would not normally experience in a traditional program of graduate study, nor could he expect to have in his present position.

7. To provide insight into the utilization of contemporary media for educational change; the focus would be on curricular development and the improvement of instruction.

The fundamental components of the ExTFP project included course work, a seminar, field internship assignments off-campus, and the independent research study or field report.

The operation of various aspects of the program reflect the extensive involvement of many individuals who, through their interest, support, and service enhanced the attainment of the goals of the program. To them, a statement of acknowledgment is in order from both the Fellows and the Project Staff.

The purpose of this publication is to include the various projects and reports which were a part of the independent research component of the Experienced Fellowship Program. This component had been included in the program to meet the Specialist Degree specifications, to provide an opportunity for the application of theory gained in course work, and for each student to identify and pursue a problem in an area of his interest. For the majority of the Fellows, the projects were the initial attempt at design of a study, collection and analysis of data, and appropriate reporting of results. Such competencies become increasingly important in the preparation of administrative and supervisory personnel.

In presenting these studies the information gained from the individual and collective efforts of the Fellows are offered as a professional contribution.

N.G.L.  
H.A.L.

A SPEED, ENDURANCE, ACCURACY (S.E.A.) TEST FOR ASSESSING  
THE BASKETBALL PLAYING PERFORMANCE LEVELS OF HIGH SCHOOL BOYS

by Robert J. Broderick

The purpose of this study was to establish the S.E.A. Test of Basketball Ability as a standardized instrument for assessing the basketball playing performance levels of high school boys in the three basic areas of speed, endurance, and accuracy. The design of the instrument is credited to Dr. Nelson G. Lehsten who developed the test jointly with the investigator. The test was developed as a result of the feeling that there was need for refinement of those presently published basketball skill tests in order that basketball coaches be presented with a more feasible tool for periodic evaluation of their teams during practice sessions.

The S.E.A. Test was pilot tested by the writer during the 1968 Summer School session at the Phillips Exeter Academy, Exeter, New Hampshire. The test was administered to 55 high school boys representing several different geographical locations from across the country.

Three hundred and thirteen varsity and junior varsity high school basketball players were used in the study for purposes of determining the test's validity, reliability, objectivity, and to establish norms. The high school subjects represented 10 high schools (Class A, B, C, and D) within a 30-mile radius of Ann Arbor, Michigan. To further test the validity and reliability of the S.E.A. Test, the investigator also administered it, along with the Lehsten Test of Basketball Ability (presently published as a standardized instrument), to 36 selected subjects from three basketball service program classes at The University of Michigan.

Five S.E.A. Test administrations were given to the high school players by their respective coaches at specifically designated times throughout the 1968-69 basketball season. The first administration score was designed to depict the player's performance level during his first week of practice. The second score was to represent performance after three weeks of practice, just prior to the school's first game. The third administration was held to assess the effect a Christmas vacation practice layoff had on a player's performance level, and the final two administrations were done to see if there were differences in levels when players would be expected to be at their peak performances.

In addition, two varsity teams were given retests on the same day for purposes of establishing reliability. Retests were also given to the service program subjects (N = 36). At the start of the season, each of the coaches

subjectively ranked their first 10 players. These rankings were correlated against each of the five test score rankings of the subjects for determining the validity of the test.

Computation of the data was done by the investigator by means of the Spearman Rank Correlation Coefficient formula and the adjustment formula for tied ranks. The major portion of the calculations executed on the high school subjects' test data were computed by means of the 360/67 computer located at The University of Michigan Computer Center.

On the first computer run, respective mean differences by individual schools and their respective classes were computed for the variables of age, height, weight, scores on tests one through five, and the mean score from all five tests. This was accomplished by analysis of variance with means, standard deviations, F ratios, sum of squares, and degrees of freedom being printed out as directed by the BMD7D computer program. In addition, inter-correlations between these variables and histograms of specified interval frequencies were given. The computations were done for both varsity and junior varsity team levels.

The same program was used on the second run for determining whether there were significant ( $P < .05$ ) score differences between average starters and benchwarmers and between subjects having had previous team experience and those not having had experience. Finally, percentile score norms for the S.E.A. Test were computed from the 1205 raw scores made by the high school subjects.

The analysis of the data permitted the following conclusions to be made:

1. The S.E.A. Test may be considered a valid instrument for assessing the basketball playing performance levels of high school boys based on the following evidence:

- a. The test score rankings of the varsity and junior varsity players from each of the 10 schools correlated significantly ( $P < .05$ ) and ( $P < .01$ ) with the coaches rankings of these same players.
- b. The S.E.A. Test correlated significantly,  $r = .80$ , ( $P < .01$ ) with the Lehsten Test of Basketball Ability, published as a standardized instrument.

2. The S.E.A. Test may be considered a reliable instrument based on the following evidence:

- a. Test-retest reliability coefficients were found to be  $r = .98$  and  $r = .94$  for the two varsity teams that took the administrations.

- b. The reliability coefficient ( $r = .79$  of the test-retest administration of the 36 service program subjects was found to be significant ( $P < .01$ ).
3. Criteria for establishing the objectivity of the S.E.A. Test have been fully met and proven through critical analysis of the theoretical design and conduct of the study.
4. Average starters scored significantly better ( $P < .01$ ) on the S.E.A. Test on all five test administrations than did the benchwarmers.
5. Experienced players scored significantly better ( $P < .01$ ) on the S.E.A. Test than non-experienced players.
6. The validity coefficients were significantly ( $P < .01$ ) higher for the junior varsity players and those varsity teams that showed evidence of more variability between team members.
7. The S.E.A. Test shows the ability to measure increases in the performance levels of a team. The difference between the junior varsity mean scores on the five administrations were significant ( $P < .01$ ).
8. There were significant differences between the heights and weights of the varsity and junior varsity players at the ( $P < .05$ ) and ( $P < .01$ ) levels, respectively.
9. When grouped by school classification, the significant differences ( $P < .05$ ) and ( $P < .01$ ) found between the mean scores of the varsity and junior varsity players resulted in the test score norms having to be constructed by school classification.
10. There were no significant relationships ( $P < .05$ ) of the three variables (age, height, and weight) with the mean scores attained by the individual schools on either team level.

ATTENDANCE PATTERNS AT SELECTED PROFESSIONAL MEETINGS OF MEMBERS  
OF THE MIDWEST DISTRICT OF THE AMERICAN ASSOCIATION  
FOR HEALTH, PHYSICAL EDUCATION, AND RECREATION

by M. Worden Kidder

The American Association for Health, Physical Education, and Recreation (AAHPER) is a national professional organization of educators, serving a membership in excess of 50,000 individuals in the areas of Health, Physical Education, Recreation, and related fields. The parent organization as well as its six district and related state associations have endeavored to remain sensitive to and responsible for meeting the in-service needs of the component membership. This task of providing professional meetings that are both relevant and valuable to the varied interests of the personnel, however, has become a formidable one as the membership has increased.

Those responsible for the development of professional meetings at the state, district, and national levels need to know the composition and characteristics of their constituent groups in order to better serve their members at professional meetings. Evaluation was largely limited to post-meeting appraisals, and has not provided the necessary information. Consequently, there was evidenced support for this study of the members of the Midwest District of the AAHPER who attended the various meetings at the state, district, and national levels, and the related factors which might be found to influence attendance at such meetings.

Certain specific variables that might influence the decisions of members to attend or not attend professional meetings were identified at the onset of the investigation. Possible influences of sex, professional training, years of experience, level of involvement in the educational hierarchy, and area of primary responsibility were all considered potential determinants of member's decisions on this matter. A questionnaire was then constructed to derive the necessary information from the sample members.

The design of the study included a 10 percent random sampling plan involving two different populations to enhance comparisons of attenders and nonattenders of the professional meetings. The first population, which did not include students, was constituted by those in attendance at the Midwest District Convention of March 1968 (Midwest Sample). The other was determined from state membership lists, a process which involved removing the names of attendees of the Midwest Convention to avoid duplication (States Sample).

Questionnaires with accompanying cover letter were sent to a combined total of 503 members. Four hundred and thirty-three or 86 percent of the questionnaires were completed and returned.

Analysis of the data included tabular display, percentages, means, and the Kolmogorow-Smirnov one sample test. The following 10 findings emerged from the analysis:

1. A comparison between males and females in regard to their attendance at the Midwest District Convention showed both samples rather evenly divided. The sex of the individual members did not seem to have an influence on their attendance.

2. The number of years of professional training was discovered to have a positive influence upon attendance at the district level meeting. The greater the number of years of training, the more frequent the attendance at district level meetings.

3. Analysis of the data revealed that years of experience of members did not exert any substantial influence on attendance at the Midwest District Convention.

4. There were eight levels of involvement which were analyzed for their influence on attendance at district level meetings. There was more participation at the district level meetings by the college-university level of involvement than any of the other levels.

5. Eight areas of major responsibility were considered for their influence on attendance at the district level. Based on the data and revealed by the analysis it was shown that area of major responsibility did have an effect on attendance at the Midwest District Convention. The Health area of responsibility emerged with the largest number of respondents involved at the district level.

6. The nature of the respondents' major responsibility did not appear to be a factor of consequence in the Midwest Sample, but in the States Sample the administrative-supervisory group were the most active area in their attendance at the Midwest District Convention.

7. A summary of the above variables and their inference as to whether the state, district, and national level meetings are attended by different populations showed the following results: 73.5 percent of the Midwest Sample respondents usually attended the Midwest District Convention as well as the state and/or national AAHPER conventions, while only 43.6 percent of the States Sample respondents followed this pattern. This indicated that there was a greater involvement of members at the various levels of meetings as presently structured in the Midwest Sample than in the States Sample.

8. A consideration of the total number of meetings attended at all three levels showed that the respondents in the Midwest Sample were more actively involved at all three levels than were the respondents from the States Sample.

9. A study of the number of meetings attended at the district level, other than the annual district AAHPER convention, showed that approximately one-third of the respondents in both the Midwest and States Samples attended meetings at the district level other than the district convention.

10. A summary of the rating of importance of the factors that influence attendance at the annual district convention revealed that the factors which had the greatest significance were program content and professional commitments. The factors which were of some importance to the respondents were geographic location, personal expenses involved, convention facilities, social-professional contacts, professional opportunities and service, and employer policy on absence and financial support. The exhibits, size of convention, and "to get away from office" factors exerted very little influence on the respondents' decision to attend the district convention.

In summary, attendance at the Midwest District Convention, as analyzed and interpreted within the scope of this study, was shown to be positively influenced in both samples by the following variables: (1) years of professional training; (2) level of involvement; and (3) for those in the States Sample, the nature of responsibility. Factors that were considered but did not prove to be significant for either sample in affecting attendance at the Midwest District Convention were the following variables: (1) the member's sex; (2) years of experience and area of involvement; and (3) for those in the Midwest Sample, nature of responsibility.

The Midwest Sample respondents were more actively involved at all three levels of meetings than were the States Sample respondents. Moreover, the program content and professional commitments factors were important in their influence on those in attendance at the district convention.



A PHYSICAL FITNESS STUDY OF PARTICIPANTS IN HIGH SCHOOL  
INTERSCHOLASTIC WINTER SPORTS

by Richard T. Holman

It was the purpose of this study to examine the worth of interscholastic athletics as a contributing factor to a participant's physical fitness.

The basic design of this investigation called for comparisons of Michigan's three interscholastic winter sports (basketball, swimming, and wrestling) in three high schools. These selected Michigan high schools were: Beecher High School; Carman High School; and Grand Blanc High School (suburban Flint schools).

The study utilized nine high school interscholastic teams that were preparing for championship play, thereby making it necessary to select measuring devices which would interfere as little as possible with team practice time and yet produce a significant measurement. For this purpose the American Association of Health, Physical Education, and Recreation Battery of Youth Physical Fitness Tests was selected as the measuring instrument. These tests have been developed on a national basis with updated norms established in 1965. Studies by Esslinger, Klesius, Landiss, Olree, and Stein all support the validity and reliability of this instrument. Due to inclement winter weather, the test items selected were those that could be administered indoors: pull-ups, shuttle run, sit-ups, and standing broad jump.

A team of four adults and six student assistants administered Test-1 ( $T^1$ ) in mid-November, after team organization but prior to any scheduled contests. A total of 169 boys were measured on  $T^1$ . During the last two weeks of February, at the conclusion of the regular season, Test-2 ( $T^2$ ) was administered. On  $T^2$ , 129 previously tested subjects were again measured and it was with this group that all final statistical analyses were made.

The raw data recorded on individual data cards was translated into percentile scores from the AAPHER YOUTH FITNESS TEST MANUAL, based on national norms. The Neilson-Cozens Classification Index was utilized to determine the percentile rankings. Both the percentile rankings and raw data were used for the statistical analyses.

The statistical analysis for the first set of data was done by comparing descriptive indicators of sample distributions. Results on  $T^1$  indicated bimodal or exponential distributions of the variables measured with this population.

The Snedecor-Fisher F-Test was utilized for the analysis of subject's participation or nonparticipation in fall sports. The only ratio of variance

found to be significant occurred in the standing broad jump for basketball players ( $P < .05$ ). Although the means of these two groups were only .44 of a percentile apart (yes—65.65, no—66.09), the dispersion of the subjects not participating in fall sports was much greater, as illustrated by the Standard Deviations (yes—16.62, no—25.85).

The variable of sit-ups presented a special problem for statistical analysis to this investigation. This is the only item in the AAHPER Youth Fitness Test Battery that provides a maximum limit in performance. The upper limit of 100 sit-ups was reached by 81 percent of the combined teams on  $T^1$ , with 90 percent attaining this total on  $T^2$ .

To test the hypothesis of gain in physical fitness, from the onset to the completion of a winter sports season, a statistical nonparametric treatment, the sign test, was utilized. Significant at the .05 level were: (1) the pull-ups in basketball, swimming, and wrestling; (2) the shuttle run in basketball; and (3) the standing broad jump in basketball. The use of the Student's t-Test added swimming in standing broad jump as achieving significant improvement.

Kullback's Information Tests were used to compare results between sports. In shuttle run and standing broad jump gain, basketball showed the most improvement with swimming rating second. For pull-ups, the order of improvement could not be clearly established.

For the purpose of evaluating the relationship between a subject's performance in a particular sport and his level of physical fitness, the coaches were asked to rate each squad member. The results of the sign test showed a greater gain by the below average performers as compared to the average and top rated subjects. Perhaps this is due in part to a higher degree of physical fitness, as measured by the four selected test items, for the top rated group before the season started.

An explicit aim of this study was a comparison of specific teams, resulting in a sample that was not probabilistic in nature. Therefore, no attempt to generalize the data for the entire interscholastic athletic population of Michigan was made. The statistical analysis of this investigation permit the following conclusions:

1. There was no significant level of difference in physical fitness, as measured by the four selected test items, in those subjects participating in fall sports as compared to those who did not participate.
2. Significant gain by all three sports, basketball, swimming, and wrestling, can be observed in pull-ups which purport to measure arm strength.
3. Of the subjects measured, 90 percent reached the maximum limit in the sit-up test which purports to measure abdominal strength.

4. Significant gain was shown in the shuttle run by basketball subjects, which purports to measure speed and agility.

5. Basketball and swimming teams gained significantly in standing broad jump which purports to measure leg power.

6. The following hypothesis is accepted: high school boys participating in interscholastic basketball, swimming, and wrestling teams, gain in physical fitness, from the onset to the completion of a winter sports season.

7. The following hypothesis is rejected: of the specific participants to be measured, no one group will show any significant improvement in the selected test items as compared to the other two groups.

8. Based on the statistical test results, of the three groups investigated, more gain in physical fitness, as measured by the four selected test items, was observed in basketball players.

9. The level of a subjects rated performance does not determine the physical fitness value of participation on an interscholastic athletic team.

The review of related literature and research clearly supports the need for establishing physical fitness as the foundation for total fitness. As this study has shown, it is possible to raise the level of physical fitness by increasing the physiological demands on the bodies of our youth. Yet, it was observed in this study that there were limitations in developing physical fitness for some participants. When comparing the subjects with national norms, there are those boys that did not reach the upper half of the percentile rankings in the four selected test items. Some subjects actually regressed in performance from  $T^1$  to  $T^2$ . Deviations from the pattern set by the majority of measured subjects might be explained in terms of need and motivation.

The investigator realizes that physical fitness is not a primary objective of these high school teams. Yet, if interscholastic athletic teams are to operate within the framework of today's educational process, justification for their inclusion must be based on more than a goal of winning contests. With increasing public demand for accountability from the various segments of public education, sound objectives must be basic to any program. Physical fitness can be one of these fundamental objectives of athletics, contributing to fitness through the development of interest and participation in physical activity.

A COMPARISON OF THE STATUS OF PHYSICAL EDUCATION PROGRAMS CARRIED OUT BY  
SPECIALISTS AND NONSPECIALISTS IN IOWA

by Robert Herzog

Increasing support has been given claims stating the need for a sound physical education program in the elementary schools. Much of the emphasis in the past has been upon developing a strong physical education program at the high school and college levels at the expense of the basic needs of children at the elementary level. Thus neglect is further manifested in the dearth of studies concerned with the conduct of physical education programs in the elementary schools.

The purpose of this study was to compare the status of physical education programs carried out by specialists and nonspecialists in the elementary schools of Iowa. Comparisons were also made in relation to time allotments, facilities, budget, supplies and equipment, and the proportion of the total time allotted to each of the five general classifications of activities.

The following hypotheses were formulated to focus the investigation:

1. Schools employing a specialist allot a significantly larger amount of time to physical education instruction than schools employing nonspecialists.
2. Schools employing a specialist allot a significantly greater amount of money to the physical education program than the nonspecialist schools.
3. Schools employing a specialist have significantly better facilities available for indoor and outdoor instruction than nonspecialist schools.
4. Schools employing a specialist have a significantly larger amount and variety of (a) indoor supplies and equipment and (b) outdoor supplies and equipment than nonspecialist schools.
5. Schools employing a specialist allot a significantly different proportion of the total time to the five general classifications of activities resulting in a better balanced program.

An original questionnaire was designed to survey the schools with regard to the categories stated above, and to provide information concerning the background and training of the specialists and the organization of the program as well.

The sampling frame of 621 public elementary schools was obtained from the 1966-67 Iowa Education Directory published by the Iowa Department of Public In-

struction. Only those schools containing grades 1-6 and from a district of three or more elementary schools were selected.

The total number of schools that indicated they employed a physical education specialist totalled 358; schools that did not have a specialist numbered 263. The five largest districts in the specialist category and the three largest districts in the nonspecialist category were deleted from the sample both to keep the elements of the sample comparable in size and to insure that the results would be valid. The total number of schools in the sample frame was 415 at this final stage.

The 415 schools were then ranked according to the population of the cities in which the school was located, from the smallest to the largest. The 80 schools were sampled with probability proportionate to size (pps), and the results generalized to all Iowa school districts containing elementary schools, grades 1-6, with at least three schools in the district. Of the 80 schools surveyed, 60 returned the questionnaire, a response of 75 percent.

In addition to the frequency and percentage of response to each item, t-test and chi square tests were used to determine if a significant difference existed between the specialist and nonspecialist schools relative to the designated five categories.

Within the limitations of this study the following conclusions seem justified after data analysis:

1. No significant difference in time allotted to physical education was found between the specialist and nonspecialist schools; therefore, hypothesis #1 was rejected. Where the specialist was the sole instructor in physical education, each child usually had only two classes per week of approximately 30 minutes. In the nonspecialist schools the teacher usually taught physical education twice per week but for a slightly longer period, 35 minutes. The amount of time allotted per period was higher in the upper grades, 4-5. Seventy-one percent of the specialist schools and 83 percent of the nonspecialist schools met the minimum time allotment of 50 minutes required by Iowa law. None of the schools offered a daily period, 30 minutes in length as recommended by authorities in the field.

2. The amount of money allotted to physical education by the specialist schools was significantly greater than that by nonspecialist schools: therefore hypothesis #2 was accepted. The schools in which a specialist taught allotted \$2.23 per student for physical education while the nonspecialist schools allotted an average of \$.70 per child.

3. There was no significant difference between the specialist and nonspecialist schools concerning the size of indoor and outdoor facilities available: therefore hypothesis #3 was rejected. A majority of the specialist and nonspecialist schools had adequate indoor and outdoor play areas. However,

about one-third of the nonspecialist schools had less than the minimum standard recommended by La Porte for outdoor play areas. About 90 percent of the schools had an all-weather surface on part of their playground. Only one school had a swimming pool. Approximately 90 percent of the specialist and nonspecialist schools had a gymnasium or playroom.

4. A significant difference existed between the specialist and nonspecialist schools regarding the amount of indoor supplies and equipment: therefore, hypothesis #4a was accepted. There was no significant difference in the amount of outdoor play equipment. A majority of the specialist schools had adequate indoor supplies and equipment while a majority of the nonspecialist schools did not. A majority of the specialist schools had an adequate supply of balls of various types to meet the peak load while the majority of the nonspecialist schools did not. The outdoor play equipment was inadequate in a majority of the schools.

5. The specialist schools allotted a significantly different proportion of the total allotted time to the five general classifications of activities reflecting a better balanced program than did the nonspecialist schools. Therefore, hypothesis #5 was accepted. The majority of time allotted to physical education was devoted to games of various sorts. The nonspecialist schools, on the whole, devoted much more time to games than did the specialist schools. Much more time was allotted to rhythms in the specialist schools than in the nonspecialist schools. Both types of schools spent approximately the same amount of time on self-testing activities. The specialist schools allotted much more of the total class time to light and heavy equipment activities than did the nonspecialist schools. The amount of time allotted to the various activities in the specialist schools followed the recommendations of the authorities much closer than did the nonspecialist schools.

The following recommendations have been formulated on the basis of the findings of the study:

1. Investigations should be initiated to determine if specialists actually make use of the supplies, equipment, and facilities they have available at their schools.

2. Districts not employing specialists should appoint a committee of principals to study methods of securing more funds, supplies, equipment, and trained personnel for the physical education program.

3. A course of study should be developed in those districts not employing specialists to help the teachers develop a well-balanced program of activities.

4. Since 60 percent of the nonspecialists received assistance from a consultant or supervisor, a study comparing the physical education program taught by a nonspecialist, who had regular in-service training, with the program of a trained specialist might be of value.

5. A comparison of the amount of money spent per pupil for physical education in other comparable districts would prove enlightening and might justify a request for additional funds.

# THE ROLE OF PHYSICAL EDUCATION IN THE LIFE OF THE PHYSICALLY DISABLED CHILD

by Barbara C. Chartier

The overall objective of the project was to promote a general awareness among educators and school administrators of the potential capabilities of the disabled child in a physical education program. In neglecting the physical education of this child, public school systems have failed in their responsibility to provide the opportunity for the fullest development of the unique capacities of every individual.

Two major reasons can be cited to explain the exclusion of these children in physical education activities: overprotection by parents and school administrators and a disbelief in the capabilities of these children to perform in physical education.

This study was accordingly focused on the disabled child. Beyond presenting the social and psychological influences on this child, it also discusses the need for physical education in the life of the disabled child and demonstrates his capabilities in physical education activities indicating that both of the above reasons are unjustifiable.

The investigator felt that the most effective method of demonstrating the potential capabilities of the disabled child in physical education was to produce a film to accompany the written project, thereby demonstrating beyond a reasonable doubt that these children are able to participate in physical education activities. Beyond making their capabilities observable, however, one film could also demonstrate the enthusiasm and enjoyment of the children.

The film, entitled "We, Too, Must Play," is best described by the outline presented below.

- I. General overview of the need for physical education for normal elementary school children.
- II. General overview of the need for physical education for the disabled child.
- III. Introduction of the disabled children featured in this film.
- IV. Physical education activities for disabled children, focusing upon the seven main characters in this film.
- V. Conclusion of the film.



The writer observed several special schools for physically disabled children that offered adapted physical education programs for the students. The school finally selected for this film is located within a large metropolitan public school district. These children were not allowed to attend regular schools because of school board policy and are, therefore, transported to this special school operated by the school district.

The writer selected seven students to focus upon in this film: an athetoid cerebral palsy child, a post-polio child, a hydrocephalic child, two spina bifida myelomeningocele children, a partially sighted child, and an amputee.

These seven students were selected for this film because their physical disabilities are visually observable. This film featured these children performing in their physical education classes, demonstrating their capabilities in a much needed area of education. The favorable responses of those who viewed the film attested to the dramatic effect created by the performance of the seven children.

Thus, if physical education is to achieve its avowed purpose of contributing to the fullest development of all pupils, more adequate provision must be made for those with physical disabilities. Each student, whatever his limitations, has certain capacities, needs, and interests. The needs of the disabled are not different from those of the normal student; they are merely greater. He wants to earn acceptance and recognition from his fellow students. He wants the security which grows out of acceptance in the process of growing up and living within his social group. He is willing to struggle harder for the normality which comes so easily for others. In general, he wants the opportunity to prove himself to his peers. Proving himself in the classroom where is on an keel with his normal peers is not enough; he must have the opportunity to prove himself in an area where he is not on an even keel. That opportunity is best provided in physical education.

The degree to which a disabled child is able to participate in the physical education activities depends wholly upon the individual child and the extent of his disability. The most important factor to be remembered by the physical educator is that every physically disabled child is capable of participating and achieving in a well-planned and well-supervised program of physical education. The goal of the physical educator should be to provide the opportunity for this achievement.

A COMPARISON OF GROSS MOTOR PERFORMANCE OF SECOND GRADE BOYS WHO  
HAVE EXPERIENCED READING SUCCESS WITH GROSS MOTOR  
PERFORMANCE OF BOYS WHO HAVE FAILED IN READING

by Robert R. Morley

The problem of children's inability to master reading skills is of great concern to all educators. Reading experts have turned to ophthalmologist, psychologists, and physiologists in a mass effort to find clues to this national problem.

Certain studies depicting the importance of visual activity and its relationship to the early bodily movement of infants has lent credibility to the theoretical significance recently accorded the role of perceptual-motor skills in children's reading. The psychologists and vision experts conducting such studies have had great influence on reading teachers by convincing them that movement is all-important in the early learning process. Such phrases as "pattern movement," "perceptual-motor-awareness," "spatial relationship" have appeared in educational literature. Accordingly, the reading teacher has turned to the physical educator for additional information, for few people are more concerned with bodily movement than he.

The purpose of the study was to compare gross motor performance of boys who have experienced reading success (second graders who are reading at grade level or above) with gross motor performance of boys who have experienced reading failure (first graders who have been retained because of lack of reading skills).

The following hypotheses were formulated in the initial phases of the investigation:

1. The success group would perform significantly better than the failure group in agility as measured by the Rope Skip Test.
2. The success group would perform significantly better than the failure group in balance as measured by the Bass Balance Test.
3. The success group would perform significantly better than the failure group in a sport skill as measured by the Soccer Punt Test.
4. The success group would perform significantly better than the failure group in explosive power as measured by the Standing Broad Jump.
5. The success group would perform significantly better than the failure group in gross motor performance as measured by the sum of standard scores for the test battery.

A review of pertinent literature revealed many tests of agility, sport skill, balance, and explosive power, but the majority of tests dealt with children whose ages were 12 and over, and many of the tests lacked validity and/or reliability. Further research disclosed a doctoral dissertation entitled "Motor Performance Testing of Elementary School Age Children" authored by Margie R. Hanson, University of Minnesota. Each item in her study had established norms by age group, and each was accompanied by an adequate reliability coefficient.

Perusal of Miss Hanson's dissertation revealed the aforementioned four areas could be measured by four gross motor performance test items from her study. These items selected are as follows: (1) Rope Skip Test (agility); (2) Bass Balance Test (balance); (3) Soccer Punt Test (sport skill); and (4) Standing Broad Jump (explosive power). These test items were deemed desirable because of both their established norms and the scoring simplicity and ease of administration they offered.

The study was conducted with children in a suburban school district located in the State of Michigan. Availability of an adequate number of boys with high reading ability and boys with low reading ability in the specified age group was confirmed by the school district Director of Reading Services. Consolidation of the facts submitted by the reading consultants indicated it would be feasible to involve approximately 100 boys in this study. Fifty boys who had been retained in first grade because of reading difficulties and 50 boys who were reading at second grade level or above would comprise the success group.

A pilot study test period was arranged; this period provided opportunities for the testers to establish and refine techniques and procedures. Attempts were made to establish uniformity of test administration through observation, evaluation, and constructive criticism of these proceedings. A framework of time allotment for each test item was determined and the sequence of administration was discussed and solidified.

Administration of all test items was accomplished in the various school multipurpose rooms. Thirty-eight classrooms in 11 buildings housed the 102 boys involved in the study. Total testing time was spread over nine half days. Children were tested in small groups of four to seven boys and although tested on the same day, boys from the success group were never tested in the same group with boys from the failure group.

Raw score data for each of the four variables tested were recorded and a number was assigned each student, his school, and his classroom. Each child was designated as being a member of the failure group or success group.

These data were punched into IBM cards and programmed at The University of Michigan Computer Center. Means and standard deviations were calculated with accompanying print-outs of histograms and F-ratios for each of the four variables.

In an effort to further discriminate between success and failure group, the raw scores were converted into standard scores (T-scores) with a mean of 50 and a standard deviation of 10. This conversion allowed for the totalling of all four variables and projection of the means and standard deviations of this total for the success group and failure group.

The mean of the success group was larger in each of the four items tested. Ranges of the success group were larger in each item except the broad jump. An identical pattern was shown by the results of the T-scores. Polygons for each item graphically depict the higher scores recorded by the success group and in all cases the trend of the curve approaches normalcy with a decided shift toward higher scores in the success group. The curves of both failure and success group in the balance test had the least normalcy tending to cluster along the low side of the scale. This item was the least discriminatory of the four employed.

Examination of F-ratios gave the following information about each variable: differences between success group and failure group were significant at the .01 level for rope skip, standing broad jump, soccer punt, and total T-scoring when compared by analysis of variance. Differences between success and failure group were significant at the .05 level for the balance test when compared by an analysis of variance.

Examination of the correlation matrix containing the four raw score variables for the failure group revealed no negative correlations and the positive correlations were relatively low. Highest was the correlation between soccer punt and standing broad jump. With the success group there was a negative correlation indicated between rope skip and balance tests but it was near zero. As with failure group, highest positive correlation was between soccer punt and broad jump. Both items involve leg power and both are sport oriented.

The analysis of variance program lent credence to the basic hypotheses of this study. There was a significant difference in gross motor performance between the success group and failure group as measured by the test items, each item separately, and in the test battery collectively.

The boys in the study should be tested again in the future to determine the extent to which the observed differences remain significant, and to what extent later reading success parallels improved gross motor performances and/or is influenced by maturation. Moreover, progressively ranked reading scores on both the success groups and failure groups should be correlated with progressively ranked scores on each of the four variables (test items) to determine whether further gradation of success or failure in reading parallels a similar gradation in each or all of the rankings in the test battery.

THE COLLEGE ACADEMIC POTENTIAL OF THE 1967 AND 1968 UNITED PRESS  
NATIONAL WISCONSIN ALL-STATE FOOTBALL SELECTIONS

by Ronald J. Nieman

There have been relatively few impressive studies done in an attempt to refute the negative academic image that many people have acquired of the high school and college athlete, and most especially the football player. To partially alleviate this dearth of evidence, this study attempted to identify the college academic potential of the 1967 and 1968 United Press International Wisconsin high school all-state football selections as measured by the Preliminary Scholastic Aptitude Test.

In addition, an attempt was made to compare the estimated Scholastic Aptitude Test scores of the 1967 and 1968 all-state selectees with the minimum Scholastic Aptitude Test requirements for admission to the following nine universities in Wisconsin:

1. River Falls State University, River Falls,
2. Stevens Point State University, Stevens Point,
3. Eau Claire State University, Eau Claire,
4. Stout State University, Menomonie,
5. Whitewater State University, Whitewater,
6. La Crosse State University, La Crosse,
7. Oshkosh State University, Oshkosh,
8. University of Wisconsin—Milwaukee,
9. University of Wisconsin—Madison.

The sample for the study included all first, second, and third team high school all-state selections in the State of Wisconsin for the football seasons of 1967 and 1968 ( $n = 127$ ). The United Press International poll of high school coaches was utilized for this purpose. It was assumed that the players selected to the first, second, and third teams had only a slight difference in ability, which led to the decision to use all of the boys.

The decision to use the Preliminary Scholastic Aptitude Test was made after communication with a number of high school guidance counselors in Wisconsin. The investigator was informed that more students in Wisconsin take this test than either the Scholastic Aptitude Test or the Achievement Tests. These College Board tests are standardized tests used nationally as a predictor of college academic potential and as criteria for college admissions. These tests are given annually and all are administered by the College Entrance Examination Board of Princeton, New Jersey.

A form letter explaining the study and assuring anonymity was sent to each

coach of the 127 all-staters to solicit their aid in collecting the necessary data. Each coach was asked if he would obtain permission from his principal, guidance department, and anyone else deemed necessary in order to allow the coach to have access to each boy's confidential file.

If his all-stater had taken the Preliminary Scholastic Aptitude Test the coach was asked to simply check the verbal and mathematical range scores and indicate the percentile rank of each boy on an enclosed self-addressed card, sign it with his name and the name of his school, and mail it to the investigator.

A reply was received on 122 of the 127 ball players. The 53 ball players that had taken the Preliminary Scholastic Aptitude Test were retained; all others had failed to take the test. Therefore, the number of subjects actually used in this study was 53 all-state selectees from the 1967 and 1968 seasons.

Since colleges and universities use Scholastic Aptitude Test scores and not Preliminary Scholastic Aptitude Test scores for admission consideration, it was necessary to convert the Preliminary Scholastic Aptitude Test scores of the 53 subjects to estimate Scholastic Aptitude Test scores. This conversion technique is accomplished by applying the formula  $SAT = (PSAT_v + PSAT_m)$ . Preliminary Scholastic Aptitude Test scores range from 20 thru 80 and Scholastic Aptitude Test scores range from 200 thru 800.

The findings of the study were limited by the few subjects who took the test. That many all-state football players did not take this test constituted a finding in itself.

A two-tailed t-test for significance was used to compare the sample means with national means. Since there are two sections of the Preliminary Scholastic Aptitude Test, verbal and mathematical, it was necessary to show significance between the observed mean of each section and the national mean of each section. In both cases, verbal and mathematical, the difference between means was found to be significant ( $p < .01$ ) in favor of the football players.

In a further attempt to show the relationship between the PSAT scores of the 53 all-staters and the national norms, percentile rankings were established and compared for each group. The scores of the all-staters were well above those needed to be ranked at the 50th percentile nationally.

Finally, the percentage of all-staters who would be acceptable for admission to each of the nine selected universities in Wisconsin on the basis of their estimated SAT scores was determined.

Fifty of the 53 all-staters studied would be acceptable to either all or some of the selected Wisconsin universities used in this study according to the SAT admission requirements established by each individual university. Moreover, 52.8 percent of the all-staters who had taken the Preliminary Scholastic Apti-

tude Test could be accepted at the two universities having the strictest admission requirements.

Further studies in this area might be designed to include the scores of more than one test. Investigations of the academic potential of football players who did not attain all-state recognition is likewise deemed desirable. This latter study might include all lettermen or all seniors in a given athletic conference.

THE EFFECTS OF THE FINANCIAL RESOURCES OF K-8 SCHOOL DISTRICTS OF LAKE COUNTY, ILLINOIS, UPON THEIR PROGRAMS OF PHYSICAL EDUCATION

by John J. Sullivan

It was the purpose of this study to determine the effects of a school district's financial resources upon its potential ability to administer a comprehensive program of physical education. It was the intent to depict certain common factors that determine why schools have good programs or poor programs. If these key factors or determinants evolved from this study, corrective action could subsequently be taken to remedy the ills associated with the existing programs of elementary and junior high schools.

Persistent demands by physical educators and administrators for increased budgets for "better programs" indicate that professional personnel in this area feel that facilities, equipment, staff, and the like, are all too often inadequate, especially in light of increasing enrollments. A study of this type was therefore deemed a significant contribution to the fields of elementary and junior high school physical education.

The sample was composed of 22 of the 41 K-8 school districts located in Lake County, Illinois. These sample districts were selected on the basis of expenditures per pupil in Average Daily Enrollment (A.D.E.) and a minimum pupil enrollment of 200. The sample districts were selected after ranking the 41 K-8 school districts of Lake County, Illinois on the basis of expenditures per pupil in A.D.E. The 11 districts with the highest expenditures per pupil in A.D.E. and the 11 districts with the lowest expenditures per pupil in A.D.E., both with enrollments of over 200, were then selected. The 11 districts with the highest expenditures per pupil in A.D.E. were designated as "Group X," and the others were collectively designated as "Group Y."

The 22 selected districts were labeled "A" through "V" to assure their anonymity. The districts selected for the study represented a combined enrollment of 36,202 K-8 students or 59.7 percent of the total K-8 enrollment of Lake County, Illinois. Their individual enrollments ranged from 213 to 3582 students. They represented towns that ranged in population size from 466 to 30,054.

A checklist was self-constructed by the investigator for use during personal interviews to reveal information pertaining to areas of importance in the administration of a program of physical education at the elementary and junior high school levels. The areas under consideration were personnel, facilities, program, and equipment.

After initially contacting the superintendents of the districts by phone



for arranging the interviews, the investigator collected the data from December 1968 to February 1969.

The superintendent was the first person interviewed in each of the selected districts; in most cases, the time spent with the superintendent did not exceed one hour. The superintendent usually referred the investigator to the district's business manager for information pertaining to budget, salaries, equipment, and supplies. Plant plans or blueprints were studied and visitations were made to each school in the district to obtain accurate measurements of facilities, both indoors and outdoors.

The physical education teachers were also interviewed to ascertain the nature of the program and the curriculum content. Intramural programs and interscholastic athletic programs were likewise studied. Depending upon the number of schools in the selected districts and the availability of personnel, visitation time ranged from 2 to 5 hours.

It was the plan of the study, to rank the districts according to the basis for the sample selection, namely, the expenditures per pupil in A.D.E. and then to rank the districts of Group X and Group Y according to their performances in the selected variables of personnel, facilities, equipment, and program. A composite rank was then obtained in order to determine the relationship between financial resources and the ability to administer a good program.

Because the study dealt with non-parametric data, it was necessary to select a test of significance that would test the difference between two medians. The Rank Sum Test was therefore selected for the statistical treatment of the data.

The study revealed that the expenditures per pupil in A.D.E. for the total sample ranged from \$418 to \$983 for the year ending June 30, 1968. The expenditures per pupil in A.D.E. for Group X ranged from \$594 to \$983 while the median was \$748. Group Y ranged from \$418 to \$540; the median was \$486.

The expenditures per pupil in A.D.E. for programs of physical education in the selected districts of Group X ranged from \$18.28 to \$41.46; the median was found to be \$29.97 per pupil. Group Y ranged from \$2.53 to \$21.84; the median was found to be \$14.22 per pupil. The Rank Sum Test was applied and a significant difference between the medians was found at the .01 level of confidence. It was revealed then, that the districts of Group X generally allotted more funds for programs of physical education, than did the districts of Group Y.

The following four postulates were identified in the design of the study and were dually supported after the analysis.

1. There tends to be a positive relationship between the fiscal resources of school districts and the variables related to the area of personnel ( $p < .05$ ).

2. There tends to be a positive relationship between the fiscal resources of school districts and the variables related to facilities ( $p < .05$ ).

3. There tends to be a positive relationship between the fiscal resources of school districts and the variables related to the program of physical education activities ( $p < .01$ ).

4. There tends to be a positive relationship between the fiscal resources of a school district and the potential for administering comprehensive, effective programs of physical education ( $p < .01$ ).

The study revealed that, in general, districts that had the highest expenditures per pupil in A.D.E. also had the highest expenditures per pupil for programs of physical education. A positive relationship has been established between the financial resources of the selected districts of Lake County, Illinois and their potential for administering comprehensive programs of physical education. In light of this finding it seems tenable that school administrators, physical educators, and those charged with the responsibility of administering physical education programs, should examine the relationship between fiscal resources and a district's potential for administering comprehensive programs of physical education. In short, physical educators and administrators in the field of education need to determine the quality of services and facilities received from dollars spent.

THE RELATIONSHIP OF THE FLEXED-ARM HANG AND PULL-UPS  
FOR GIRLS USING REGULAR AND REVERSE HAND GRIPS

by Richard P. Klassen

A national survey of youth fitness was conducted by the American Association for Health, Physical Education, and Recreation (AAHPER) in 1965. In this survey the upper arm and shoulder girdle strength of girls was measured by timing performances of the flexed-arm hang while gripping the bar with palms facing away from the performer (regular grip). Sixty-five percent of the girls, ages 10-17, could hang only 11 seconds or less; the remaining 35 percent skewed distribution girls were awarded six percentile rank points for every second of hanging through the first 11 seconds, while only one percentile point was awarded for each second of hanging beyond that point. Physical education instructors reported girls had little incentive to perform beyond 11 seconds.

The purpose of the study was to investigate two other quick and inexpensively administered tests of dynamic strength of the upper arms and shoulder girdle of girls. It was hypothesized that these two tests would relate to the present flexed-arm hang as follows: (1) result in a more normal distribution, (2) correlate highly with the present test, and (3) be equal to or exceed the reliability of the present test.

The study explored three methods of testing the upper arm and shoulder girdle strength of girls in grades 5, 6, 8, and 9. The specific problems investigated were: (1) What were the coefficients of reliability of the three methods? (2) What were the intercorrelations between variables? (3) What were the multiple correlations between the tests and age, height, and weight?

Two elementary and two junior high schools were purposively selected. The subjects were 151 girls from two regularly scheduled physical education classes in each of the grades 5, 6, 8, and 9. They were tested on: (1) flexed-arm hang using a reverse grip (palms facing performer), (2) flexed-arm hang using a regular grip, and (3) pull-up using a reverse grip.

The effect of consistent biases on the results was minimized by randomization of the design. Each set of names from each grade of each school was randomly divided into two equal groups forming 16 experimental or subgroups. Sixteen random test sequences were formed and were randomly assigned to the 16 subgroups. Each subject was tested twice on each test, thus each subject performed a total of six times. Two tests were administered on each of three days scheduled one week apart. Two different tests were administered by random assignment at each session. The investigator and one assistant administered all tests. Height and weight were measured with standardized instruments and age was recorded from school records.

Statistical analysis was performed on the University of Michigan Terminal System IBM 360/67 computer. The results are best presented in six sections.

1. Test-retest reliability was found by computing the coefficient of correlation for two administrations of the same test. All tests at all grades displayed high reliability, ranging from 0.82 to 0.97. A portion of this high reliability, especially for the pull-up test, must be attributed to the number of zero scores. The range of zero scores of failures for the four grades is as follows: (1) pull-up with reverse grip, 56.3 to 75.7 percent, (2) flexed-arm hang with regular grip, 9.4 to 27.0 percent, and (3) flexed-arm hang with reverse grip, 0.00 to 9.3 percent. Because of the high reliability further analysis was reported only for trial-1 of each test.

2. Means and standard deviations were computed for all variables. Average age for grade 5 was 10.3 years, for grade 9, 14.3 years. Average height ranged from 142.6 (grade 5) to 161.0 (grade 9) centimeters. Weight for the same groups ranged from means of 83.4 to 166.6 pounds. Little growth was evident from grade 8 to grade 9.

Grade 9 had double the performance of the 5th grade in the flexed-arm hang with reverse grip, 16.0 and 31.1 seconds. A similar ratio appeared with the regular grip flexed-arm hang, 8.0 and 16.3 seconds. Performance with the reverse grip flexed-arm hang was double the regular grip at all grades. Pull-up (reverse grip) performance changed little from grade to grade. Results averaged 0.9 to 1.3 pull-ups for grades 5 and 9, respectively.

3. The pull-up test correlated in the slight to moderate range with both flexed-arm hang tests. The range was  $r \leq 0.16$  to  $r \leq 0.67$ . These results did not support the hypothesis that the pull-up, reverse grip, could be substituted for the regular grip flexed-arm hang as a test of dynamic strength.

The flexed-arm hang, reverse grip, correlated with the flexed-arm hang, regular grip, with a range of  $0.64 = r = 0.84$ . These values indicated a high relationship and supported the hypothesis that the reverse grip flexed-arm hang could be substituted for the regular grip flexed-arm hang for the group of subjects in this sample.

4. The proportion of failures or zero scores was reported in item number 1 of this section. Construction of frequency polygons displayed positively skewed distributions in all tests with the pull-up most severe. The reverse grip flexed-arm hang appeared the most normal. A chi square test for normality was conducted on the latter. Normality was rejected at  $p < 0.005$  in all cases.

5. Coefficients of correlation for anthropometric measurements of age, height, weight, and the three tests were computed. The highest intercorrelations between age, height, or weight and the tests were between weight and each of the tests. For the four separate grades the range was from -0.25 to -0.60. Age and height had lower absolute coefficients than weight.

Multiple correlations between tests and combinations of age, height, and weight were computed. The combination of weight and height displayed the greatest relationship with both flexed-arm hang tests, but none exceeded  $R = 0.58$  for trial-1. No important change in the multiple-R coefficient occurred upon introduction of age. Loss of either height or weight did, however, reduce the coefficients, with weight being the factor of greatest influence.

The pull-up test produced R's less than 0.33 for all seven combinations studied.

6. A practical consideration was the class time consumed in the administration of the tests. For a class size of 35, grade 9, the maximum time, including clothes changing and showering, was computed as:

Flexed-arm hang with regular grip, 30 minutes, 11 seconds.

Flexed-arm hang with reverse grip, 38 minutes, 48 seconds.

Within the scope and limitations of this study the following conclusions were formulated:

1. The test-retest reliabilities for all tests were sufficiently high for mass administration.

2. The pull-up with reverse grip was not an acceptable substitute test for the flexed-arm hang with regular grip, the present AAHPER test. The flexed-arm hang test with reverse grip, however, was an acceptable substitute, and tended to be more satisfactory as a dynamic arm and shoulder strength test than the regular grip flexed-arm hang.

3. Neither age, height, nor weight was found to be satisfactory as a classification technique.

4. No combination of age, height, and weight was found to be satisfactory as a classification technique.

Closing remarks included a recommendation to investigate another form of dynamic strength test of the upper arm and shoulder girdle, a test where the elbow is maintained at 90 degrees.

A STUDY OF PHYSICAL FITNESS OF JUNIOR HIGH SCHOOL BOYS AND THEIR  
SUBSEQUENT PARTICIPATION IN INTERSCHOLASTIC ATHLETICS

by John L. DeMillion

In recent years there has been a definite increase in studies relating to both athletics and physical fitness. The former studies, however, have tended to overlook the junior high school age group in favor of high school and collegiate subjects. Moreover, the physical fitness area, although widely investigated, has been only superficially related to the future athletic participation of junior high school boys.

Accordingly the study was designed to examine the physical fitness scores of seventh, eighth, and ninth grade students, and compare these scores to the students' subsequent participation in interscholastic sports in the high school. Also included was the effect of the opening of a second senior high school upon athletic participation by a school which received students from the same three junior high schools within a given school district.

The information used for this study was tabulated from a physical fitness test battery, called the AAPFT, which included five test items from the AAHPER: sit-ups, pull-ups, standing broad jump, shuttle run, and the 600 yard run-walk test. These test items were administered by qualified Physical Educators in accordance with the Youth Fitness Test Manual Instructions.

The sample for the study consisted of 1138 students from the high school graduating classes of 1967, 1968, and 1969. This sample represented the total number of individual physical fitness score cards for the ninth grade years of 1964, 1965, and 1966 in each of the three junior high schools within the district. These male students were then categorized into two classes, athletes or nonathletes, according to their high school interscholastic participation.

A code sheet was devised that included variables on age, school attended, sports participation, extent of participation, and athletic awards received by each student, as well as their physical fitness test battery data.

Utilizing the Computer and Research facilities at The University of Michigan, the data was analyzed according to mean and standard deviation, analysis of variance, F-ratios, and t-tests, written in two Computer programs, BMDX70 and BMD7D. This analysis plan yielded a number of significant differences.

With the exception of one test item (pull-ups) in the seventh grade scores, the mean performances on physical fitness test scores of high school athletes exceeded that of high school nonathletes at the .01 level of confidence.

While the data reflects higher overall performances recorded by senior high athletes than nonathletes from grades seven through nine, comparisons of the relative gains by either group made between grades did not indicate any significant differences in their rate of gain or improvement.

Moreover, when grouped by sports, the analysis of junior high school physical fitness test scores as it relates to a subsequent comparison of senior high school athletes did not identify any clear cut pattern or relevance in terms of this sample. In spite of programming modifications to eliminate the difficulties, certain circumstances involving the analyses of this segment of data, including the duplication of individuals in the sample who participated in more than one sport, were identified as a deterrent to any justifiable interpretation.

When comparisons of the athletes' junior high school fitness level and their subsequent participation in one or more interscholastic sports were made, a significant difference on their previous fitness level in favor of the three sports participants over their one or two sport fellow athletes was identified.

The data dealing with expanded opportunities for interscholastic athletics resulting from availability of a second senior high school in a given district indicated that the number of participants did increase (14.6 percent) but the increase did not appear to parallel the increment in the opportunities for participation provided by the additional sports.

In summary, the following findings were formulated on this basis of the study:

1. Senior high school male athletes tend to have had a significantly higher level of physical fitness during their junior high school years than nonathletes at the same class (grade) level.
2. There is no conclusive evidence to indicate that male senior high school students reflected a greater improvement on their mean performances of physical fitness tests at successive grade levels in the junior high school than did their nonathletic classmates in grades seven, eight, and nine.
3. Analysis of junior high school physical fitness performances for males who subsequently participated in senior high school interscholastic sports, when grouped and compared by sports was, in this study, inconclusive.
4. Students who participate in three interscholastic sports in high school had recorded significantly higher levels of physical fitness at the junior high school level than fellow athletes who participate in one or two sports.

5. When opportunities were afforded for doubling the participation in interscholastic athletics within a school district by the opening of a second senior high school, wherein both schools offered the same number of activities, the total number of participants does increase. However, in this study sample the hypothesis was substantiated that the immediate increase would not parallel the opportunities for participation.



A COMPARISON OF EXISTING PROGRAMS OF PHYSICAL EDUCATION IN SCHOOL DISTRICTS  
WITH ENROLLMENTS OF 1500 OR LESS STUDENTS IN THE STATE OF IDAHO

by James Guy

The investigation was designed to appraise existing programs of physical education on both the elementary and secondary school levels. It was intended, on the one hand, to provide a standardized evaluation of physical education programs, for periodic evaluation has been traditionally neglected by professional physical educators. Moreover, in the course of evaluating these programs, it was possible to depict trends or patterns which emerged in the conduct of physical education programs.

The study focused upon 10 specific problems:

1. To what extent were written courses of study existent?
2. What policies and procedures were followed relative to the organization and administration of physical education programs?
3. Did existing indoor and outdoor facility areas adequately meet the demands imposed by both pupil needs and school size?
4. What was the status of aquatics programs at the elementary and secondary levels?
5. Were equipment and supplies adequately provided?
6. Did the student health services work in conjunction with the physical education departments?
7. To what extent were modified-individual (corrective) programs offered?
8. What administrative procedures were followed in intramural and interschool athletics?
9. To what extent were programs of physical education offered at various grade levels?
10. Were physical education classes taught by trained specialists or by classroom teachers?

La Porte Score Cards I and II were determined to be the optimum means of obtaining the necessary information.

Seventy-one school districts were selected with probability proportionate to size from a population of Idaho school districts with enrollments up to 1500. The sample schools represented 25 districts. Fifteen of the 25 were mailed the score cards; the actual rating was performed by superintendents and staffs of these districts. The remaining 10 districts were rated by the Idaho State Department of Education. Sixty-eight of the 71 (95.8 percent) of the schools cooperated in the investigation.

The findings of the study were discussed under elementary, junior high, and secondary school headings. Elementary school physical education programs were found to be generally deficient. Only 56 percent of the schools provided formal programs for the primary grades (1-3). 85.8 percent of the teaching in existing programs was performed by classroom teachers. Grades four, five, and six were served by programs in 56, 64, and 76 percent of the schools, respectively. 55.4 percent of the upper grade classes were taught by classroom teachers.

Moreover, there was a dearth of modified-individual programs at this level. Average ratings were obtained relative to outdoor areas, indoor facilities, and essential equipment and supplies. Fifty-two percent of the programs ranked below the 50th percentile in the percent of effectiveness in terms of overall program development. Less than 10 percent of the sample schools rated their courses of study as superior.

The greater prevalence of physical education programs at the junior high level (92 percent) was accompanied by an increment in the utilization of trained specialists for instructional purposes (95.7 percent). Necessary equipment and supplies were available in most school districts. Schools were rated good to superior for their organization and administration of their athletic programs.

Nevertheless, a number of limitations were discovered at this level, too. This was reflected in the 44.7 percent overall effectiveness of the junior high schools, in comparison to 49.1 percent at the elementary school level and 55.6 percent at senior high schools. Courses of study and standing committees concerning planning on more than a yearly basis were rated from minimum to poor for the majority of schools. Moreover, indoor facilities were rated minimum to poor on nine of ten items; the same rating was obtained for locker and shower facilities. Swimming facilities for junior high students existed in only one of the sample districts.

Deficiencies were also found to exist in modified-individual programs and intramural-extramural activities. Thirty-three percent of the schools had no corrective program. Of those offering such a program, six of ten recommended items were ranked below the recommended minimum. Furthermore, over 50 percent of the junior high schools provided inferior programs in regard to intramurals, play days, and girls' interschool athletic competition.

Although senior high schools scored the highest of the three levels on overall effectiveness, they nonetheless have the most limited programs at the various grade levels. Only 40 percent of the schools provided tenth grade programs and even fewer (32 percent) have physical education classes available to the upper two grades. The 55.6 percent effectiveness rating is better classified when considered relative to the range of 18-74 percent effectiveness of individual schools at this level. Programs obviously contrasted sharply with 30 percent rated above the 60 percentile and 27 percent below the 35th percentile.

Facilities were found to be limited at this level as well. Outdoor areas rated from poor to minimum on seven of ten items. Indoor facilities were rated minimum to poor in the majority of schools. Equipment and supplies were available in the majority of schools. Although courses of study and long-range planning were limited, the program of activities was rated very satisfactory on most items. All of the teaching was done by specialists. Once again, however, the virtual absence of swimming facilities caused poor aquatics programs.

Furthermore, approximately 75 percent of the schools conducted limited intramural programs. Inadequate school nursing services and inferior modified-individual programs likewise characterized the senior high physical education program. Interschool athletics was one area over which satisfactory control was exerted in most schools.

Five general conclusions and recommendations were formulated on the basis of the findings of the investigation. First of all, the individual school districts should develop courses of study to establish criteria and objectives for physical education programs. Faculty committees should be established to make yearly reviews and revisions of these courses of study.

Secondly, school districts should provide physical education programs for their students at the elementary level and extend the availability of participation for all students at the senior high school level. These programs should be taught by physical education specialists. School districts should emphasize programs which promote maximum physical growth and development at each grade level as well as the establishment of habits and ideals applicable to adult life.

Thirdly, school districts should pay particular attention to their health service programs. Guidelines should be established to promote medical examinations for students at the primary, upper-elementary, junior high, and senior high school grades. More emphasis should be given to the classification of students for physical activity and the promotion of programs for the injured or physically handicapped student. Moreover, the health instruction program should come under the close scrutiny of school administrators and adequate policies and procedures need to be established at the district level to improve the health service programs.

The Idaho State Department of Education should establish a statewide modified-individual (corrective) program. The State should provide guidelines and objectives that fall within the jurisdiction of school personnel. Indorsement by the Idaho Chapter of the American Medical Association should be solicited.

Finally, the Idaho State Department of Education should provide the necessary leadership to school districts and constantly evaluate programs in light of needs of students, districts, and communities. The many deficiencies and sharply contrasting effectiveness of school districts depicted in this investigation indicate the importance of this recommendation for the improvement of the physical education programs in the smaller school districts of Idaho.

A PERSONALITY ANALYSIS OF SELECTED ELEVENTH GRADE  
ATHLETES AND NONPARTICIPANTS IN ATHLETICS

by Robert L. Haney

The present investigation deals with a personality analysis of selected subjects who have been the recipients of an athletic award for participation in a varsity sport, and those boys who have never participated in interscholastic athletics. By means of comparing the two groups, the investigator attempted to determine the extent to which identifiable personality differences could be attributed to athletic participation.

The measure selected for the data collection was the IPAT Sixteen Personality Factor Questionnaire by Cattell and Eber. It was chosen because it had established norms for junior and senior male high school students, which included the desired age group of the subjects in the study.

The subjects for the study ( $N = 117$ ), all eleventh grade boys, were selected from three different high schools in the suburban Detroit area. Forty boys were purposively chosen from the three schools with equal representation of athletes and nonathletes from each. All subjects voluntarily participated in the study. They were unaware of the special criteria used for their selection, however, in an effort to reduce the bias in the investigation.

The physical education instructors at the respective schools set up the groups for testing and were extremely cooperative. The subjects and all school officials were assured of complete confidentiality in the treatment of the data obtained from these test scores.

In each school, the 40 boys were sent from their physical education classes to a room designated for the testing by prior arrangement with the administration. In some cases, where it was not possible to get 20 athletes and 20 nonathletes from one class, several class periods were used, and necessitated testing two and sometimes three times a day in a particular school.

The test took 40-50 minutes to administer, with all procedures running smoothly in most instances. Three boys who did not complete the test in the time allotted constituted the only exception, and had to be dropped from the sample.

The raw scores obtained from the results of the IPAT Sixteen Personality Factor Questionnaire were separated into two equal groups, one comprised of participants and the other of nonparticipants in athletics. The means and standard deviations on the sixteen personality factors, plus four broad derivatives, were computed for each group. The means were then compared with the

supplement of norms for junior and senior male high school students.

These norms convert the raw scores into standardized scores expressed in 10 units. From these, a profile was constructed for each of the groups, and comparisons were made and shown on profile sheets. The second order factors were also computed using the weights described in the 16 PF Test Manual, and these too, were compared. Differences between the means of the two groups on each of the sixteen factors of personality were tested by an analysis of variance.

Before discussing the conclusions, it should be stated that both groups (athletes and nonathletes) scored in the normal or average range on all of the sixteen factors of personality, except one, and on all of the four second-order factors. This indicated that neither group exhibited deviant characteristics of personality, except in Factor B, Intelligence, which demonstrated that both of our groups were above average in intelligence.

There were differences between the two groups on 6 of the 16 personality factors, however, both at the .05 level, and in two instances, at the .01 level of significance. These differences were on: Factor F, Sober—Happy-Go-Lucky; Factor G, Expedient-Conscientious; Factor I, Tough-Minded—Tender-Minded; Factor L, Trusting-Suspicious; Factor M, Practical-Imaginative; and Factor Q2, Group-Dependent—Self-Sufficient.

The findings of the study included the following:

1. The athletic group exhibited characteristics that were more surgent, enthusiastic, and happy-go-lucky than the nonathletic group. They tended to be more frank, expressive, and effervescent in character than the nonathletic group.
2. The athletic group exhibited stronger characteristics of super ego strength, were more conscientious, persistent, responsible, better organized in planning their lives, and more moralistic than were the nonathletic group.
3. The athletic group exhibited stronger characteristics of tough-mindedness than the nonathletic group. They were more practical, realistic, masculine, independent, responsible, and better able to function in a group setting than were the nonathletes.
4. The athletic group was more relaxed, secure, and free of jealous tendencies than the nonathletic group. They were also more adaptable, cheerful, and concerned about the welfare of others than were the nonathletic group.
5. The athletic group was more extroverted, practical, and concerned with facts than the nonathletic group. They tended to be more concerned with detail, better able to keep their head in an emergency, and more attentive to practical matters.

6. The athletic group was more socially dependent than the nonathletic group. They showed characteristics indicative of ability to work better in group situations where dependence on social approval and admiration are important.

7. The nonathletic group showed stronger characteristics of individualism, they were more self-motivated than the athletic group, and better able to make decisions on their own without requiring the approval of others.

8. The athletic group exhibited characteristics that were more free of anxiety than the nonathletic group.

9. The athletic group was more extroverted than the nonathletic group. They were more socially outgoing, uninhibited, and good at making interpersonal contracts than were the nonathletic group.

10. The athletic group showed more alert poise than the nonathletic group. They showed characteristics which were likely to be more enterprising, decisive, and who show a more resilient personality than did the nonathletes.

RELATIONSHIP OF TEACHER AND STUDENT PERCEPTION OF STUDENT GOALS DURING  
THE TEACHING OF A SELECTED PHYSICAL EDUCATION ACTIVITY UNIT

by Marian E. Kneer

The purpose of the study was to provide the physical education teacher with all-important feedback about what the student feels and needs, feedback that has been traditionally obtained intuitively in the instructional setting. The study was accordingly designed to allow comparisons of student satisfaction and teacher perceptions of this satisfaction. The following three variables were identified to provide the bases for intercorrelation: (1) students' goals for a particular lesson; (2) student satisfaction with their skill achievement; and, (3) student satisfaction with the lesson after its completion.

A major problem initially confronted was the construction of adequate measures to collect the data. A pilot study was therefore conducted at The University of Michigan to ascertain the effectiveness of projected methods and procedures for obtaining and analyzing the data. The results of the pilot study were used to guide the final development and application of the device for obtaining information. Two devices were constructed, one for students and the other for teachers. The student device contained three open-ended questions concerning student goals to be completed before the lesson and a continuum to indicate the degree of satisfaction to be checked after the lesson. The second device contained three questions concerning lesson plans, which were intended to reveal teacher perception of student goals, and were to be answered prior to the lesson.

Two additional devices were developed to obtain the information needed to ascertain the teacher and student assessment of student satisfaction with playing ability. The student device contained a continuum for the student to rate her personal satisfaction with her playing ability. The teacher device likewise contained a continuum which called for her to indicate her perceptions of each student's satisfaction with playing ability. In addition, the teacher was requested to indicate the skill grade that the student earned in the class.

The study was conducted in two high schools of a suburban public school system in Michigan. The sampling plan called for one class to be randomly drawn from the classes of each woman teacher of sophomore girls' physical education. Three classes from each school were thusly selected; four were gymnastics classes and two were swimming classes.

Each school was visited personally by the investigator to orient teachers and students to the study and its procedures as well as to obtain an understanding of the school environment, its physical education program, and the teachers and students in general. The actual data was collected at the end of the first



semester of the 1968-69 school year.

The practice of teachers of deleting certain lessons from unit plans made it necessary to choose observations at random; lessons three, five, eight, and ten were ultimately selected. After collection, the data was mailed directly to the investigator by each teacher and, to insure that student responses remained confidential, by selected student leaders.

The variables were intercorrelated to determine their relationships, and then underwent further analysis in an effort to ascertain the influence of such items as the individual class, the school, apathetic responses, and the like on the total sample. The analysis plan allowed the following generalizations to be made relative to all of the classes.

1. Sixty-seven percent of the student's goals found adequate provision in the teacher's lesson plan; 50 percent of the teacher's lesson related to student goals.

2. Teacher perception of student satisfaction with the completed lesson was 63 percent; the expressed satisfaction of students on this item was 67 percent.

3. Student satisfaction with and teacher perception of skill achievement was 61 percent.

4. The percent of student goals provided was related to both the provision in the lesson plan and post lesson satisfaction.

5. The percent of post lesson satisfaction related to both student skill satisfaction and teacher's assessment of skill.

6. Teacher's perception of student satisfaction was related to skill assessment.

7. Percent of skill grade was related to student satisfaction with skill achievement.

In general, teachers were able to provide for a considerable proportion of stated student goals even though no direct attempt was made to obtain knowledge of student goals. It would be well for teachers to determine techniques to assist students to improve their ability to determine appropriate goals. Likewise, teachers should strive to develop or discover means to perceive student goals more accurately.

Students expressed a considerable amount of satisfaction with the daily lesson. Lesson satisfaction seemed to be influenced by many factors, including provisions for meeting student goals, the nature of the activity, teaching methods, teaching situation, student differences, and skill attainment. In general,

the lessons reflected a greater proportion of goals of the better skilled students.

Teachers perceived that students were relatively satisfied with their skill. Teachers tended to be more accurate in perceiving student skill satisfaction of the extremely skilled or unskilled student. The results may have been affected by a tendency to have skill grades influence the teacher's perception of student satisfaction with playing ability. The mean percent of student satisfaction with skill achievement equalled the mean percent of the teacher's assessment of skill achievement. However, skill grades do not seem to markedly be related to the student's satisfaction with playing ability. Teachers should recognize that a skill grade may represent only a part of the student's goals.

Teachers should become more sensitive to the lesser-skilled student. They should become aware of the fact that these students may not be satisfied with their skill level which has implications for improving teaching techniques for the less skilled students providing a wiser and more appropriate range of success possibilities and assisting them to select more realistic goals.

It was also found that the proportion of student goals provided had little bearing on the teacher's perception of student satisfaction with skill and the student satisfaction with skill. The proportion of the teacher's lesson which provided for student goals seemed to have little influence on student satisfaction with skill, teachers skill grades, or the teacher's perception of student satisfaction with skill attainment. Furthermore, the satisfaction with the daily lesson had little influence on the teacher's perception of student skill satisfaction.

It would be desirable to replicate this study using different activities, teaching methods, and teaching situations. Moreover, other techniques and procedures need to be developed to assist teachers and students in becoming more accurate in perceiving lesson goals.

CONCEPT TESTS FOR ASSESSING SIXTH GRADE STUDENTS' ABILITY TO  
IMPART VARYING DEGREES OF FORCE AND TO ABSORB FORCE

by Herman O. Maxey

The effectiveness of present curriculum content and methods of instruction used in teaching elementary physical education has become a focal point of concern for physical educators, for they have recognized the importance of guiding children toward an understanding and control of their bodies in their environments. If this objective is to be attained, the student must have a conceptual understanding of the elements of space, force, and time. Although the emphasis of movement education has provided content for teaching children these concepts of movement, no techniques have been developed which measures the child's understanding of these concepts.

Traditionally tests of physical education skills have been primarily constructed to measure the use of maximal force and maximal speed. No attempt has been made to measure the student's awareness of the need to vary the amount of force and time in relation to specific controlled conditions.

The purpose of the study, therefore, was to develop reliable test items to measure students' understanding and ability to apply concepts related to force. Specifically, the intent was to measure the abilities to: (1) impart varying degrees of force to an object and, (2) to absorb the force of an oncoming object.

Since the search of the related literature failed to bring to light any previous movement concept tests, it was necessary to develop the test and construct the equipment needed for the testing.

Certain criteria were established to guide the selection of the test items. The items themselves should be novel movements and at the same time, easily performable ones. Moreover, the equipment involved should be both inexpensive and easily constructed from readily available materials.

In this selection of movement tasks, it was necessary to compile a list of all possible tasks that had even the slightest potential for being appropriate tests. A list of 15 items was shortened to two which were deemed the most appropriate tasks for this particular study. They were:

1. To use an implement to "catch" objects that have been propelled with varying degrees of force. (Absorption of Force Test)
2. To impart varying degrees of force to an object. (Imparting of Force Test) From these two tasks the final test items were constructed.

The construction of the instruments for both tests was a major problem. In construction of the instruments for the Absorption of Force Test, certain basic elements had to be included. An object would have to be propelled toward the student with the same force on each trial. The student would have to, in some manner, reduce the speed of the propelled object and stop it on a given target. In determining the object to be propelled three factors had to be considered: (1) the type of object to be propelled; (2) the manner in which the object should be propelled; and (3) the implement which would propel the object.

Cognizant of these factors, it was decided that all objects should be propelled on a surface. In selecting the type of object to be propelled, a review of the work done by Dr. Joseph Oxendine led to the selection of an outdoor shuffleboard desk four inches in diameter.

Investigation of the propulsion problem followed along two main themes. The utilization of a spring-powered arm and a chute-like structure were considered. The chute was selected because of its simplicity in design and construction. At its top, the chute measured 30 inches; it was 10 feet long and seven inches wide. Pilot testing indicated the necessity for greater length, and a formica runway 18 inches wide and 10 feet long was extended from the chute.

A mallet was constructed from a 22 inch portion of the shaft of a hockey stick for purposes of stopping the disc at the desired target. This shaft was secured to a 2" x 4" x 12" block of wood. A strip of billiard cushion was glued to the face of the mallet to insure a rebounding action. Control of this rebound action allows a differentiation between those who understood the concept and those who did not.

In the Imparting of Force Test, the same size formica runway was used. Most difficult in preparing the instruments for this test was the construction of a rebound board. This was solved by securing a strip of billiard table cushion along the face of the board. The desired rebound was achieved. The same four inch shuffleboard disc was used in this test.

The scoring procedure established for both tests was that of recording the amount of error in inches for each trial. After observing the scoring patterns obtained during the pilot study, it was decided that a total of six practice tosses and 30 test trials (10 per target) were needed for the Imparting of Force Test. For the Absorption of Force Test, five practice trials and 10 test trials were deemed adequate.

A sample of 35 sixth grade students were selected for this study from an elementary school in Cedar Rapids, Iowa. Tests and retests on the succeeding day indicated that eight minutes was required for a subject to complete both tests.

An administrative error led to the use of only 25 of the 35 scores from the Imparting of Force Test. A correlation coefficient using a raw data formula was run on the following groupings for both tests:

1. All 10 scores.
2. First five scores.
3. Best three scores out of the first five scores.
4. Best five scores out of all 10 scores.

None of the above groupings generated a desirable reliability.

A correlation coefficient was also computed for the total 30 scores of the Imparting of Force Test. For this test a reliability of .737 was obtained using all 30 scores.

The highest single reliability was obtained using the best 5 out of 10 scores for target number three ( $r = .603$ ). It was interesting to note that the reliability improved as the target required more nearly maximal force to reach it.

Target number one, which was the closest to the rebound board, achieved its highest reliability ( $r = .024$ ), when all 10 scores were used. The other three were all negative correlations.

Target two, the second farthest from the rebound board, obtained its highest reliability score when the best 5 out of 10 scores were used ( $r = .392$ ).

The reliability scores for the Absorption of Force Test ran consistently better than those of the Imparting of Force Test. The highest correlation ( $r = .626$ ) obtained from the first five scores might indicate that there was no need for more than five trials.

The means were consistently better for the test than the retest. This was attributable to the roughness of the center surface of the formica runways. The increased friction between the disc and surface during retesting resulted in the students attempting to compensate for this development.

It was also observed that the smaller subjects, who appeared to have less strength, scored better because they could not hold the mallet as firmly. When the disc came into contact with the mallet, it would give way, thus reducing the resiliency of the billiard cushion attached to the head of the mallet. While this type of action was successful in terms of the scoring structure of the test, in this situation it did not occur because of any conceptual understanding by the subjects.

The results of this study show that the two tests developed were not sufficiently refined to be reliable measures of the concepts described in this investigation. The reliabilities were high enough though in some cases to

warrant continued research along these lines. Advantages for further research would be, (1) obtaining a substantially larger sample than was used for this study; and (2) obtaining a sample that had been taught physical education using the conceptual approach.

Future investigations in this area should be guided by the following recommendations based upon this study.

1. The runways should be constructed out of another type of material, stainless steel would be a possibility.
2. Improvements should be made in the scoring procedure for both tests.
3. The mallet used in the Absorption of Force Test should be redesigned to eliminate manipulative problems that occurred.
4. The test procedures should be evaluated and adjustments made if deemed necessary.
5. Experimentation with different distances for placement of the target lines in the Imparting of Force Test should be done.

A COMPARISON OF GROSS MOTOR ACHIEVEMENT OF FIRST GRADERS:  
PREDICTED READING SUCCESS WITH PREDICTED READING FAILURES

by Jerry B. Thornton

The purpose of the study was to investigate the relationship of reading readiness to selected measures of physical performance, physical status, and physical maturity. Moreover, the following four hypotheses were formulated to further define the study:

1. Children predicted to succeed in reading will be significantly more agile than children predicted to fail in reading.
2. Children predicted to succeed in reading will have significantly better balance than children predicted to fail.
3. Children predicted to succeed in reading will score significantly higher in a selected sports skill than children predicted to fail.
4. Children predicted to succeed in reading will score significantly higher in explosive strength than children predicted to fail.

A review of the literature led to the selection of appropriate test items for first graders. Those selected included the rope skipping test to measure agility, the modified Bass Balance Test, the soccer punt to measure the sports skill, and the standing broad jump to measure explosive strength. All four test items were adopted from a study by Margie R. Hanson, and each had norms published in The Minnesota Elementary Physical Education Guide.

The Dehirsch Predictive Index was chosen to assess the potential reading success of the subjects. This battery was widely recognized as a valuable predictor of academic potential among kindergarten, first grade, and second grade children and was suitably tested in previous studies by its proponents. In addition, the design called for teachers' predictions of the subjects' scores on the test items.

The investigator learned that the Wayne County Intermediate school district was involved in a Federal project concerned with the prediction of academic success. All of the first graders involved in three selected elementary schools had been given the Dehirsch Predictive Index during the 1967-68 school year, when the children were in kindergarten. Two of the three schools approved the proposed investigation. A change in administration on the third school led to their decision not to participate, eliminating 67 potential subjects.

A combined total of 94 children had been originally identified as either "Predicted Reading Success" or "Predicted Reading Failure" in the two schools; normal attrition had reduced that number to 66. Data was ultimately collected from 29 boys and 36 girls (n = 65), ranging in age from 76 to 89 months. Sixteen of the males and 22 females constituted those subjects with Predicted Reading Success.

The analysis plan for the data was intended to underscore comparisons of children predicted to succeed and those predicted to fail in reading. Means, standard deviations, and ranges were computed for each of the four items for boys and girls. Moreover, an analysis of variance was selected to determine the extent to which differences which existed within and between groups were significant. A second analysis of variance was also computed in which teachers' predictions of scores on the test items were substituted for the Dehirsch score.

Hypothesis #1 was ultimately rejected. The analysis of the data clearly illustrated that the rope skip item had little predictability in segregating first graders on the basis of their reading potential. The substitution of standard scores for the raw scores did not alter this finding.

Moreover, the modified Bass Balance Test also failed to statistically differentiate between Predicted Reading Failures and Predicted Reading Successes. Although males scored higher than females on both the rope skip and the balance test, these differences were not significant.

The soccer punt also failed to differentiate between the groups as stated in hypothesis #3. Unlike the previous two test items, findings in all cases followed anticipated patterns; males as a group performed better than females, and Predicted Reading Failure scores were lower than those of the Predicted Reading Success group. These differences, however, were not statistically significant.

The fourth hypothesis was rejected, too. No significant differences were found in the analysis of data which would support the use of the standing broad jump to differentiate between the two groups. Again, the scores followed the anticipated pattern, but the differences that existed between the two groups were too small.

In interpreting the findings, the investigator was impressed by the failure of the sample to approximate normalcy. The skewness was due, at least in part, to the fact that the subjects lacked the training, instruction, and practice, in the four test items afforded the children whose scores were used in computing the test norms. The loss of the third school, which reduced the sample size by 50 percent was also a contributor to this problem. Although the validity of the Dehirsch Index for the age group might have been a problem, this skewness was ultimately considered to be the most significant factor in the study's inability to demonstrate significant differences.



Further studies in this area need to be conducted. Within the scope of the present investigation, it must be concluded that the data collected were not adequate predictive measures of reading readiness.

THE IMPACT OF A PROFESSIONAL ADVISOR ON UPGRADING THE PHYSICAL EDUCATION  
PROGRAM IN A SIX-SCHOOL SATELLITE IN THE CITY OF DETROIT

by William S. Bauerle

The investigator identified the need for an investigation which indicated the possible impact of a supervisor in upgrading physical education in a major city school district. The study was intended to be a pilot program which would hopefully yield some positive directions, although the investigator did not exclude the possibility of negative effects of supervision. A major objective in itself was to obtain information about the effects of supervision which were based on more than just common sense, past experience, and often-quoted opinions.

Although many fine physical education programs in some of the elementary schools in the City of Detroit existed, the great majority of teachers, if not all, could greatly profit from consultation with a supervisor on a personalized basis. Realizing this could not be done expediently on a one-to-one basis, a solution could be offered whereby a supervisor could instead work with six or seven schools at one time. A supervisor might set up clinics, demonstrations, and workshops centering around the interests and needs of the individuals involved and work on a neighborhood basis. As a result teachers would not be required to drive miles across the city in heavy traffic to attend clinics and workshops. They would have to travel only to a nearby school for each program or may possibly have the program in their own school.

With this concept under consideration, the following hypotheses were formulated:

1. Personalized supervision will have an impact on teachers to the extent that the teachers involved will alter present programs by improving teaching techniques.
2. After attending instructional workshops and exchanging ideas, physical education teachers will introduce new and different skills in the content of their physical education programs.

The final determination of this study taking place in the City of Detroit was based on three considerations. First, the investigator's 19 years of teaching experience occurred in Detroit, and this familiarity with the school system allowed a more thorough investigation into the problem. Secondly, the availability of possible sample schools in a closely approximated neighborhood was a criterion met in Detroit.

A third and important consideration was the selection of clinicians. Each clinic or workshop would only be as good as the person in charge. Although the investigator made the final decisions, he solicited the advice of the supervisor and the teachers involved in the project for recommended candidates to lead the respective meetings. All of the clinic leaders selected were members of the physical education department of the Detroit Public Schools.

A preliminary questionnaire was devised and personally administered to determine areas of interest in physical education activities. Tentative dates for the clinics and workshops were also discussed at this time. After obtaining the results from the preliminary questionnaire, the decision was made to hold the first clinic in the area of gymnastics. Subsequent clinics and workshops would then follow in rhythms and dance, mass games, and techniques of teaching sports.

A final questionnaire was subsequently developed under the advisement of Dr. Stuart Rankin, Director of the Michigan-Ohio Regional Educational Laboratory, Mr. George Jacobs, of the Detroit Public Schools Research Department, and Dr. John P. Kirscht, Instructor of Survey Methods in the Department of Biostatistics, The University of Michigan.

To select the sample area, the author went to one of the Detroit Schools and used an office map of the City of Detroit listing of all the public schools within the city limits. The elementary schools were then clustered in groups of six and presented to Dr. Luby, the Director of Health and Physical Education for the Detroit Public Schools, for the final selection. Twelve of the eligible 14 physical educators in the sample district agreed to participate in the study.

The results obtained from the final questionnaire were analyzed descriptively. A Likert Scale was the basis for compiling the data and subsequently computing the percentages and means.

The first hypothesis, that personalized supervision will have a catalytic impact on teaching, was supported. A supervisor coordinating six or seven schools at a time has the opportunity to become more personal in his association with the teachers. The ratings the teachers gave on the final questionnaire indicated their interest had increased. Out of a highest possible rating of "7" the means ranged from 5.56 on the organization of sports to 6.13 for tumbling and stunts and for mass games. A mean over "4" was considered acceptable in that "4" was the midpoint on the seven point Likert Scale. The average mean for increased interest of all the clinics and workshops was 5.91, indicating a high degree of interest increase.

The teachers also learned from the demonstrations. The average mean from all the demonstrations for the amount learned was 5.68. This was again more than enough to be acceptable.

Moreover, a mean of 5.22, indicating the extent to which the clinics improved teaching skills, helped to substantiate rationale that the teachers would alter their present programs by improving their teaching techniques.

The answer to the question concerning "Have you or will you change any of your teaching techniques as a result of the clinics," was the final reason the investigator felt the hypothesis could be accepted as valid. Eight of the nine respondents answered that they would change their teaching techniques, and all eight gave examples of how they intended to institute this change.

The investigator used the same reasoning based on increased interest, amount learned, and improved teaching skills, in accepting the second hypothesis. The overall rating of the clinics constituted another reason.

The final influential factor which offered credibility to the second hypothesis was the answer to the question regarding curriculum change. Seven of the nine teachers answered "yes," and six listed the specific changes they were contemplating or had already made. A follow-up was deemed necessary to give final substantiation to the hypothesis by determining how many of the proposed changes in the curriculum were actually implemented.

The investigator will personally visit all the participating teachers in the coming school year to determine the extent to which changes have been instituted.

The study, then, has demonstrated in part the possible positive effects of the proposed plan of supervision. The potential values of one supervisor assigned to a six school satellite warrant the implementation of such a plan. Where financial resources are limited, a concentration of all available supervision in one district for a year to determine the extent to which combined efforts can effect desirable changes. Any further conclusions regarding the effects of supervision and the means of implementing it await the conduct of future studies in this area.

THE EFFECT OF MODULAR SCHEDULING ON GIRLS' PHYSICAL EDUCATION  
PROGRAMS IN SELECTED HIGH SCHOOLS IN SOUTHERN MICHIGAN

by Joan E. Warrington

Because of the paucity of literature on the subject of flexibility in the scheduling of the physical education curriculum, a need has existed for contemporary programs to be appraised and analyzed in a search for the distinctive characteristics which reflect their strengths and weaknesses.

This study was undertaken to determine what physical educators are doing to individualize the instruction, broaden the curriculum offerings, make more effective use of facilities, and allow the specialized abilities of the staff to be utilized. It was also the intent to uncover the strengths and weaknesses of flexible scheduling and the organizational problems which teachers have incurred in their efforts to implement program components. The third purpose was to identify the factors which prevented flexibility in physical education within a modularly-scheduled school.

A modular schedule was defined as that kind of master schedule in a school which divides a school day into modules, mods, which can be combined to provide classes of varying lengths. Modules are generally 15, 20, 25, or 30 minutes in length, and shorter mods provide greater flexibility in a master schedule because there is a greater number of modules each day with which to construct classes.

The following four hypotheses were formulated to serve as the basis for the investigation:

1. In modular scheduling there is a departure from the traditional scheduling of daily participation in physical education for all students.
2. In schools which utilize modular scheduling, flexibility in physical education is observable through differentiated class size, variety in the length and frequency of class meetings, class formation, personnel assignments, and the use of facilities.
3. The size of staff and the amount of facilities influence the degree of flexibility.
4. The reorganization of students, teachers, curriculum, and time is primarily the responsibility of the members of the Physical Education Department.

Credentials on file at the Bureau of School Services at The University of Michigan were screened to identify 10 schools which had modular master schedules.

Only those public high schools which were located within one day's travel from the Ann Arbor, Michigan, campus were considered in the selection process. One school was subsequently eliminated from the sample when its principal responded that no physical education was offered in the total curriculum.

Nine high school principals were contacted to obtain permission for the observation-interview technique which was employed at each sample school. The female physical education teacher served as the contact person for the 34 item questionnaire which was completed in a one-to-one interview. Provision was made for open ended questions so that supplemental information could be obtained. Observation and interview consumed one complete school day at each one of the sample schools.

The letters A, B, C, D, E, F, G, H, and J were used to designate the sample schools which were discussed in a continuum from smallest to the largest in terms of enrollment. It was found that four schools were small ones with an enrollment of less than 800 high school students. Three schools enrolled 1000 to 1750 pupils, and the remaining two schools were considered large ones by virtue of their 2000 plus enrollments. Schools H and J also had a modular-block form of organization, rather than the more flexible modular system.

The data was treated in a case study of the sample schools which allowed discussion of departmental program, facilities, equipment, and staff. Sixteen items were analyzed separately, and 10 of these were identified as flexibility factors to determine a school's degree of implementation. Six additional items were analyzed for their relevance to the total program. The schools were discussed individually, in the final step of the data treatment, to identify the problems which were unique to the school and which seemed to affect the degree of implementation of modular components.

The following 10 items were designated as flexibility factors:

1. Varying class size for lecture and laboratory groups,
2. Differences in time lengths for lecture and laboratory groups,
3. Varying time exposures to physical education determined by need and interest,
4. Provisions for elective physical education,
5. Ability grouping as a basis for organization,
6. Provisions for progression to different groups,
7. Team teaching,
8. Planning time for teaching teams,

9. Hierarchy of teachers,

10. Open labs in the gymnasium.

Evidence which was given in the case study, the analysis of components, and the discussion of the individual schools was cited to determine the acceptance or rejection of the four hypotheses. It was concluded that there was a departure from traditional scheduling when a physical education program was organized under a modular schedule.

Hypothesis #2 was universally rejected because there was no observable evidence of differentiated class size, variety in the length of class meetings, or changes in the frequency of those meetings. Neither was there any variety in the organization of classes. Personnel assignments did not make use of specialized staff talents, nor was there evidence of a hierarchy of teachers. Facilities were only occasionally used for open labs.

Hypothesis #3 was also rejected because there was no data to support the premise that the degree of flexibility was related to the size of the school or the number of teaching stations. In fact, small schools exhibited greater flexibility in two cases.

Since there was no evidence to indicate otherwise, Hypothesis #4 was accepted. It would seem that the responsibility for reorganization in physical education lies primarily with that departmental staff. Parents, students, and administrations were generally supportive of program organization, and the initiative and staff cooperation determined the degree of flexible implementation.

Although schools tended to record low scores in the implementation of flexibility factors, it was important to acknowledge the ability, interest, enthusiasm, sincerity, and rapport of each teacher in the sample schools. In spite of their failure to individualize instruction through reorganization, they were to be commended for their dedication to teaching and their ability to relate to students.

There was no attempt made to propose a model physical education program under the modular umbrella, but several suggestions were made as guidelines for future program implementors. Among these were:

1. Organize meetings with staff and administration to establish philosophy and determine goals and objectives,
2. Strive for rapport and interaction among all staff members,
3. Know what the needs of the students are,
4. Be willing to experiment with new ideas and methods,

5. Develop a working knowledge of the computer programmer so that teachers are familiar with what it can and cannot do,
6. Visit other schools which have modular scheduling to gain new insights,
7. Provide some means for evaluating teachers, students, and program so that new units can be incorporated and old ones deleted.

Modular scheduling is not seen as the panacea for program ills in physical education, but it can be an effective means for the reorganization of students, teachers, curriculum, and facilities in that area, just as it has been in other subject areas. It will take a unified effort on the part of all physical education teachers, students, and administration. Beyond that, it will require dedication to innovation, the willingness to work hard, and the courage to try.



EXPERIENCED TEACHER FELLOWSHIP PROGRAM PERSONNEL ROSTER

Name and Home Address	Pre-Program School Address	Post-Program School Address
William S. Bauerle 16715 Edinborough Road Detroit, Michigan 48219	Pasteur Elementary School 19811 Stoepele Detroit, Michigan 48221	Same
Robert J. Broderick 2 Bogert Avenue White Plains, New York 10606	Pearl River Public Schools 275 East Central Avenue Pearl River, New York 10965	Athletic Director Woodbury Public Schools Woodbury, Connecticut
Barbara Chartier 23851 McMillan Warren, Michigan 48091	Wolcott Junior High School 12225 Stephens Warren, Michigan 48089	Van Dyke Public Schools Federal Street Warren, Michigan 48089
John L. DeMillion, Jr. 106 Greenwood Avenue Belle Vernon, Pennsylvania 15012	Belle Vernon Area Schools R.D. 2 Belle Vernon, Pennsylvania 15012	Belle Vernon Area High School R.R. 2 Belle Vernon, Pennsylvania 15012
James Guy 1716 East Ash Caldwell, Idaho 83605	Caldwell High School Willow and Montana Caldwell, Idaho 83605	Director of Physical Education Caldwell High School Caldwell, Idaho 83605
Robert L. Haney 26941 Davison Detroit, Michigan 48239	Southfield Public Schools Glenn W. Levey Junior High School 25300 W. Nine Mile Road Southfield, Michigan 48075	Southfield Public Schools 24675 Lasher Road Southfield, Michigan 48075
Robert J. Herzog 2157 Deborah Drive Dubuque, Iowa 52001	Dubuque Community School District 1500 Locust Street Dubuque, Iowa 52001	Same
Richard T. Holman 413 W. Paterson Flint, Michigan 48503	Beecher High School 1020 W. Coldwater Road Flint, Michigan 48505	Coordinator of Physical Education Board of Education Flushing, Michigan

EXPERIENCED TEACHER FELLOWSHIP PROGRAM PERSONNEL ROSTER (Continued)

Name and Home Address	Pre-Program School Address	Post-Program School Address
Daniel L. Jarrett 5313 Driftwood Circle Dayton, Ohio 45415	University of Colorado Boulder, Colorado	Ravinia School Dean Avenue Highland Park, Illinois 60035
M. Worden Kidder 15919 Tonkawood Drive Minnetonka, Minnesota 55343	Minot Board of Education Minot, North Dakota 58701	Elementary Physical Education Consultant Minnetonka Public Schools 216 School Avenue Excelsior, Minnesota 55331
Richard B. Klassen 2073 E. Mesabi Avenue North St. Paul, Minnesota 55109	Capitol View Junior High School 70 West County Road B-2 St. Paul, Minnesota 55117	Indian School District No. 623 1251 West County Road B-2 St. Paul, Minnesota 55117
Marian E. Kneer Bldg. 17, Apt. 201 8671 W. 85th Street Justice, Illinois 60458	East Peoria High School 1401 E. Washington Street East Peoria, Illinois 61611	University of Illinois Chicago Circle Chicago, Illinois
Herman O. Maxey 425 21st Street, N.E. Cedar Rapids, Iowa 52402	Cedar Rapids Public Schools Administrative Building 346 2nd Avenue, S.W. Cedar Rapids, Iowa	Same
Fred L. Moore 6441 Forest View Drive Oak Forest, Illinois 60452	Evergreen Park High School 9901 S. Kedzie Avenue Evergreen Park, Illinois	Same
Robert R. Morley 35457 Hathaway Street Livonia, Michigan 48150	Wayne Community School District Wayne, Michigan	Same

EXPERIENCED TEACHER FELLOWSHIP PROGRAM PERSONNEL ROSTER (Concluded)

Name and Home Address	Pre-Program School Address	Post-Program School Address
Ronald J. Nieman 508 Clement Avenue Sheboygan, Wisconsin 53081	Sheboygan Public Schools 840 Virginia Avenue Sheboygan, Wisconsin 53081	North High School 1042 School Avenue Sheboygan, Wisconsin 53081
John J. Sullivan 1242 Linden Deerfield, Illinois 60015	Alan B. Shepard Junior High School Grove and Franklin Streets Deerfield, Illinois 60015	Same
Jerry B. Thornton 3219 South 142nd Place Seattle, Washington 98168	Highline Public Schools Box 66100 Burien, Washington 98166	Same
Joan E. Warrington 2313 Packard Road Ann Arbor, Michigan 48104	English Center 235 N.W. 3rd Avenue Miami, Florida 33128	Department of Physical Education Eastern Michigan University Ypsilanti, Michigan
Donald Scott Woods 2605 York Road Raleigh, North Carolina	Enloe High School Raleigh, North Carolina	Physical Education Department North Carolina State University Raleigh, North Carolina





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