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**A STUDY OF THE
EFFECT OF A STRENUOUS EXERCISE PROGRAM
ON
PHYSICALLY UNDERDEVELOPED BOYS**

**AN ABSTRACT OF
A THESIS
PRESENTED TO THE GRADUATE FACULTY
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MASTER OF SCIENCE**

**by
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TO STRENGTHEN youth fitness in 1961, the President's Council on Physical Fitness suggested identifying the physically underdeveloped youngster through the use of screening tests, and working with him to bring him to a reasonable level of fitness by the use of strenuous exercises as a part of every physical education period. The purpose of this study is to examine the assumption that as a result of a program of strenuous exercises we can bring the physically underdeveloped student to a reasonable level of fitness.

The specific purpose of the study is to compare the initial and final fitness scores of an experimental group of eleventh and twelfth grade boys which participated in a supplementary program of strenuous exercises in addition to the regular physical education curriculum to the scores of a control group which participated in the regular physical education curriculum with only the usual warm-up and stretching-type exercises. Thus, the null hypothesis tested was that there would be no significant difference at the .05 level between the final fitness scores of the experimental group as compared to those of the control group.

Procedure

The New York State Physical Fitness Screening Test was administered to 177 eleventh and twelfth grade boys at Mahopac

High School during the first school week in October. The screening test is an individual performance-type test composed of four different test items. In addition to a total physical fitness score the test provides four part-scores indicating relative strengths and weaknesses in four basic components of physical fitness: strength, agility, endurance and speed. Raw scores were converted to achievement level scores in order to transform each of the four test component scores to a common unit of measurement and eventually obtain a composite physical fitness status. Thirty boys were identified by the test as being underdeveloped. Through the process of random sampling, 15 boys were selected to form the experimental group which participated in a 30-week (3 days per week) supplementary program of strenuous exercises and 15 were selected to serve as a control group.

At the conclusion of the thirty-week experimental training period, the pre-training tests and measurements were repeated as post-training evaluations.

Analysis of Data

Final test data for each group were adjusted for initial score differences by use of the analysis of covariance technique. Results were obtained at the .05 level of confidence for determining whether any differences which were found would be attributed to chance.

Conclusions

The following conclusions seem warranted within the limitations imposed by the experimental design of the study:

1. Analysis of pre and post experimental data indicates no significant difference in improvement at the .05 level in final total fitness scores between the experimental group of eleventh and twelfth grade boys which participated in the developmental program of strenuous exercise during regular physical education classes and the control group of eleventh and twelfth grade boys which did not receive the program of exercises.

2. Analysis of pre and post experimental data of the experimental and control groups indicates no significant improvement at the .05 level in fitness scores of any of the four components (strength, agility, speed, endurance) of the Physical Fitness Test.

3. Both groups improved slightly, but not significantly, in total fitness scores, the experimental group improving slightly more than the control group.

4. Of the four components of the Physical Fitness Test the most improvement (but not significant improvement) occurred in the strength component of the experimental group.

Recommendations for Further Study

As an outgrowth of the present study the investigator suggests the following recommendations for further study:

1. Further experimentation should be conducted in remedial methods of exercise to significantly raise the physical fitness level of physically underdeveloped high school students.

2. It is recommended that further studies investigate the significance of factors which appear to contribute to the student's state of physical underdevelopment.

3. It is also recommended that experimentation be conducted to determine if the physically underdeveloped student can be motivated to significantly raise his fitness level.