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How Increased Motivation Levels Can Lead to Increased Levels of Muscular Strength and Cardiovascular Endurance

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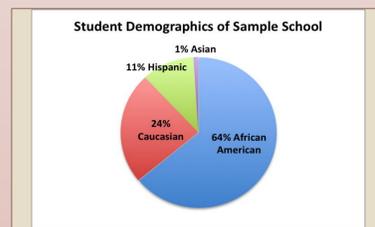
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Abstract

Through differentiation of physical education curriculum, teachers are able to increase levels of student autonomy, therefore increasing their motivation to choose to participate in regular physical activity. A peer-reviewed questionnaire was administered to the class in order to obtain a baseline reading of the students' motivation levels before a strength and conditioning unit involving Fartlek Training began. After both the educator and the students completed the differentiated curriculum and physical activities, the questionnaire was administered again. By comparing the results of the post-instruction motivational questionnaire and the recorded progress of each student in their individual fitness logs, the effectiveness of the differentiated curriculum was assessed.

Methodology

The instructional program this project was based on took place in a mandatory physical education class in a high-school setting. The sample population consisted of 27 African-American, unmotivated students (18 boys and 9 girls). All but five of them were enrolled in Freshman Academy; the remaining students were enrolled in regular classes, but were enrolled in P.E again after failing the class their first time through. This high school is located in a highly developed town in Northwest Indiana. The demographics of this school are illustrated in the following diagram:

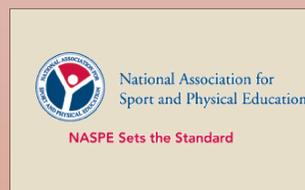


Background and Theory

NASPE's Participation Motivation Questionnaire (PMQ)

Current research findings and recommendations, including the U.S. Surgeon General's Report on Physical Activity, Centers for Disease Control and Prevention Guidelines for School and Community Programs, and Healthy People 2010 Goals, indicate consensus on the importance of regular, quality physical education and daily physical activity programs for all students, kindergarten through 12th grade. This questionnaire was distributed to the class before and after the instructional unit took place. The questions that specifically measure student motivation levels are as follows:

- 5- Do I want to stay in shape?
- 9- Do I like the excitement of exercising?
- 11- Do I like to have something to do?
- 15- Do I like the feeling of being on a team?
- 23- Do I like to be challenged?



Theory of Social Facilitation

When a performer is in the presence of others whom he/she wishes to perform well in front of, the mere presence of that audience will either make the performer execute their showcased skill at a much higher or lower level than usual.

Fartlek Training

A physical training and conditioning program where all participants engage in intervals of moderate to vigorous physical activity (MVPA). The intervals of exercise are staggered between intervals of rest. As all subjects engage in Fartlek training for an extended period of time, both their cardiovascular endurance and muscular strength levels will increase.

Data

Data for this project was collected at a local high school where I served as a student teacher during the Spring semester of 2013, from January 7 to May 1. Figure 1 shows the pre-instruction results to selected questions from NASPE's Participation Motivation Questionnaire (PMQ) that measure the motivation levels of the test-taker. Figure 2 compares the results of students' pre-instruction 12-minute run times with NASPE's criterion standards for their age group (13-15 years old). Figure 3 shows students' pre-instruction average strength levels by male and female strength test results compared to NASPE's criterion standards for the same 13-15 year old age group.

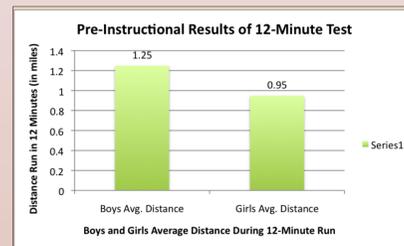
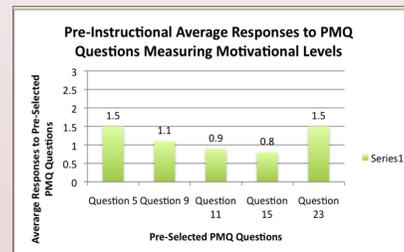


Figure 2

Figure 2 illustrates the pre-instructional results of a 12-minute run test administered to the class. Students were required to run continuously on a track for 12 minutes without walking or stopping. According to NASPE standards, the boys only ranked in their 20th percentile for their age group (13-15 years old), while the girls only ranked in their 18th percentile.

Figure 4

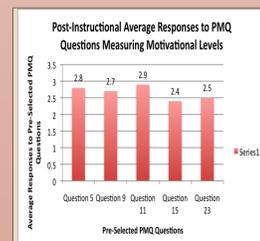


Figure 4 shows the results of the instructional program on students' motivational levels. There were nearly 100% increases in every question's response. The exact same PMQ given at the beginning was given to all the students at the end of the instructional program.

Figure 5

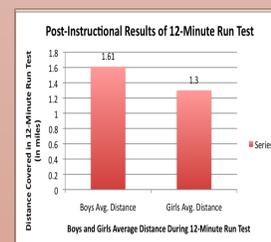


Figure 5 shows the results of the instructional program on the students' 12-minute run test scores. The boys rose to an amazing 65th percentile ranking, and the girls rose to a rank of 75th in their age percentile.

Figure 1

Figure 1 illustrates the motivational levels of the students before the instructional program was implemented. The pre-selected questions are questions that measure students' motivational levels at the time of the PMQ's distribution. Any score at or below 1.5 is considered "Not Very Motivated" by NASPE. Any score between 1.5 and 2.2 is considered "Moderately Motivated," and any score 2.3 or higher is considered "Highly Motivated." None of the students scored above a 2.0 on any questions.

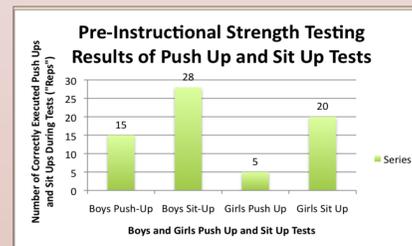


Figure 3

Figure 3 illustrates the pre-instructional strength levels of both boys and girls. In order to obtain these baseline strength levels, both the Military Push Up and Sit Up Tests were administered to the class. The boys ranked in their 25th percentile, while girls ranked in their 16th percentile. Each gender ranked in these percentiles for both strength tests.

Results

Figure 6

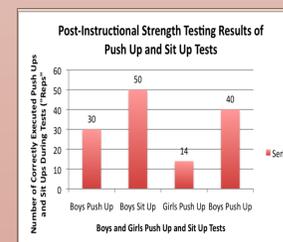


Figure 6 shows the results of the instructional program on the students' strength test scores. In the Push Up and Sit Up tests, the boys improved their percentile rankings to 70th and 61st (respectively); the girls improved their push up and sit up percentile rankings to 75th and 40th (respectively).

Analysis

- Overall score data indicated a nearly 100% increase in students' motivational levels after the differentiated curriculum was put into place by the educator.
- Both males and females greatly increased the proximity of their average scores to NASPE's 13-15 year-old standards for both cardiovascular endurance and muscular strength after the installation of the Fartlek Training program.
- Each PMQ question showed a sharp, positive increase in value during the post-instruction distribution of NASPE's PMQ. These increases ranged in value from 1.3 (Question 5) all the way up to 2.0 (Question 11).

Conclusions

- The pre-instruction distribution of the PMQ showed that the class had a very low level of motivation to participate in any kind of MVPA beyond walking from class to class during a regular school day.
- The comparison of the pre-instruction PMQ results with the post-instruction PMQ results displayed a significant increase in the effectiveness of instruction on all students to increase their motivation levels.
- As student motivation levels rose, so did their scores on both cardiovascular endurance and muscular strength tests. After repeated incidents yielding the same results, it was concluded that student motivation levels shared a direct relationship with cardiovascular endurance and muscular strength.
- From the limited data used in this research study, it appeared that the differentiated instruction that was used increased student motivation levels had increased both their cardiovascular endurance and muscular strength levels as a direct result. However, due to a small sample size, the data was unfortunately inconclusive.

Implications

- This research project had a significant impact on student performance levels because increased motivation levels lead to higher scores on both the PMQ and physical performance tests, which resulted in improved class grades.
- This research project had a significant impact on the field of education because it clearly illustrated how increased student autonomy lead to increased motivation levels, and as a result increased student performance levels.
- Based on the post-instructional results of both the PMQ and fitness tests, I believe I possess a respectable level of teaching efficacy and thoroughly understand the principles and knowledge within my content area.

References

Arlo, D. P. (2000, February 7). *Public attitudes towards physical education: Participation motivation questionnaire*. Retrieved from http://www.aahperd.org/naspe/publications/teachingTools/upload/survey_public.pdf

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