



Impact of Motivation and Technology-Enhanced Physical Activity Intervention

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Abstract

The purpose of this study was to determine the effects of a technology-enhanced physical activity intervention on self-determined motivation, attention and concentration, and physical fitness in school-aged children. My specific research focus is on whether Self-Determination Theory targeted motivational interventions have a positive correlation with physical fitness level. In the initial literature search, 376 articles were collected using variations of the keywords Self-Determination Theory, cognitive functioning, and physical activity. Additionally, the search was restricted by ages 6-18 and peer-reviewed articles published after the year 2005. These articles were collected from the databases ERIC, psychINFO, Pubmed, Sports Discus, and CIHAHL. Additionally, specific articles were collected from a few key authors who conducted Self Determination Theory studies with school-aged children. Specifically, these authors were Ntoumanis and Standage. Once collected, the articles were narrowed down to 10 through the deletion by duplicates, title, abstract, and then the full length article. The 56 participating students completed the Physical Activity and Attitude Questionnaire, which measures motivation as it relates to physical activity as a pre and post assessment. Additionally, students took a fitness test including a 1-mile run, taken from FITNESSGRAM (2015), which determined the students' health related fitness zone (HRFZ). These participants' mile times were placed into one of three categories (below average, average, and above average) depending on their performance on the assessment. Both the survey and the fitness test were performed at the beginning of the study and at the end of the 4-week study. The results from this study show that there is a significant positive relationship between intrinsic motivation and the students HRFZ as well as between autonomy and the students HRFZ.

Purpose

This study investigated the relationship between students' motivation in PE class and their level of physical fitness.

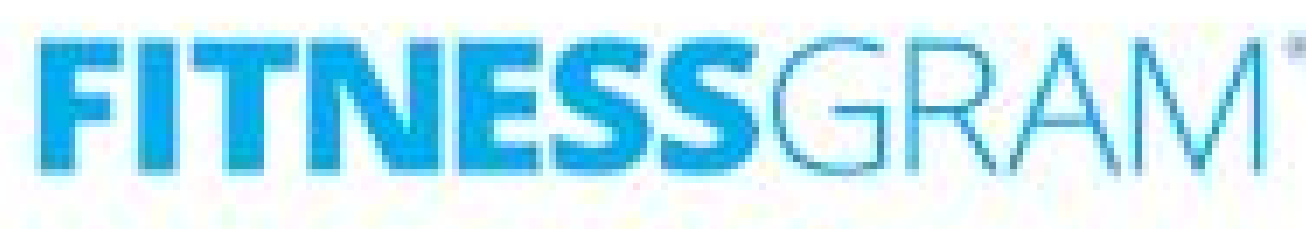
Introduction

- ❖ The Self-Determination Theory (SDT) is a theory of motivation involving the relationship between extrinsic and intrinsic motivation and how they influence people's actions (Deci & Ryan, 2000).
- ❖ This theory places an emphasis on the presence of intrinsic motivation, autonomy, competence, and relatedness, which are thought to promote the most positive motivational attitudes (Deci & Ryan, 2000).
- ❖ A major problem in our society today is the physical inactivity that many children are guilty of committing.

Methods

Participants & Setting

- ❖ This study used Quasi experimental design that investigated the relationship between students' Self Determined Motivation and level of fitness.
- ❖ 116 fifth grade students (10-12 yrs) were recruited from two suburban elementary schools in Southeast Michigan. All students participating in the study were recruited from Title 1 fifth grade classes.
- ❖ Both schools were located in areas of a low socio-economic status. Within these two school, 43% and 37% of their studetns qualify for free or reduced lunch.
- ❖ The students completed the Children's Physical Activity Attitudes and Behavior (PAAB) questionnaire (Chen & Hypnar, 2015). This measured the motivation and attitudes that students had toward physical activity. This survey addresses five types of motivation consisting of intrinsic motivation, identified regulation, introjected regulation, external regulation, and amotivation, which is rated on a 5-point scale, in which 5=strongly agree to 1=strongly disagree.
- ❖ The physical education teachers at each school provided the students scores for their school fitness assessment. The fitness test included a 1-mile run used in FITNESSGRAM (2015).



- ❖ The participants' mile times determined their prospective health related fitness zone (HRFZ), with each student fitting into one of three categories (low, healthy, or high) depending on their performance on the assessment. The results from each of these questionnaires were compared to discover if any correlations were present between measurements.

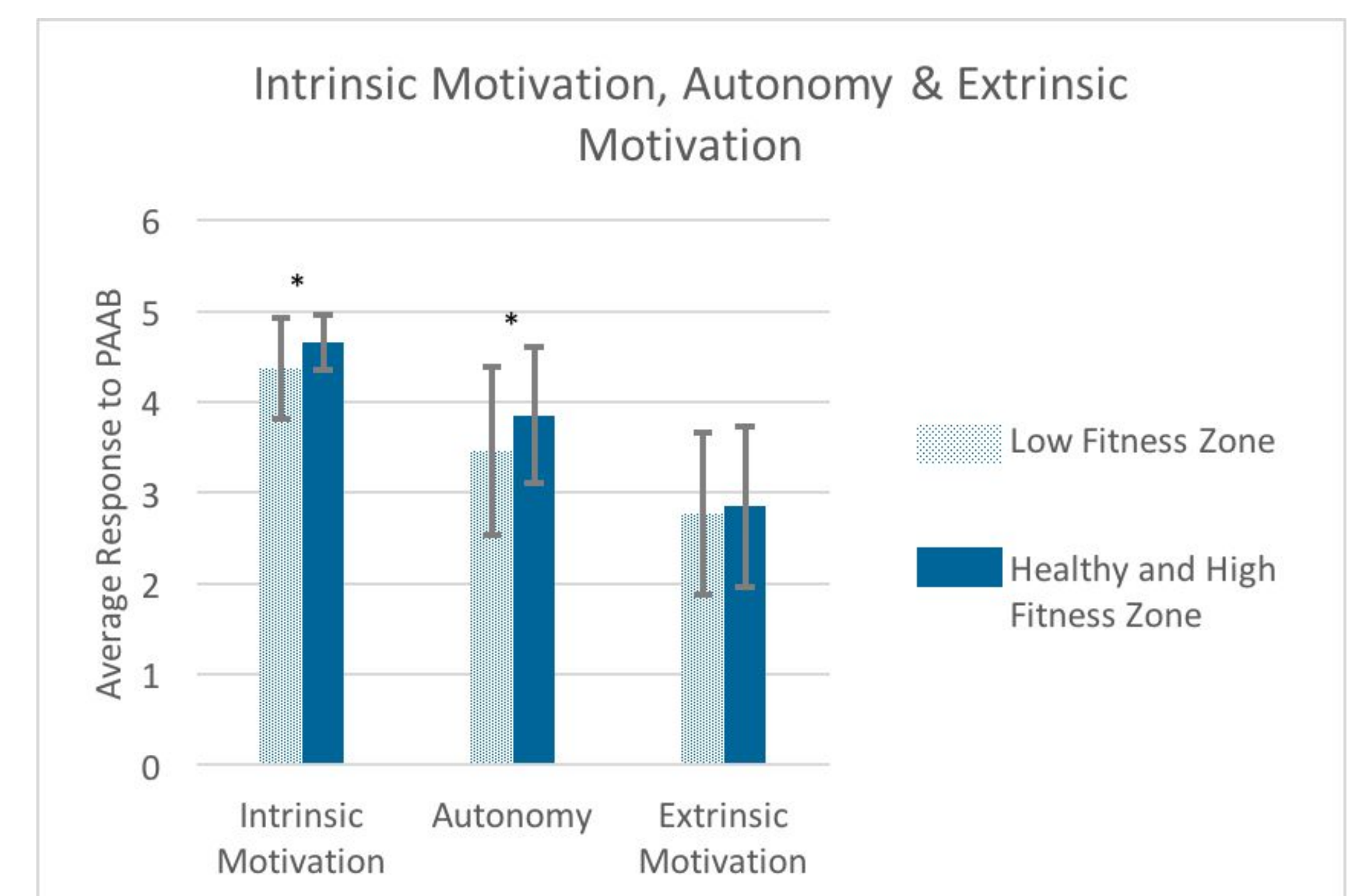
Data Analysis

- ❖ Descriptive statistics were utilized to examine the differences between the low fitness zone students and healthy or high fitness zone students.
- ❖ The analysis of variance (ANOVA) model was used to investigate the mean score difference between low fitness students and healthy or high fitness students.

Results

Descriptive Statistics in Motivation and Physical Fitness

Figure 1 summarizes the main descriptive statistics between the health related fitness zone (HRFZ) groups and the students' Physical Activity Attitudes and Behavior (PAAB) questionnaire.



Analysis of variance model indicates that both intrinsic motivation ($p=.001$) and autonomy ($p=.017$) are significant, meaning that intrinsic motivation and autonomy had a significant effect on the students HRFZ. Conversely, extrinsic motivation did not show any significance ($p=.661$), meaning it did not influence HRFZ.

Conclusions

- ❖ Intrinsic motivation and autonomy have a significant effect on a student's health related fitness zone (HRFZ), signifying that a higher level of motivation emanating from oneself and the belief you are good at physical fitness will make one more fit.
- ❖ Extrinsic motivation does not show any influence on one's HRFZ.
- ❖ Since it has been determined that a higher level of motivation correlates with a higher level of physical fitness, future research may consist of determining ways in which society can increase motivation within school aged children, promoting and increasing physical fitness, and attacking the obesity epidemic present in today's society.