

# Pre-Service Teachers' Perceptions of Incorporating Pedometers in Elementary Physical Education Classes

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## Abstract

The purpose of this study was to examine the effects of pedometers on elementary students' exertion, motivation, and attitude. Twenty pre-service teachers enrolled in a field-based Health and Physical Education course conducted lessons in a public school setting during elementary students' physical education class. The college students were asked to conduct class activities with the elementary students over a five-day period, using pedometers on the second, third, fourth and fifth days. Observation of the elementary students' exertion, motivation, and attitude took place during this five-day project. The pre-service teachers completed surveys, both qualitative and quantitative, concerning their perception of the elementary school students' physical activity levels. Results indicated that the exertion levels, motivation, and attitudes of elementary school students increased positively while wearing pedometers. In addition, the future physical educators viewed pedometers as a positive teaching tool, increasing their likelihood of using pedometers for future lessons.

**Keywords:** *Pre-service teachers, pedometers, elementary students, motivation*

## 1. Introduction

In a society full of sedentary lifestyles, physical education teachers are constantly searching for ways to motivate their students to stay active. With a new video game console released every year, going outside to play no longer holds the same entertainment value for children. Neighborhood pick-up basketball games have been replaced with a surplus of basketball video games. Why go outside when you can play on a video game?

According to the Center for Disease Control and Prevention (CDC, 2010), the obesity rate among children and adolescents has tripled within the last decade. Today, 17% of children and adolescents are now affected by obesity. This obesity trend does not end after children enter adulthood. Children who are overweight or obese as preschoolers are five times as likely as normal-weight children to be overweight or obese as adults (CDC, 2013). Among a plethora

of health problems, obesity is associated with risks and serious health conditions including diabetes, heart disease, and some cancers (CDC, 2010).

What can be done to motivate children to exercise? What can we do to raise healthy children? Pre-service teachers in Health and Human Performance are concerned with motivating elementary students to participate in physical education classrooms. Will wearing pedometers motivate elementary students to be more active? Will pre-service teachers choose to utilize pedometers as a motivational tool in future lessons?

## **2. Literature Review**

The American Academy of Pediatrics (2000) states that persons who are physically active as children continue to be physically active as adults. Therefore, Story (1999) suggests that younger children would benefit from extra attention in physical education activities. Elementary students usually participate fully in physical education class, whereas adolescents typically are less lively and not as motivated to be physically active (Dunn & Tannehill, 2005). Further, children are at school approximately one-third of the time they are awake (Gauthier et al., 2012). Most of the school day is spent sitting and listening rather than moving and being active. Only eight percent of elementary schools in the United States provide daily physical activity (Stewart, Dennison, Kohl, & Doyle, 2004). However, research suggests that students exert more energy during structured physical education time (Stewart, Dennison, Kohl, & Doyle, 2004). When compared to European students, students from the United States rank significantly lower in the amount of time spent in a school physical education class (Luepker, 1999). With a seeming lack of motivation to exercise and a surplus of activities requiring little physical exertion on the behalf of the participant, it is no surprise that 64% of students are no longer physically active by the time they reach high school (American Council on Exercise, 2011).

According to Pangrazzi & Beighle (2009) increasing the amount of physical activity that children participate in will provide them with immediate health benefits. Obesity rates among children, specifically in the United States, have reached outlandish proportions. In the United States, close to nine million children and adolescents are considered overweight (Stewart, Dennison, Kohl, & Doyle, 2004; National Environmental Education Foundation, 2009). Several factors contribute to this astonishing account. With the recent economic recession, many schools are forced to tighten budgets, cut programs, and condense the amount of time allotted for physical education. Due to the increasing pressure for students to improve standardized test scores, schools are decreasing physical education programs, requiring regular classroom teachers to incorporate physical activity into the regular classroom (Luepker, 1999).

Walking is a preferred activity for leisure time, according to Tudor-Locke & Myers (2001a). Pedometer use provides motivation for students of all ages and is highly correlated with physical activity in children (Lubans & Morgan, 2008). Pedometers are motion sensors worn on the body to keep track of physical activity. The inexpensive and simple device may be used to motivate partakers to become more physically active. Steps are counted as the person moves, providing information that can be analyzed and compared to the estimated activity recommended for a healthy lifestyle (Tudor-Locke & Bassett, 2004). A review of 32 studies was conducted to determine a recommendation for the expected number of steps per day for a healthy lifestyle. Tudor-Locke & Myers (2001b) found that eight- to ten-year-old children

can be expected to walk between 12,000-16,000 steps per day, with expectations for females being slightly less than males.

Pedometers have recently seen an increase in use in research studies (Bassett & John, 2010). This growth is in part because the design of the pedometer does not require a person's ability to recall information. Subsequently, pedometers can provide an impartial measure of physical activity levels. Studies have confirmed a pedometer's ability to motivate people with a sedentary lifestyle to increase their physical activity level. According to Bassett and John (2010), programs including the use of a pedometer, a daily step goal, and a daily step log have shown to increase physical activity levels by 2,500 steps. Pedometers accomplish this task through providing immediate feedback of users' current activity level (Bassett & John, 2010).

### **3. Purpose of the Study**

The purpose of this study was to examine the effects of pedometers on elementary students' exertion, motivation, and attitude. Pre-service teachers enrolled in the Department of Health and Physical Performance (HHP) taught 30 minutes of physical education to classes of fourth and fifth grade students two times per week. The university students wished to determine if the elementary students are motivated to be actively engaged in physical activity if wearing pedometers. The pre-service teachers completed the following survey:

Pre-Service Teacher: Use of Pedometers Survey

1. I will use pedometers in future lessons.
2. Students' exertion levels increased while wearing a pedometer.
3. Students worked harder while wearing pedometers.
4. Students were more engaged and motivated while wearing pedometer

The survey was based on a Likert Scale of 1-5, with 5 being strongly agree and 1 being strongly disagree (Appendix A). The goal of this research was to determine if pedometer use impacts exertion, motivation, and attitude of elementary students.

Research shows that academic performance is directly correlated with physical activity levels (National Association for Sport and Physical Education, 2002). With the recent obesity epidemic in the United States, schools are searching for ways to combat this overweight trend. Educators, specifically physical educators, are looking for ways to step up and face this epidemic.

Therefore, a secondary goal of understanding pre-service teachers' perceptions of physical activity levels was included. A questionnaire containing statements on a Likert Scale 1-5 with 5 being strongly agree and 1 being strongly disagree, and open ended questions requiring written responses (Appendix B).

### **4. Method**

Participants in the study include 20 pre-service teachers at a state university in the southeastern United States. Prior to the beginning of the semester, researchers met with the Health and Human Performance methods professor to explain the research project. The university and the local public schools have a cooperative agreement that provides HHP pre-service teachers an opportunity to teach physical education classes. Permission was

obtained to interview and observe students from each participating fourth and fifth grade class.

For the purpose of the study, university students were asked to use the same pedometer-based warm-up game for a time span of five days. The first day, university students introduced the warm-up activity to the elementary students without using pedometers. The second through fifth days, university students distributed pedometers to the elementary students to use during the warm-up activity and throughout the entire lesson. After the warm-up, elementary students reported their number of steps shown on the pedometer to the pre-service teacher. Another reporting session was conducted approximately three-fourths of the way through the class, and then at the end of the class each day. These procedures allowed pre-service teachers to monitor elementary students' exertion, motivation, and attitude while wearing pedometers.

Upon completion of the field-based project, pre-service teachers completed a questionnaire based upon their observations. The questionnaire required the pre-service teachers to reflect on their perceptions of elementary students' behaviors while wearing pedometers. The pre-service teachers then completed a questionnaire concerning their perception of the elementary school students' exertion, motivation, and attitudes. This questionnaire contained statements ranked on Likert Scale 1-5, with 5 being strongly agree and 1 being strongly disagree and open ended questions requiring written responses (Appendix B).

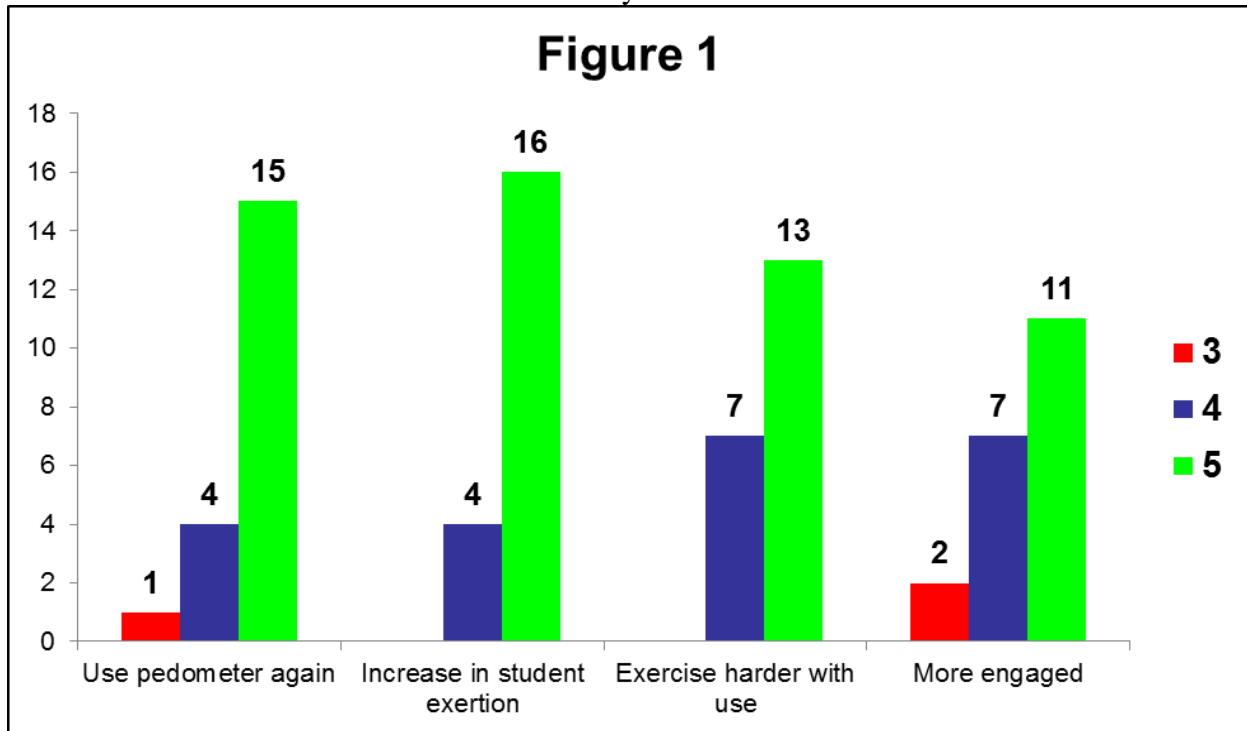
## **5. Findings**

From this study, researchers found a difference in overall student exertion, motivation, and attitude through the use of pedometers. This motivational tool can easily be integrated into the physical education classroom. Pedometer use integrates technology into the physical education classroom through unobtrusive size, economical cost, and minimal set-up time. Pedometers are flexible enough to be incorporated in almost any curriculum. As stated by the National Association for Sport and Physical Education (NAPSE, 2004), "physical activity provides opportunities for self-expression and social interaction that can be enjoyable, challenging and fun" (p. 24). University students taking part in the study experienced first-hand the benefits of pedometer use. This project allowed the pre-service teachers to gain valuable insight and experience using pedometers for future classroom use.

### **Pre-Service Teachers: Use of Pedometers Survey**

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Pre-Service Teachers: Use of Pedometers Survey Results



A total of 20 pre-service teachers completed the research statements. Number 5 (green) represents strongly agree, number 4 (blue) agree, and number 3 (red) neutral.

Pre-service teachers included several comments concerning students' use of pedometers and physical activity levels.

- The more unfit kids worked a little harder than usual.
- Wearing pedometers made kids more active, they just needed some motivation.
- Students worked harder when they had some kind of record of their activity, and other people could see it, too.
- They were fascinated by how their numbers compared to their peers and how they performed better than the day before.
- One kid who wouldn't do anything last semester was getting the most steps!
- Students worked cooperatively, helping each other put on the pedometers and resetting them.

## 6. Discussion

According to the National Environmental Education Foundation, (NEEF, 2009), the children of today are the first generation at risk of living a shorter lifespan than their parents. Active children become active adults. The purpose of this research was to determine if pedometers have an effect on elementary students; physical activity levels. Based upon the observations and questionnaires completed by pre-service teachers, pedometers are effective in increasing both activity levels and motivation of elementary students. These results were obtained from a small number of students and cannot be applied to all students.

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