



GENDER DIFFERENCES IN PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOR INDICES AMONG PHYSICAL EDUCATION PEDAGOGY UNDERGRADUATE STUDENTS

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Abstract

PURPOSE: This study examined the gender differences of sedentary behavior (SB) and self-reported and measured physical activity (PA) in undergraduate Physical Education Pedagogy (PEP) students. **METHODS:** Twenty five (19 males, 6 females, aged 19-26) undergraduate students participated. Participants underwent testing according to the Canadian Assessment of Physical Literacy (CAPL) protocol. Participants also wore an accelerometer for one week to record steps and moderate to vigorous physical activity (MVPA). **RESULTS:** Significant differences in self-reported sedentary behavior score were observed (0.42 ± 1.07 vs. 2.0 ± 2.19 for males and females respectively; t = -2.420, p ≤ 0.05) and self-reported PA score (2.0 ± 0.94 vs. 1.17 ± 0.41 for males and females respectively; t = 2.080, p ≤ 0.05). Surprisingly, no gender differences were found in measured MVPA or steps (267.8 ± 128.7 vs. 223.7 ± 82.8 minutes/week and 5472.9 ± 2579.1 vs. 4755.2 ± 2596.5 steps/day for males and females, respectively). **CONCLUSIONS:** This study indicates females self-report higher levels of sedentary behavior and less physical activity compared to males. Although not statistically significant, males participated in more measured PA. These findings suggest gender differences in physical activity participation exist even among professionals in the field. The implications of these findings are particularly relevant when considering the role these professionals play in modeling physical activity behaviors.

Background and Rationale

Physical education teachers serve as role models to students for physical activity levels as well as other aspects of physical literacy and health (Whent et al., 2016; Cardinal & Cardinal, 2001).

In general, gender differences in physical activity are well-acknowledged in the literature (Troiano, et al., 2008; Bauman et al., 2009). In college-aged adults specifically, previous research has also identified gender differences (Acs et al., 2017; Lowry et al., 2000)

Acs et. al. (2017) recently reported significant gender differences in light- and vigorous-, but not moderate-intensity weekly activity levels among university students.

Additional attention to gender differences in physical activity among Physical Education Pedagogy undergraduate students is warranted given the potential impact these pre-professionals will have on their future students' physical activity.

Purpose

This study examined the gender differences of sedentary behavior (SB) and self-reported and measured physical activity (PA) in undergraduate Physical Education Pedagogy students.

Methods

Participants:

Twenty-five Physical Education Pedagogy undergraduate majors (19 males, 6 females, aged 19-24 years).

Measures:

Physical Literacy – Based on the Canadian Assessment of Physical Literacy first edition (CAPL-1). Physical literacy is made up of four sections with associated points. The maximum score possible is 100.

Physical Competence – 32 points

- Body composition - Height, Weight, and Waist Circumference were all assessed in duplicate according to standard procedures (Malina, 1995).
- Aerobic Capacity - 20 meter Progressive Aerobic Cardiovascular Endurance Run (PACER)
- Musculoskeletal fitness - Muscular strength was assessed by measuring grip strength. Muscular endurance was assessed by plank.
- Flexibility - The sit-and-reach test was used to measure flexibility of the lower back and hamstring muscles.

Methods Cont.

Measures:

Physical Literacy (cont.) –

Knowledge and Understanding – 18 points

- 10 Specific questions from the questionnaire

Motivation and Confidence – 18 points

- CAPL assesses the knowledge about physical activity, sedentary behavior, physical fitness, and safety during activity.
- Motivation and Confidence in this study is comprised of the PSPP and other questions from the CAPL.
- Scores were adjusted in order to compare to CAPL normative values.

Daily Behavior – 32 points

- Average daily steps with accelerometer
- Self-reported sedentary time
- Self-reported days engaged in 60 minutes of MVPA

Physical Activity

- Participants wore ActiGraph GTX3+ accelerometers (Pensacola,FL) on their waist for a minimum of 7 days. Data was used to determine step counts and moderate to vigorous physical activity
- Seven questions in the CAPL ask about sedentary time and physical activity. These questions were used to determine self-reported physical activity
 - Self-report Physical Activity – Score determined off of one question: During the past week (7 days), on how many days were you physically active for a total of at least 60 minutes per day? (all the time you spent in activities that increased your heart rate and made you breathe hard). A score of zero corresponded with participants reporting activity for 0-1 days, 1 (2-3 days), 2 (4-5 days), 3 (6-7 days).
 - Self-report Sedentary time – Score determined off of four questions. Two questions asked about sedentary and screen time during a weekday, and two additional questions assessed for the weekend. Scores were given to correspond with amount of screen time. 0 corresponded with excessive screen time. 8 corresponded with meets guideline (< 2 hours per day)

Data Analyses:

Descriptive statistics were calculated for all variables.

Independent samples t-tests were used to examine gender differences

Results

Table 1. Descriptive Statistics

	Males (19)	Females (6)	Total (25)
Age	20.9 years (1.1)	22.0 years (1.3)	21.16 years (1.2)
BMI	30.2 kg · m ⁻² (5.8)	22.7 kg · m ⁻² (3.8)	28.4 kg · m ⁻² (6.2)
MVPA Score	2.00 (0.943)*	1.17 (0.408)	1.8 (0.913)
Sedentary Time Score	0.42 (1.1)	2.0 (2.2)*	0.80 (1.5)
Average Measured MVPA/Week	267.8 minutes (128.8)	223.7 minutes (82.8)	257.9 minutes (119.3)
Average Steps/Day	5,473 (2,579.1)	4,755 (2,596.5)	5,420 (2,342.0)
Physical Literacy	53.6 (7.9)	48.4 (7.7)	52.3 (8.0)

All descriptive are presented as Mean (Standard Deviation)

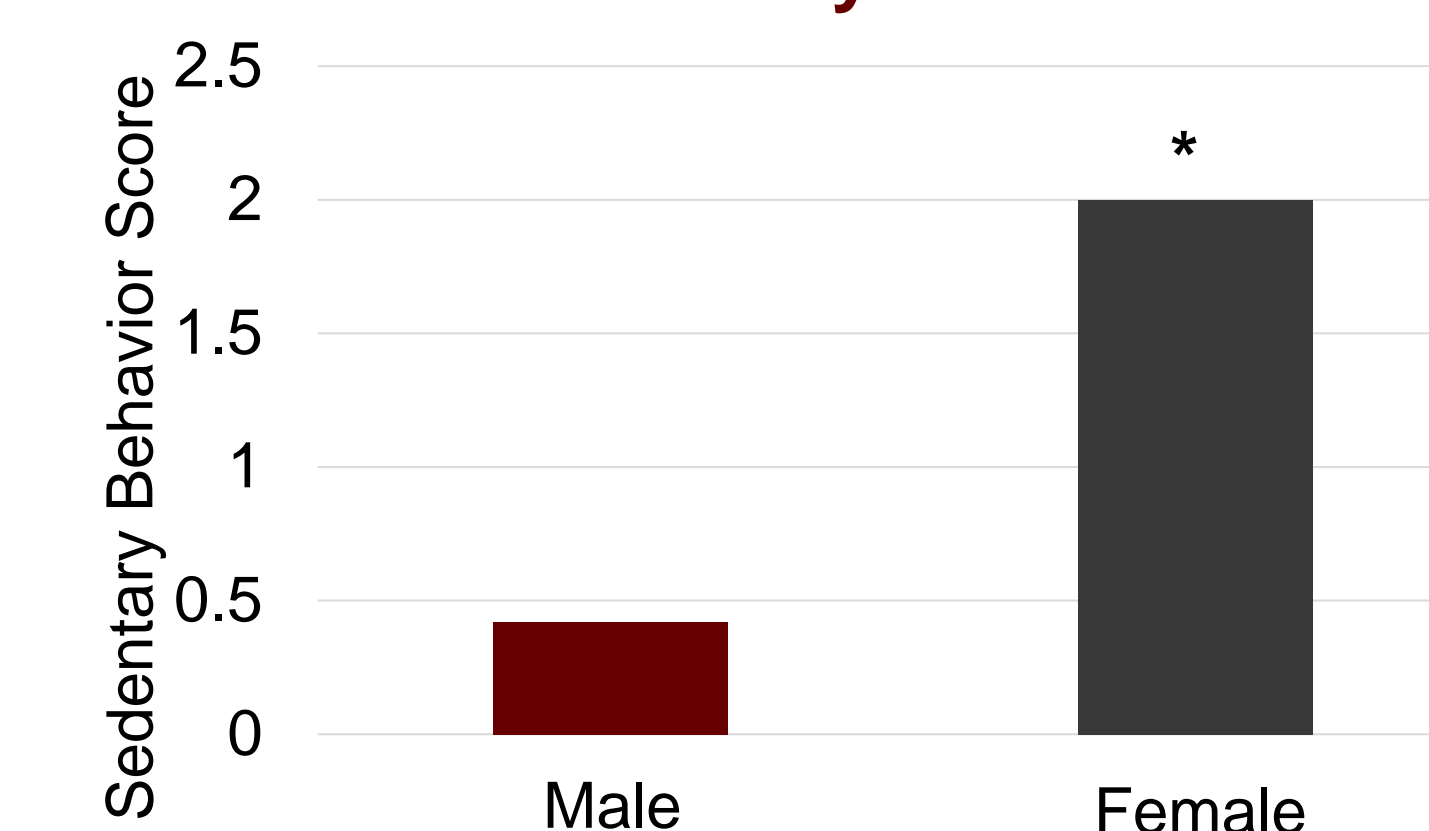
*p<0.05

Self-reported sedentary time and Self-reported MVPA are based on a score system.

The Sedentary Score is from 0 (very sedentary) – 8 (meeting guidelines). Scores were determined using 4 questions. The MVPA score is determined by number of days active. A score of 0 corresponds with 0-1 days physically active, 1 (2-3), 2 (4-5), 3 (6-7). MVPA scores were determined off of the following question: During the past week (7 days), on how many days were you physically active for a total of at least 60 minutes per day? (all the time you spent in activities that increased your heart rate and made you breathe hard)

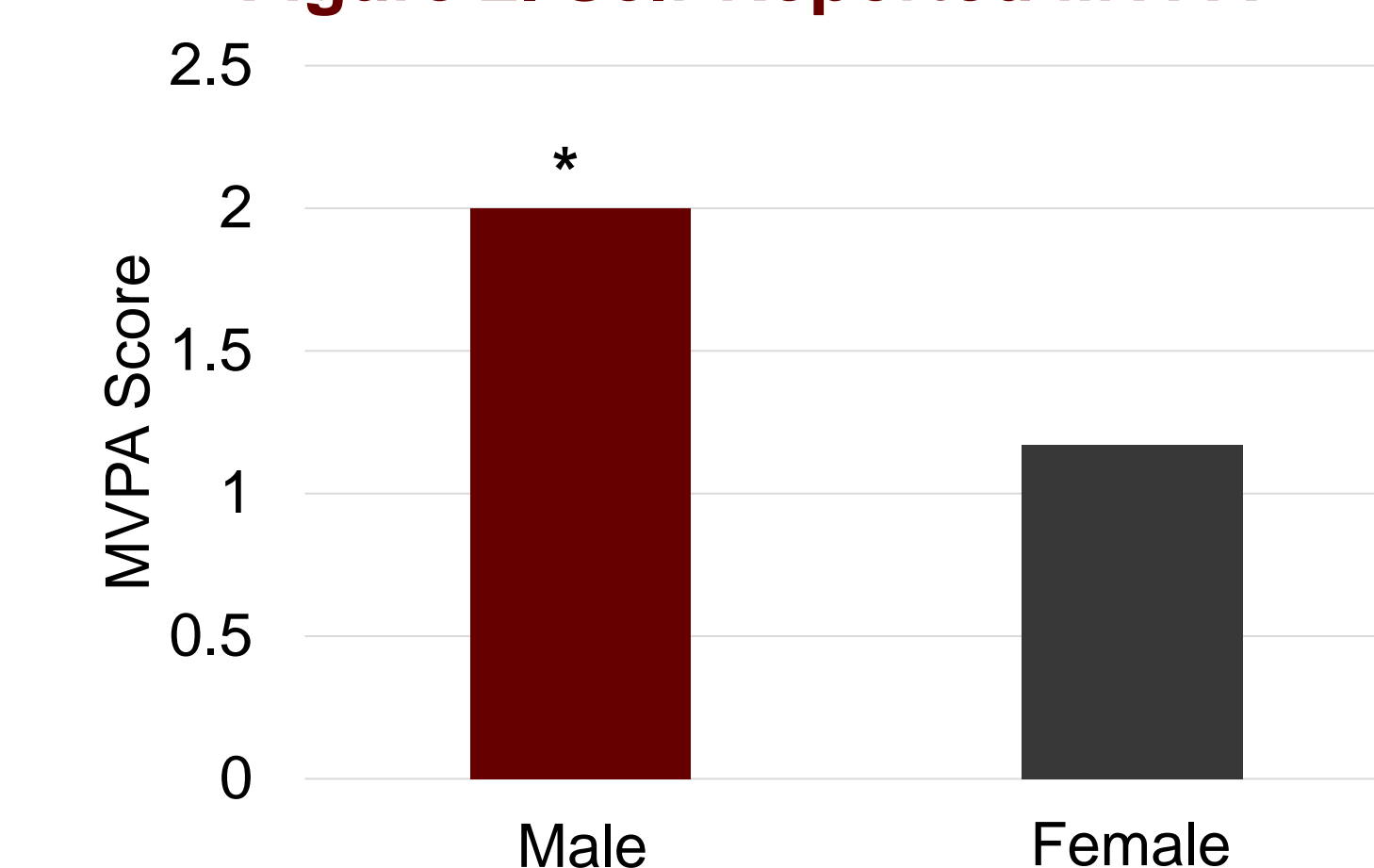
Results Cont.

Figure 1. Self-Reported Sedentary Time



Four questions assessing sedentary behavior during week and weekend. Score range from 0 (very sedentary) – 8 (meeting guidelines)
Male: mean score of 0.42 minutes with SD of 1.07
Female: mean score of 2 minutes with SD of 2.19
p = 0.024

Figure 2. Self-Reported MVPA



Question: During the past week (7 days), on how many days were you physically active for a total of at least 60 minutes per day? (all the time you spent in activities that increased your heart rate and made you breathe hard)
Male: mean 2 days with SD of 0.943
Female: mean 1.17 days with SD of 0.408
p = 0.049

Conclusions

Self-reported sedentary behavior of females was over four times closer to meeting the guidelines for screen time. Alternatively, self-reported MVPA was almost twice as much in males. This may suggest male Physical Education Pedagogy students perceive taking part in both more sedentary pursuits as well as more physical activity, compared to their female counterparts.

Males perceived physical activity was almost twice as much as females. However, significant differences in measured physical activity were not observed in average steps per day or weekly MVPA. Males took about 700 more steps and took part in approximately 45 more minutes of MVPA per week, compared to females.

These findings suggest gender differences in physical activity participation may exist, but perceptions of the behavior are also evident, even among pre-professionals in the field.

Physical Education Pedagogy curricula may benefit from addressing self-awareness of physical literacy-related behaviors in students.

This is an important consideration given the role these future professionals have in molding physical activity behaviors in their future students.

More research needs to be conducted to confirm these findings in larger samples.