Physiological and Psychological Differences between Physical Education Majors and non-PE Majors

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Introduction
Changes in the body as a result of physical fitness education and training can alter one's body image and thus enhance self-concept and self-esteem. However, according to the U.S. Surgeon General's Report, over 60% of adults in the U.S. do not exercise regularly, and 25% do not exercise at all (USDHHS, 1996). It is well established that individuals with higher levels of education tend to be more active (USDHHS, 2000). Grubbs & Carter (2002) have demonstrated that individuals who perceive that they will benefit from exercise are more likely to participate in an exercise program. The role of health and physical education programs should instill in students the knowledge and appreciation of healthy lifestyle. Seligman and Csikszentmihalyi (2000) have emphasized a positive psychology and focused on how healthy individuals can get the most from life.

In physical education and health education, physical self-concept (PSC) has been an important mediator of successful outcomes of physical activity and engagement. PSC contributes to improving and promoting levels of physical and skill development associated with physical education classes beyond what can be expected by prior measures of skill and activity (Peart, Marsh, Richards, Martin, & Dowson, 2005). It is hypothesized that Kinesiology majors are more aware of the many health benefits of exercise compared to non-kinesiology majors and demonstrate more positive physical self-concept. Therefore, the purpose of this study was to examine physiological and psychological differences between physical education majors and non-PE majors, taking a general education kinesiology/physical activity course.

Methods
A total of 314 subjects (101 kinesiology majors and 213 non-majors; Mean age=23.4, SD=6.19), purposely recruited from a comprehensive university in California, participated in this study and were evaluated on each of the five components of fitness (i.e., Cardiorespiratory Fitness, Musculoskeletal Strength, Musculoskeletal Endurance, Musculoskeletal Flexibility, and Body Composition) and physical self-concept using the Physical Self Description Questionnaire (PSDQ; Marsh, 1996). Some of the subjects did not complete the demographic question (i.e., age), the fitness test, and the PSDQ, which caused the total number of subjects varied for different aspects of the study and data analysis.

All subjects were asked to come to the lab for a fitness evaluation of each of the five components of fitness. Prior to the fitness testing, all subjects were first asked to complete the PSDQ followed by specific instruction. A basic physiological health-related fitness test was performed in the following order: Step test for Cardiorespiratory Fitness, a Hand Grip Test for Musculoskeletal Strength, a Push Up test for Musculoskeletal Endurance, a Sit and Reach Test for Musculoskeletal Flexibility, and a 3-Site Skinfold test for Body Composition. All fitness testing was performed by individuals trained by the research staff and one individual performed all skinfold measurements.

The PSDQ is a 70-item test designed to measure nine specific components of physical self-concept (i.e., appearance, strength, condition/endurance, flexibility, health, coordination, activity, body fat, and sport) and two global components (global physical and global self-esteem). Each item is a simple declarative statement, the response to which is made on a 6-point true-false scale (i.e., 1-6 in ascending order of assessment as true). The results of the testing were entered into an SPSS 14.0 file for data analysis. Descriptive statistics were first used to calculate the means and standard deviation of each measure.

Results
Independent t-tests were performed to compare differences on each of the fitness and physical self-concept variables with a bonferroni adjustment for multiple comparisons. Incomplete responses and missing data were excluded for further data analysis. The Kinesiology majors (n = 101, Age mean ± SD = 24.8 ± 5.59 year, Height mean ± SD = 66.9 ± 3.73 inches) were statistically older and taller, t (313) = 2.92, p < .01, than the non-kinesiology majors (n = 213, Age mean ± SD = 22.7 ± 6.37, Height mean ± SD = 65.6 ± 3.64). There were no significant differences in weight or BMI between majors and non-majors. As presented in Table 1, the results of the evaluation revealed that the Kinesiology majors scored significantly better on the Step Test, Hand Grip, Push Ups, and Skinfold Measurements, but not in the Sit and Reach test. Results also showed group differences on eight sub-scales of the PSDQ. Physical education majors showed significantly higher scores on coordination, action,
body fat, sport, global physical, strength, flexibility, and endurance. However, there was no statistically difference found between groups on general self-esteem and appearance.

<table>
<thead>
<tr>
<th>Measure</th>
<th>KINE majors</th>
<th>Non-KINE majors</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step Test (Recovery H.R.)</td>
<td>107.5 (± 21.97)</td>
<td>113.4 (±18.06)</td>
<td>-2.53*</td>
</tr>
<tr>
<td>Hand Grip (kg)</td>
<td>79.5 (±21.20)</td>
<td>70.3 (±20.83)</td>
<td>3.59***</td>
</tr>
<tr>
<td>Push Ups (# completed)</td>
<td>27.1 (±11.94)</td>
<td>20.7 (±12.39)</td>
<td>4.26***</td>
</tr>
<tr>
<td>Sit and Reach (cm reached)</td>
<td>27.5 (±9.85)</td>
<td>25.6 (±8.64)</td>
<td>ns</td>
</tr>
<tr>
<td>Skinfolds (% body fat)</td>
<td>18.8 (±8.21)</td>
<td>22.3 (±8.79)</td>
<td>-3.38**</td>
</tr>
</tbody>
</table>

Note: ns = non-significant
* p < .05, ** p < .01, ***p < .001

Conclusion and Discussion

The purpose of this study was to compare the level of health-related fitness and physical self-concept between Kinesiology majors and non-Kinesiology majors. The results provide partial support the previous studies that physical self-concepts were hypothesized to be substantially higher for athletes than non-athletes on sport, strength, coordination, and flexibility. As hypothesized Kinesiology majors performed better than the students who were taking a general education Kinesiology class but were not Kinesiology majors in each area of fitness except the Sit and Reach in which there was not a significant difference.

However, these data are limited to a small sample size of 314 college students at one university. It is unknown if the Kinesiology majors are more fit because they are more interested in sports and therefore exercise more, or if their exposure to the benefits of health were enhanced after becoming a Kinesiology major and therefore increased their participation in exercise. In conclusion, the current study overall supports similar research findings that exercisers in comparison to non-exercisers have more positive global physical self; individuals who are high in measures of physical fitness tend to have higher self-concepts and higher body concepts than those who are less fit.

As a preliminary study using a cross-sectional research method, the logical next step would be to implement a longitudinal study of the effects of exercise and health education on participants’ physiological and psychological changes. In addition, regressional research should be considered to further analyze and understand relationships between exercise and physical self-concept, explaining that more positive self-esteem and higher self-concept and body concept are associated with higher levels of physical fitness.

References


