INTRODUCTION

Physical activity (PA) is an important health behavior that is commonly promoted on college campuses [1]. Body composition (BC) is a fitness trait that often reflects a student’s PA level [2]. The extent to which the constructs of PA and BC are related in college student populations is not well understood.

PURPOSE

The aim of this study was to examine the multivariate association between PA parameters and BC measures in college students.

METHODS

Study design: Data for this research came from a cross-sectional measurement study conducted at a rural public university.

Sample size and composition: A total of N=60 college students who completed a PA questionnaire and had their BC assessed.

Variables utilized: Three PA variables: VO2 max (ml/kg/min), minutes of moderate PA (MMPA) (min/week), and muscle strengthening activity (MSA) (days/week). Three BC variables: percent body fat (PBF) (%), body mass index (BMI) (kg/m²), and waist circumference (WC) (cm).

Statistical analyses: Three different statistical software packages were used to ensure consistent canonical correlation analysis (CCA) findings: SAS [3], SPSS [4], and R [5].

MEASURES

Assessment of PA: PA measures were assessed using the BRFSS PA rotating core questionnaire [6]. VO2 max was computed using sex-specific prediction equations estimating maximal metabolic equivalents (METmax).

Assessment of BC: BC measures were assessed following ACSM guidelines [7]. The Siri equation was used with the sum of chest, abdomen, and thigh skinfolds for males and triceps, suprailliac, and thigh skinfolds for females.

RESULTS

Figure 1 displays the relationship between the PA and BC constructs in the CCA. Table 1 contains descriptive statistics for all study and related variables by gender. Table 2 displays Pearson bivariate correlations between all observed variables. Table 3 contains the standardized coefficients, structure coefficients (r s), squared structure coefficients (r s²), communalities (h²) and the canonical correlation coefficients (r c). Two variates presented useful in the CCA. The first variate showed 77.8% explained variance and a large r c of .612. The second variate showed 21.8% explained variance and a modest r c of .301. All h s were large for PA variates. However, only two large for PBF and BMI in the BC construct.

Figure 1. Graphical representation of a canonical correlation analysis of BC and PA constructs.

Table 1. Descriptive statistics for study and descriptive observed variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Male</th>
<th>Female</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>21.8 ± 0.44</td>
<td>21.3 ± 0.84</td>
<td>-1.49</td>
<td>0.14</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>87.9 ± 2.14</td>
<td>72.8 ± 2.13</td>
<td>-4.85</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>176.0 ± 1.09</td>
<td>171.6 ± 0.97</td>
<td>-0.39</td>
<td>0.70</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>27.9 ± 0.59</td>
<td>24.7 ± 0.66</td>
<td>-5.29</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>MPA (min/week)</td>
<td>45.8 ± 0.24</td>
<td>40.1 ± 0.31</td>
<td>-17.46</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>MPA2 (min/week)</td>
<td>946.1 ± 109.53</td>
<td>634.0 ± 109.42</td>
<td>-1.46</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Note: t = mean, SE = standard error, * = independent t statistic.

CONCLUSIONS

Results from this study indicate that PA and BC constructs are correlated with each other in college students. Of particular note is the correlation of MSA, MMPA, PBF, and BMI to the first variate. As well, the construction of VO2_max, MSA, and BMI to the second variate. These finding may imply two different relationships between PA and BC: a PA relationship (variante 1) and a fitness relationship (variante 2).

REFERENCES

[6] Centers for Disease Control and Prevention. A Data Users Guide to the BRFSS Physical Activity Questions: How to...