Health and Fitness Determinants in Higher Education Students, a Correlation Study

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Abstract:

Purpose: The transition to university life often involves significant lifestyle changes that may impact students' physical fitness and health status.This study aimed to investigate the correlations between various fitness parameters including muscular strength, respiratory function, flexibility, and postural stability in first-year university students to better understand the interconnected nature of physical fitness components in this population.

Methods: Twenty-nine healthy higher education students (15 male and 14 female, height 172.6 ± 8.8 cm; weight 69.2 ± 9.6 kg; age 20.5 ± 1.9 years) were recruited from a first-year of physiotherapy university class. All subjects were right leg and hand dominant. Students were tested for fitness and health parameters: dominant and non-dominant handgrip strength and single leg stability; spirometry; sit-and-reach and mid-thigh pull test. Data analysis included descriptive statistics and correlation analysis within fitness parameters to identify relationships between fitness and health determinants. The significance level was set at $P < 0.05$.

Results: Significant correlations were found between fitness parameters. Handgrip strength showed a moderate but significant correlations with forced vital capacity (FVC) both for dominant and non-dominant sides ($r = 0.448$, $p = 0.015$ and $r = 0.471$, $p = 0.010$ respectively). Handgrip strength showed a strong and significant correlation with maximal strength in mid-thigh pull test, both for dominant and non-dominant sides ($r = 0.881$, $p = 0{,}000$ and $r = 0.869$, $p = 0{,}000$ respectively). FVC showed a moderate but significant correlation with maximal strength in mid-thigh pull test ($r = 0.451$, $p = 0.014$). Finally, sit-and-reach distance showed a negative, moderate but significant correlation with sway path length in dominant single leg stability ($r = -0.443$, $p = 0.016$).

Conclusions: Physical fitness determinants in young students attending the first year of university suggest that higher values of vital capacity influence the overall neuromuscular fitness. These results must be taken into account to enhance physical training programs in university students.