Determinants of Health and Fitness among University Students: Evidence from a Correlation Study

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Purpose: The transition into university life often entails substantial lifestyle adjustments that can influence students' physical fitness and health profiles. This study explored the associations between several fitness components—muscular strength, respiratory capacity, flexibility, and postural control—in first-year university students, aiming to clarify the interrelationships among these parameters in this population.

Methods: Twenty-nine healthy higher education students (14 male and 15 female, height 170.8 ± 9.2 cm; weight 67.8 ± 10.1 kg; age 20.6 ± 1.8 years) enrolled in a first-year physiotherapy degree program were recruited. All participants were right-leg and right-hand dominant. Assessments included dominant and non-dominant handgrip strength, single-leg stability, spirometry, sit-and-reach flexibility, and maximal strength via mid-thigh pull test. Descriptive statistics and correlation analyses were performed to examine relationships among fitness and health determinants. Statistical significance was set at $p < 0.05$.

Results: Notable correlations emerged among fitness measures. Handgrip strength was moderately and significantly associated with forced vital capacity (FVC) for both dominant and non-dominant hands ($r = 0.448$, $p = 0.015$; $r = 0.471$, $p = 0.010$, respectively). Handgrip strength displayed a strong and highly significant correlation with mid-thigh pull maximal strength on both sides ($r = 0.881$, $p < 0.001$; $r = 0.869$, $p < 0.001$). FVC correlated moderately with mid-thigh pull maximal strength ($r = 0.451$, $p = 0.014$). Additionally, sit-and-reach flexibility was inversely and moderately associated with sway path length during dominant-leg single-leg stability ($r = -0.443$, $p = 0.016$).

Conclusions: In first-year university students, higher respiratory capacity appears linked to improved neuromuscular fitness. These findings underscore the importance of integrating respiratory function enhancement into physical training strategies for young adults in higher education settings.