Body Mass Index and Functional Movement Patterns in Collegiate Students

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The benefits of sport participation and general physical activity, as well as the harms of high body mass index (BMI), are common knowledge. For instance, high BMI has been associated with greater sport-related injury rates in adolescences[1]. High BMI has also been correlated with lower fundamental movement skill proficiency in adolescent females[2]. Such correlations between high BMI and increased injury, as well as high BMI and decreased movement performance, may be seen in young adult populations as well as adolescences. The purpose of the current study was to identify correlations among BMI, injury, participation in physical activity, and functional movement (defined by the functional movement screen (FMS)) within a university population consisting of young adults.

Twenty college students (21.4 ± 1.5 years, 175.9 ± 8.1 cm, 75.2 ± 4.4 kg) were recruited to participate in the study. The Auburn University institutional review board approved all testing procedures (AU IRB# 18-362 EP 1811). All participants met or exceeded the Center for Disease Control's recommendations for weekly physical activity. Participants completed the FMS under the instruction and grading of an FMS Level 1 certified researcher. Following the FMS, participants completed an online questionnaire using a secure platform. Participants responded "yes" or "no" to having a history of serious injury (defined as requiring a month or more of recovery) and listed modals of their regular physical activity. Height and mass were collected on a uniform scale and stadiometer. All scalar data were transformed to Z-scores prior to running a Pearson product correlation.

Results revealed significant correlations, $\alpha < 0.05$, among BMI, injury, number of physical activities, and FMS scores. A significant positive correlation was found between BMI and the number of physical activities in which participants were involved ($r = 0.509$, $p = 0.022$) and a significant negative correlation was found between BMI and FMS total score ($r = -0.517$, $p = 0.020$). A negative correlation was also found between the number of physical activities and a history of serious injury ($r = -0.471$, $p = 0.036$).

Our findings indicate that those with a higher BMI participated in more physical activities, although they had lower FMS scores. This relationship between high BMI and low movement proficiency agrees with the previous research[1]. Also, in agreement with former findings, participation in fewer physical activities was correlated with an increased history of serious injury[2]. This relationship may be the result of greater exposure to various movement patterns seen in individuals participating in more physical activities. Such exposure could lead to altered bone and tissue density and may lead to increased proprioception, which may make individuals more robust to possible injuries[3,4]. Future studies should explore the degree of adaptations made through participation in numerous physical activities.

Statement of Research Advisor

Abigail's work establishes the groundwork needed for her to further investigate functional movement, pain, and injury in youth athletes specializing in a single sport.

– *Gretchen D. Oliver, Kinesiology*

References

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