TACSM Abstract

Sex Differences in Speed and Acceleration Metrics in Soccer: A Case of NCAA, Division III Student-Athletes

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ABSTRACT

According to American College of Sports Medicine (ACSM) reports, wearable technology is the number one fitness trend for 2020 in the US. Division III (DIII) schools are the biggest participant in the National Collegiate Athletic Association (NCAA). In terms of number of student-athletes, soccer is the second most popular sport in NCAA. Duration of high speed and number of accelerations/decelerations have been identified as correlates of injuries, such as anterior cruciate ligament (ACL) injury, especially in female athletes. **PURPOSE**: To examine whether there are sex difference in the relationship of speed and acceleration metrics in collegiate soccer. **METHODS**: All 56 players of the same SUNYAC men's and women's soccer teams agreed to participate (M_{age} =19.42, SD=1.09). Data were collected using the Titan 1+ GPS sensor. In total, 200 assessments took place in pre-season and in-season. Speed zone was defined as the duration the athlete spent traveling ≥ 6m/s and was reported in minutes. Acceleration/deceleration was defined as the number of peak accelerations (≥ 3m/s^2)/decelerations (≤ 3m/s^2) experienced by the athlete and was reported in counts. The analysis consisted of Pearson correlations and a chi-square test by gender in *R*. **RESULTS**: The correlation matrices of speed zone and both acceleration and deceleration between males and females were statistically different: ($x^2(15) = 10.54$, $p < .01$). Specifically, there was a difference in correlations between speed zone and acceleration ($r_m = .61$, $r_f = .86$, $Z = -2.15$, $p = .032$) and between speed zone and deceleration ($r_m = .47$, $r_f = .79$, $Z = -2.06$, $p = .039$). **CONCLUSION**: Our findings indicate that our female participants experienced a significantly higher number of accelerations/decelerations when in high speed. Combining these results with the already known risk factors of the etiology of lower-body injuries in female athletes (e.g., anatomy, hormones) adds one more reason why practitioners should focus on a comprehensive neuromuscular and proprioceptive training program (e.g., accelerated rounded turns, deceleration with multi-step stop) to decrease lower-body (e.g., ACL) injuries in female soccer student-athletes. Future studies should explore additional external metrics (e.g., impact metrics), include internal metrics (e.g., sRPE), investigate differences between practice and game-day data, and collect information from larger and Division I/II samples. Possible limitations include convenience sample.