Differences in Acute: Chronic Workload Ratio Preceding Injury Occurrence in United Soccer League Players

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Category: Professional-in-Training

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ABSTRACT

Professional soccer players are prone to injuries. Training loads (TL), including games, are associated with injury occurrence. Acute:Chronic workload ratio (ACWR), an index of TL, is considered an accurate injury rate metric. In respect to the relationship between injury occurrence and ACWR load obtained using global positioning systems (GPS), little evidence exists in United Soccer League (USL) teams. It is possible high ACWR during the season to lead to injuries. **PURPOSE:** To investigate the interaction effect of players' injury status with ACWR of professional soccer players of a USL team. **METHODS**: In 2019-20, in-season data were gathered from 20 players (Age 26.3 ± 2.7) across six 3-week microcycles. Players' TL was monitored over 133 training sessions and 40 regular season games using 10-Hz GPS and 400-Hz accelerometer (PlayerTek, Catapult Innovations). All physical, technical, and tactical overload/underload activities consisted of soccer-specific exercises (utilizing possession, small-sided games: 3v3-11v11) and tactical drills (based on coaches' desired style of play and game-specific situations). ACWR for players' total load accumulation was calculated for the week's acute TL prior to injury week by the mean chronic 4-week TL prior to injury week. Injury group include 11 players who got injured during the in-season and 9 that remained healthy. A factorial repeated design in SPSS for injury group (2) and ACWR injury occurrence time (7) was used to examine the interaction effect. **RESULTS:** Injury group*ACWR injury time was not significant $F_{6,66}$= .81, p=.56, η^2 = .07. **CONCLUSION:** There was no difference in ACWR index between injured and non-injured players. For every ACWR injury week the injured ones had higher but non-significant ACWR values ranged from .17 to 1.7 than non-injured besides the cycle2/week2 and cycle3/week2. Our findings warrant further investigation with more participants. Possible limitations may include sample size and convenience sample.