Tailored Injury Prevention in NCAA Women's Soccer: A 18-Year Team-Specific Epidemiological Analysis

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ABSTRACT

Accurate understanding of injury patterns in athletes is essential for crafting effective prevention and rehabilitation strategies, enhancing player well-being and career longevity. However, relying solely on general NCAA injury surveillance data or broad epidemiological studies might not fully capture the specific injury trends in a particular NCAA team. Variations in team-specific factors could lead to deviations from these general patterns, underscoring the importance of analyzing team-specific data. This tailored approach ensures that training and rehabilitation protocols are optimally adjusted to the unique needs and injury risks of each specific team. **PURPOSE**: To identify common types of injuries, their frequencies, the most affected body parts, the timing of injuries within the year, and the context in which these injuries occurred in a specific NCAA Division I Women's Soccer team over an 18-year period. **METHODS**: Data were retrieved from electronic medical records managed by the team's athletic training staff before being analyzed in Python. Descriptive data analysis of categorical variables involved the calculation of absolute and relative frequencies, while continuous data were summarized using mean and standard deviation. In total, 649 musculoskeletal injuries were analyzed among 133 NCAA Division I Women's Soccer players (M_{age} = 19.8, SD = 1.2) across 18 years (2005 – 2023). **RESULTS**: Ligament sprains accounted for 28.6% of all injuries, followed by muscle strains at 23.7% and muscle inflammation at 14.6%. The highest number of injuries occurred in September (19.4%), followed by August (16.1%) and October (14.3%). Furthermore, the knee was identified as the most common site of injury (17.4%), followed by the ankle (16.6%) and thigh (16.0%). Injuries occurred during practices (246; 37.9%), competitions (188; 29.0%), strength and conditioning sessions (43; 6.6%), or outside formal sports training (62; 9.6%). Most injuries were non-contact (317; 48.8%) compared to contact (174; 26.8%). **CONCLUSION**: The findings provide essential insights for specific modifiable factors in terms of injury prevention, particularly during the competitive season months of September, August, and October, which see the highest injury rates. This period's high injury incidence suggests a need for adjusted training and recovery protocols. Emphasizing pre-season conditioning, alongside specific strengthening and rehabilitation programs for commonly injured areas like the knee, ankle, and thigh, could mitigate risks. Additionally, a focus on individual conditioning, technique improvement, and proprioception is crucial, given the prevalence of non-contact injuries. Tailoring these strategies to the competitive season's unique demands is key to enhancing athlete health and performance.