

INJURY INCIDENCE IN COMPETITIVE CROSS-COUNTRY SKIERS: A PROSPECTIVE COHORT STUDY

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ABSTRACT

Background/Purpose: Endurance sports, including cross-country skiing, require long hours of repetitive training potentially increasing the chance of injury, yet injury incidence and risk factors for adult cross-country skiers remain relatively unexplored. Data for elite adult north American competitive cross-country skiers is unexplored. A 12 month prospective surveillance study was undertaken to calculate the injury incidence and exposure of cross-country skiers. Injuries by anatomic location and mechanism of injury were calculated. Further, the relationships between new injury and the participant's demographics and physical assessment parameters were examined. The aims of this study were to determine the injury incidence and any risk factors for injury in elite adult north American cross-country skiers.

Methods: Elite cross-country skiers (35 men, 36 women) self-reported demographics, injury history, and injury and training surveillance monthly over 12 months. *t*-tests compared the mean number of injuries per individual, per 1,000 training/exposure hours between anatomic regions, type of injuries, and seasons. Spearman's correlation analyses tested the relationship between new injury and Movement Competency Screen (MCS) score, past injury, total training time, and running training time. To determine if new injury could be predicted from any demographic data, intake physical measures, or, monthly injury, training and racing data, a regression model was developed.

Results: Overall, 58% of participants (18 men, 23 women) completed the study, and reported 3.81 injuries per 1,000 training/exposure hours. Over 12-months, lower extremity injury incidence (2.13) was higher than upper extremity (0.46) and trunk injury incidence (0.22) ($p < 0.05$). Non-traumatic/overuse injury incidence (2.76) was higher than acute injury incidence (1.05) ($p < .05$). Non-ski-season injury incidence (5.25) was not statistically higher than ski-season injury incidence (2.27) ($p = 0.07$). New injuries were positively correlated with previous injury ($p < 0.05$), but not with any other variables ($p > 0.05$).

Conclusion: In this year-long monthly survey of injuries and training load in elite adult north American cross-country skiers, new injuries were positively correlated with previous injury. Lower extremity, and non-traumatic/overuse injuries had the highest incidence rates. There was no significant correlation between new injuries and physical assessment parameters or training load.

Level of Evidence: Level 3, Prospective Longitudinal Cohort Study

Keywords: Injury burden, Injury rate, Movement System, Nordic skiing

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