

ORIGINAL RESEARCH

INJURY PATTERNS IN ADOLESCENT ELITE ENDURANCE ATHLETES PARTICIPATING IN RUNNING, ORIENTEERING, AND CROSS-COUNTRY SKIING

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ABSTRACT

Background: Prospective injury registration studies, monitoring adolescent elite athletes, are sparse in running, orienteering and cross-country skiing, yet essential for developing prevention programs.

Purpose: The aims of this study were to describe the injury prevalence/incidence, severity grade, injury location, risk factors and the prevalence of illness in running (RU), orienteering (OR) and cross-country skiing athletes (CR).

Study Design: Prospective cohort study.

Methods: One hundred fifty adolescent elite athletes (age range 16-19), participating in orienteering (25 females, 20 males), running (13 females, 18 males), cross-country skiing (38 females, 36 males), from 12 National Sports High Schools in Sweden, were prospectively followed over one calendar year using a reliable and validated web-based questionnaire.

Results: The main finding was that the average weekly injury prevalence was higher during the pre-season compared to the competitive season in all three sports. RU reported the significantly ($p < 0.05$) highest average weekly injury prevalence (32.4%) and substantial injury prevalence (17.0%), compared to OR (26.0, 8.2%) and CR (21.1%, 8.9%). Most injuries occurred in the lower extremity (RU 94.4%; OR 91.9%; CR 49.9%) and foot and knee injuries had the highest severity grade in all three sports. History of serious injury ($p = 0.002$, OR 4.0, 95% CI 1.6-9.7) and current injury at study start ($p = 0.004$, OR 4.0, 95% CI 1.5-11.2) were identified as the strongest risk factors for substantial injury. Younger athletes aged 16 ($p = 0.019$, OR 2.6, 95% CI 1.2-5.8) and 17 ($p = 0.045$, OR 2.4, 95% CI 1.0-5.9), had a significantly higher injury risk for substantial injury compared to older athletes aged 18-19.

Conclusion: Practitioners should be aware of the increased injury risk during pre-season and in younger athletes. By focus on prevention of foot and knee injuries, the injuries with the highest severity grade will be targeted in adolescent elite athletes participating in running, orienteering and cross-country skiing.

Level of evidence: 2b

Key words: athletics, elite sports, injury burden, youth

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Acknowledgement

We would like to express our gratitude to all athletes participating in the study.

Funding

This work was supported by the Swedish National Centre for Research in Sports under Grant FO2016-0009. No direct or indirect financial supports have occurred from the direct applications of this research project.

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