

Are performance-related characteristics associated with sports injuries in young soccer players?

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Introduction/Aim

The worldwide high soccer participation implicates a high amount of soccer injuries. Knowing that sports injuries could have long-term consequences for the young athlete's health and future career, it is a fortiori important to prevent injuries in this population. Therefore the aim of the present study was to evaluate performance characteristics at preseason and to analyse if these player-related characteristics are associated with a high injury risk in general and more particular with intrinsic injuries, i.e. non-contact acute and progressive injuries.

Methods

During the season 2007-2008 all U15, U17 and U19 players from the national soccer school (n=67) participated in a prospective follow-up. At preseason, an extensive test battery was set up to assess physical fatigue, emotional stress and injury history (questionnaire), anthropometric variables, general joint laxity (Beighton score), lower limb coordination (functional hop tests), aerobic fitness (shuttle run test), strength of knee extensor and flexor muscles (isokinetic tests), static and dynamic balance (force plate tests) and explosive strength (jump tests on force plate). Throughout the entire season training and match exposure volume were recorded daily for every player. All soccer-related injuries leading to time-loss were registered by the responsible physiotherapist. To investigate the relationship between individual characteristics and soccer injury, a Cox proportional hazards regression model was applied.

Results

During the 10-month follow-up, 163 soccer injuries were recorded. Overall injury incidence was 10.4 injuries per 1000 hours, with competition having a 3.3 times higher injury risk than training (injury incidence of 23.5 and 7.1, respectively). Most injuries were located at the lower limb (87%) and almost two thirds of the injuries were of intrinsic nature (63.2%). Slight injuries (0-3 days lost) were the most frequent (47.2%), whereas severe injuries (>28 days lost) accounted for only 6.7%. Considering all injuries only physical fatigue was revealed as a risk factor (HR=2.0, p=0.035, CI_{95%} [1.05-3.82]) by the survival analysis. The same result was found when focusing only on intrinsic injuries.

Conclusion

A single preseason evaluation has limited value in predicting injury throughout the whole season. To respect the dynamic, recursive nature of injury aetiology, multiple assessments throughout the season could be more appropriate to reveal potential risk factors.