INFERIOR BALANCE STRATEGY IS ASSOCIATED WITH INSUFFICIENT TRAINING EXPERIENCE BUT NOT WITH INJURY HISTORY IN RUGBY PLAYERS

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BACKGROUND:
Balance strategy and balance performance of rugby players with a history of injury are important yet under-examined issues. This study aimed (1) to examine the differences in balance strategy and balance performance between amateur rugby players and non-players, and (2) to explore injury- and training-related factors that may affect rugby players' balance outcomes.

MATERIAL AND METHOD:
This is a cross-sectional and exploratory study. Forty-five amateur rugby players and 41 healthy active individuals participated in the study voluntarily. Both balance performance and balance strategies were assessed using the sensory organization test (SOT) of the Smart Equitest computerized dynamic posturography machine. Rugby training history and injury history were obtained by interviewing the participants.

RESULTS:
Multivariate analysis results revealed that the SOT strategy scores were 1.99–54.90% lower in the rugby group than in the control group ($p < 0.05$), and the SOT condition-specific equilibrium scores were 1.06–14.29% lower in the rugby group than in the control group ($p < 0.05$). After accounting for the effects of age, sex and body mass index, only length of rugby training was independently associated with the SOT condition 6 strategy score, explaining 15.7% of its variance ($p = 0.006$). In addition, there was no association between SOT condition 6 strategy/equilibrium scores and history of injury among the rugby players ($p > 0.05$).

DISCUSSION:
The suboptimal postural control strategies (over-reliance on hip balance strategies) observed in the rugby players might be associated with the specific movement patterns used during rugby matches (e.g., tackles and collisions). However, with increasing training experience, rugby players gradually shifted their balance strategy from a predominantly hip strategy to an ankle strategy. History of injury including lower limb musculoskeletal injuries and mild concussion was not associated with inferior balance strategy or performance among the rugby players. This finding may be attributed to recall bias or spontaneous recovery. Nevertheless, our results may be relevant to the development of rugby-specific injury prevention programs, including balance enhancement training for the less experienced rugby players, to ensure that all players participate in rugby matches safely.

CONCLUSION:
The amateur rugby players with a history of injury predominantly relied on a hip, rather than ankle, strategy to maintain standing balance and demonstrated suboptimal balance performance compared to their non-training counterparts. Interestingly, their suboptimal balance strategy was associated with insufficient training experience but not with history of injury.