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# The relationship between isokinetic ratios, functional movement screening and injuries in university rugby players: a retrospective study

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# ABSTRACT

**Background**: Rugby is a full contact team sport associated with many injuries. A good understanding of the risk factors that predispose players to injury will help to predict injury adequately and hence, prevent them. Many researchers have studied various isokinetic ratios of the knee, especially the agonist/antagonist (reciprocal) ratio and the bilateral ratio. The Functional Movement Screen (FMS) is another tool that has been extensively studied in predicting injury.

**Aim**: The aim of this study was to determine the relationship between functional movement screen, isokinetic ratios, and injuries in university rugby players.

**Methods**: This study was a retrospective study. The data used in this study were from the isokinetic tests, FMS score sheets and injury reporting sheets of forty-two university rugby students from one university rugby season. Isokinetic testing was done at a speed of $60^{o}$/sec, CON/CON and INT/EXT bilaterally for the shoulder.

The peak torque (PT), peak torque to body weight (PT/BW), torque at $30^{o}$, torque at 0.16sec, bilateral deficit, agonist/antagonist ratio, fatigue ratio and the FMS were compared in players who reported injury in the season and players who did not report an injury in the season. A further multivariate binary logistic regression analysis was made to determine if a combination of the FMS and each of the isokinetic ratios could have predicted injury in the players.

**Results**: Out of a total of forty-two players included in this study, twenty-two (52.38%) players reported injury in the season under study. A total of twenty-nine reported the previous injury. Out of the 29 players with the previous injury, 18 (62.07%) players reported injury in the season under study while the remaining 11 (39.93%) did not report the injury in the season. Only the agonist/antagonist ratio of the knee above 55.03 ($p=0.020$) was significantly related to injury in the dominant leg. Other isokinetic indices and ratios were not significantly related with injury in

this study. The FMS ≤14, individually and in combination with each of the isokinetic ratios did not predict injury in this study.

**Conclusion**: The findings from this study showed that previous injury and agonist/antagonist ratio of the knee were significantly related to injury incidence. However, there was no significant relationship between the injury incidence and each of the FMS, bilateral deficit and fatigue ratio. There was also no significant statistical relationship between injury incidence in this study and each of the bilateral deficit, agonist/antagonist ratio and fatigue ratio when combined with the FMS.

The bilateral ratio, fatigue ratio and the FMS did not predict injury in this study. Combining the FMS with the isokinetic ratios also did not predict injury in this study. Hence, only previous injury and agonist/antagonist ratio were able to predict injury in this study.