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# Can glenohumeral joint isokinetic strength and range of movement predict injury in professional rugby league

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## Abstract

**Objective:** To isokinetically record shoulder strength scores and range of motion in a professional rugby league squad. To prospectively monitor injuries over a season looking for associations between measured variables and injury.

**Design:** A cohort study design involving prospective screening of risk factors with subsequent injury surveillance.

**Setting:** University Sports Science Laboratory and Professional Rugby League Club.

**Participants:** All players participating in the clubs reserve team squad for the 2011 season (n = 20).

**Main outcome measures:** Concentric (Con) and eccentric (Ecc) peak torque values; ratio of Ecc internal rotation IR to Con external rotation ER, also known as the dynamic control ratio (DCR), shoulder range of IR and ER.

**Results:** Eight players (36%) received a total of eleven injuries over the season. There were no statistically significant differences between injured and non-injured shoulders. IR range of movement was significantly lower in injured versus non-injured groups with left ($p = 0.022$) and right ($p = 0.024$). Left IR range of movement was predictive of injury using binary logistic regression ($p = 0.046$). No isokinetic strength parameters reached statistical significance ($p > 0.05$) for prediction of injury; however size effects were apparent for reduced con IR of the left shoulder and Ecc IR of both shoulders.

**Conclusion:** Reduced shoulder IR range appears predictive of future shoulder injury although caution is drawn due to small participant numbers. Injury prevention strategies for rugby league players should include exercises to improve shoulder IR and possibly Ecc IR strength.

**Keywords:** Injury prevention; Isokinetic; Rugby; Shoulder injuries.



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