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Harper, Damian, Hobbs, Sarah and Moore, Jason (2011) Harper, D.J., Hobbs, S.J. & Moore, J. (2011). Reactive strength vs power: The best predictor of speed in elite U'20 Super League Rugby Players. 16th Annual Congress of European College of Sports Science. 2011 July 6-9; Liverpool, United Kingdom. In: 16th Annual Congress of European College of Sports Science, 6-9 July, Liverpool. (Unpublished)

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REACTIVE STRENGTH VS POWER: THE BEST PREDICTOR OF SPEED IN ELITE U'20 SUPER LEAGUE RUGBY PLAYERS?

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Introduction

There is a paucity of research that has investigated what strength characteristics best transfer to the high intensity sprint movements performed by elite rugby-league players (Baker & Nance, 1999; Cronin & Hansen, 2005; Harris et al., 2008). Therefore, the aim of this study was to identify relationships between reactive strength and power and measures of speed, change of direction (COD) ability and reactive agility in elite rugby-league players.

Method

Sixteen Super League rugby-league players (age, 19.7 ± 0.8 years, weight 88.5 ± 12.0 kg, height 177.3 ± 6.1m) participated in the study. Tests included: sprint time (5-m, 10-m, 20-m and 30-m); COD ability (L-run); reactive agility (cut test); loaded (25 and 50% body weight) and unloaded vertical jump (VJ); squat jump (SJ) and reactive strength via a vertical rebound jump (10 to 5 repeated jump test) performed over a series of 10 repetitions with ground contact time of less than 0.25s. All tests were measured using Smart-speed/jump (Fusion Sport, Australia).

Results

The 5-m, 10-m, 20-m and 30-m sprint times were all significantly correlated ($r=0.80$ to 0.95). Significant relationships ($r=-0.54$) were found with 5-m speed and unloaded VJ height. In addition a significant relationship ($r=-0.54$) was found between 30-m speed and loaded VJ (50%BW). The reactive agility (cut test) time had a significant relationship with SJ height ($r=0.58$). The single best predictor of change of direction speed was SJ height ($r=-0.75$). Squat jump height had significant relationships with all VJ heights ($r=0.69$ to 0.87). Reactive strength had moderate to large relationships ($r=-0.34$ to -0.51) with all sprint measures and a large relationship with COD speed ($r=-0.49$).

Discussion

Reactive strength had moderate to large relationships with all sprint distances, accounting for up to 26% of sprint performance. The lack of relationship between reactive strength and sprint performance however is not surprising. The running mechanics of rugby league players is characterised by a more slouched upper body posture with significant forward lean. Interestingly, it was the measures of concentric only (SJ) performance that resulted in the highest correlations with all speed measures.

References

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TOPIC: PHYSIOLOGY

PRESENTATION FORM: ORAL

SESSION ART: THEMATIC