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# EFFECT OF DROP JUMP TRAINING FREQUENCY ON REACTIVE STRENGTH IN RUGBY ATHLETES

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## INTRODUCTION

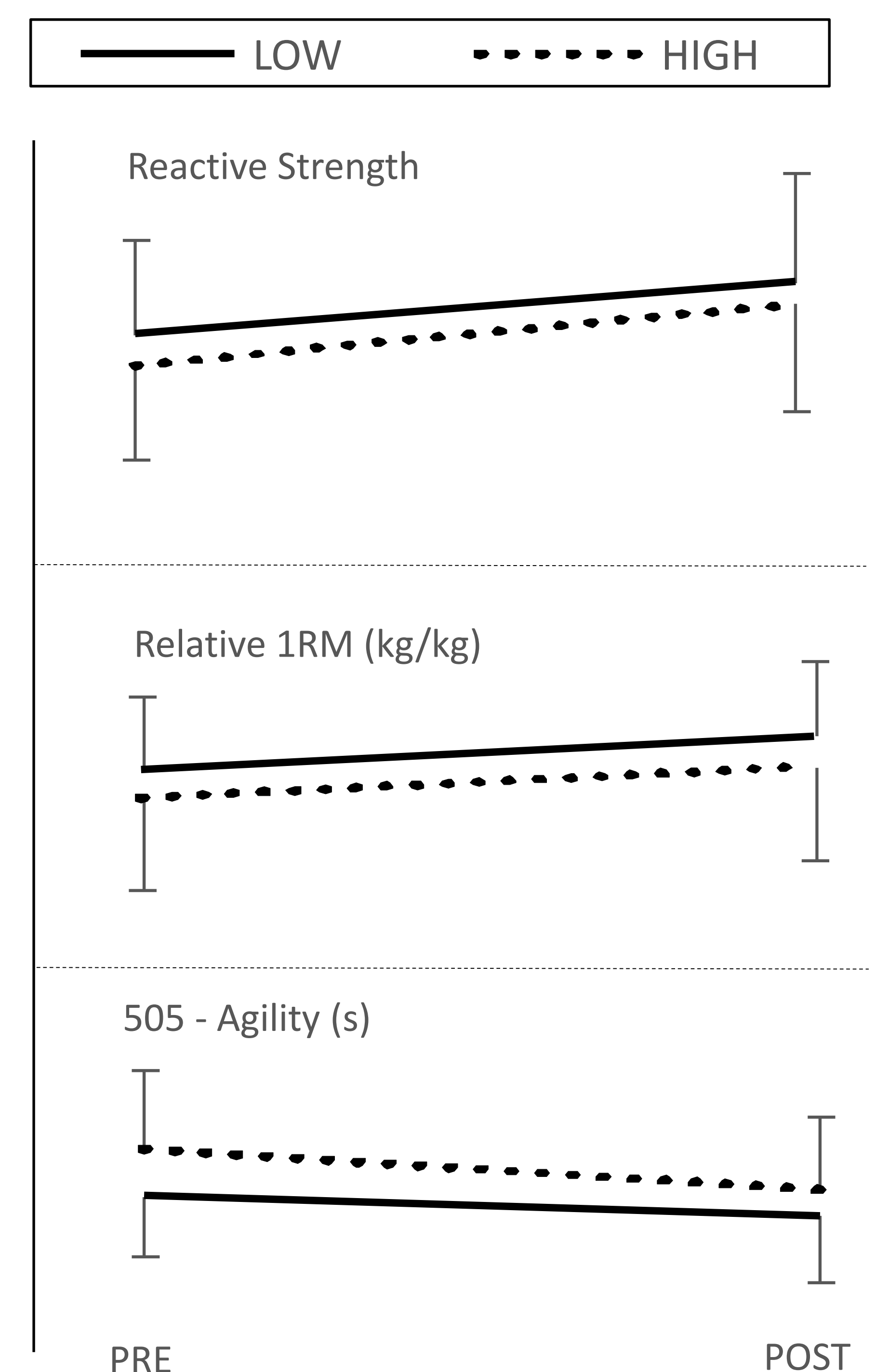
Jumping is a commonly used training modality to improve athletic performance and neuromuscular capabilities. The capacity to rapidly absorb eccentric forces and rapidly produce a concentric force within a stretch-shortening cycle (SSC) is referred to as reactive strength (RS)<sup>1</sup>. The drop jump (DJ) assesses RS and has been used as a proxy for fast SSC (<250 ms)<sup>2</sup>. The ability to utilise the fast SSC during running and jumping is an essential part of athletic preparation in rugby players<sup>3</sup>.

## METHODS

24 academy rugby athletes ( $97 \pm 12$  kg, rel. 1RM back squat:  $1.6 \pm 0.2$  kg/kg, 10-m sprint:  $1.73 \pm 0.09$  s) performed an identical 6-week daily undulating periodized training program but were randomly allocated to a HIGH (3 sessions/week) or a LOW frequency (1 session/week) DJ training group matched for RS (Flight time/Ground contact time).

## RESULTS

- Both groups significantly improved RS (ES  $\pm 90\%$  CL), LOW:  $0.55 \pm 0.41$  & HIGH:  $0.70 \pm 0.27$ , and rel. 1RM in the back squat (LOW:  $0.39 \pm 0.12$  & HIGH  $0.36 \pm 0.27$ ).
- There was a clear difference between the improvement in 5-0-5 agility times in favour of the HIGH group (ES:  $0.28 \pm 0.27$ ,  $p < 0.08$ ).
- Only the HIGH group demonstrated a significant improvement in counter-movement jump performance (ES:  $0.27 \pm 0.21$ ,  $p < 0.04$ ).
- No between group differences were observed in 10-m sprint times or rel. 1RM in the back squat.
- 505-agility was related to RS ( $r = -0.70$ ) and 10-m sprint time ( $r = 0.78$ ).



## DISCUSSION

One training session a week was sufficient in this population to improve reactive strength; however, the higher frequency of DJ training improved agility and jumping ability to a greater extent in our academy rugby athletes. Thus, positive changes in relevant functional measures were observed when training three days per week. While RS and agility were related, there was no evidence of covariance over time.

1. Flanagan, Ebben, Jensen. Reliability of the reactive strength index and time to stabilization during depth jumps. JSCR, 2008; 22(5), 1677-1682.  
2. Douglas, Pearson, Ross, & McGuigan. The kinetic determinants of reactive strength in highly trained sprint athletes. JSCR, 2018; 32(6):1562-1570.  
3. McClymont. Use of the reactive strength index (RSI) as a plyometric monitoring tool. 5th World Congress of Science in Football, 2003.

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