3 vs. 5 sets for strength development in trained adolescent Rugby Union players

3 vs. 5 Sets for Strength Development in Trained Adolescent Rugby Union Players

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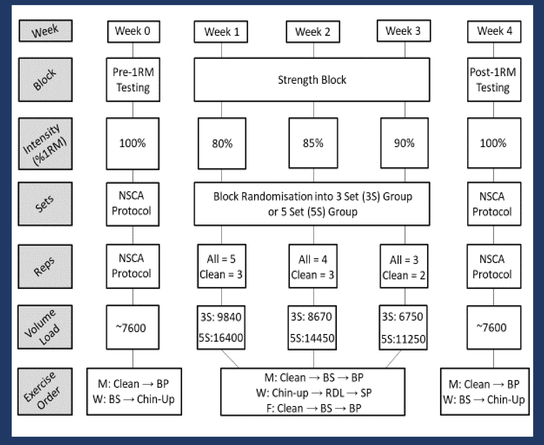
INTRODUCTION & AIM

- Ambiguity, contradiction and conflicting recommendations exist for optimal training volume (dose) upon strength development (response) [1].
- Manipulation of training volume is important for optimising physiological adaptations (muscular and neural) whilst minimising injury risk [2].
- Much research on the dose-response relationship between training volume and strength development focuses on the debate concerning single set training versus multiple set training [3].
- There is a considerable lack of recent, published research pertaining to optimal volume prescriptions for competitive adolescent athletes, specifically U18 rugby union players.
- The aim of this study was to compare the effects of resistance training volume (3 versus 5 sets) upon strength levels in trained, adolescent male rugby union players.

METHODS



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PRACTICAL APPLICATIONS

As improvements in upper and lower body strength for 3S and 5S training were comparable and not meaningfully distinct, it is advised that moderate training volumes (3S) be used over higher volumes (5S) to optimise strength development during short training blocks, and potentially after a period of detraining, however this requires further exploration. Additional advantages of moderate training volumes include improved time efficiency, lower residual fatigue and decreased injury risk. For S&C practitioners working with trained adolescent rugby union players, these combined benefits are valuable.

RESULTS

Table 1: Pre and post changes for bench press, clean, back squat & Chin-up (mean (SD)). *Denotes significant difference from pre-to-post.

1RM Test	Pre	Post	Effect Size	Magnitude
Bench Press (kg)				
3S	80 (15.41)	85.89 (14.86)*	0.38	Trivial
5S	85.63 (11.78)	91.19 (11.36)*	0.47	Small
Clean (kg)				
3S	82.78 (12.53)	85.89 (10.88)*	0.25	Trivial
5S	84.38 (12.94)	88.75 (6.94)*	0.34	Trivial
Back Squat (kg)				
3S	121.11 (21.76)	126.22 (21.23)*	0.23	Trivial
5S	127.5 (19.64)	135 (15.58)*	0.38	Small
Chin-Up (kg)				
3S	21.94 (7.05)	25.17 (7.45)*	0.46	Small
5S	25.31 (7.84)	26.86 (6.51)*	0.20	Trivial

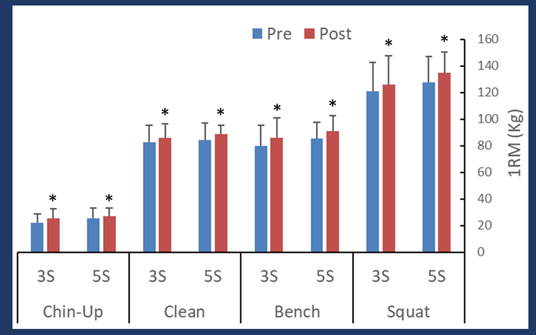

Figure 1. Mean (SD) 1RMs before and after 3-week 3S or 5S training intervention. * Illustrates significant difference pre-post within groups ($p < 0.05$).

- There was a significant effect of time for 1RM bench press ($P < 0.001$), 1RM chin-up ($P = 0.02$), 1RM clean ($P = 0.04$) and 1RM back squat ($P = 0.005$).
- There were no significant group x time interactions observed for any of the strength measures.

CONCLUSIONS

Over a short time period, there is no additional benefit of increased training volume (5 versus 3 sets) for augmenting strength gains in adolescent rugby union players.