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# A Comparison of physiological differences between Academy and Semi-professional Rugby League Players

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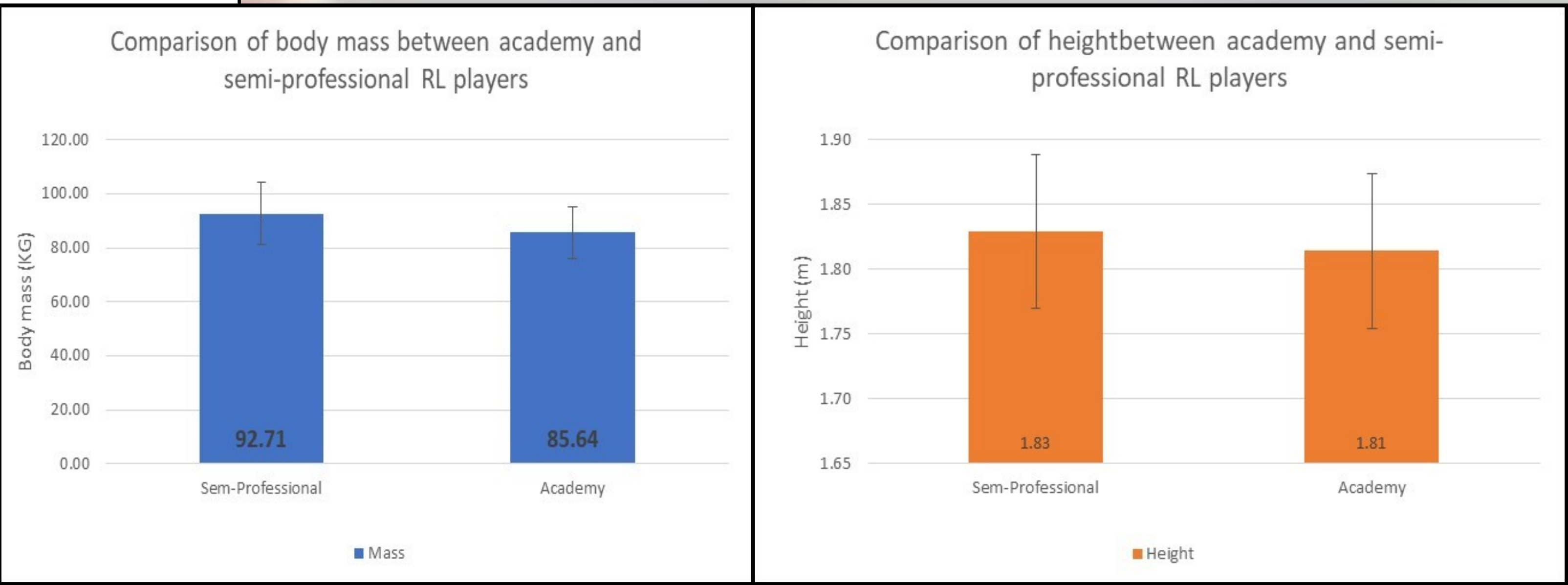
## Introduction

Rugby League (RL) is an intermittent, collision, invasion game, played internationally at professional, semi-professional and amateur level. The physiological attributes required for RL performance include, aerobic and anaerobic power, speed, acceleration, momentum, change of direction speed (CODS), strength, power and technical skill. Professional clubs operating in the Super League, develop academy players, as a method of talent development. However, not all players make the transition to senior, professional status, frequently required to leave this environment and participate at the semi-professional level. This study sought to better understand the physiological differences between these two levels, affording a better understanding of the career transition faced by academy graduates. The variables of examination were unilateral leg strength, strength symmetry, linear and change of direction speed. It was hypothesised that there would be significant differences between all variables.

## Methods

Rugby league players (n = 50), recruited from three different clubs, were used to investigate the physiological differences in unilateral leg strength and speed, both linear and COD. Tests of unilateral leg strength (rear foot elevated split squat 5RM, Helme et al, ePUB) and speed (20m sprint, modified 5-0-5 test) were separated by 48 hours. A magnitude based decision approach was used to determine between group differences in all variables measured.

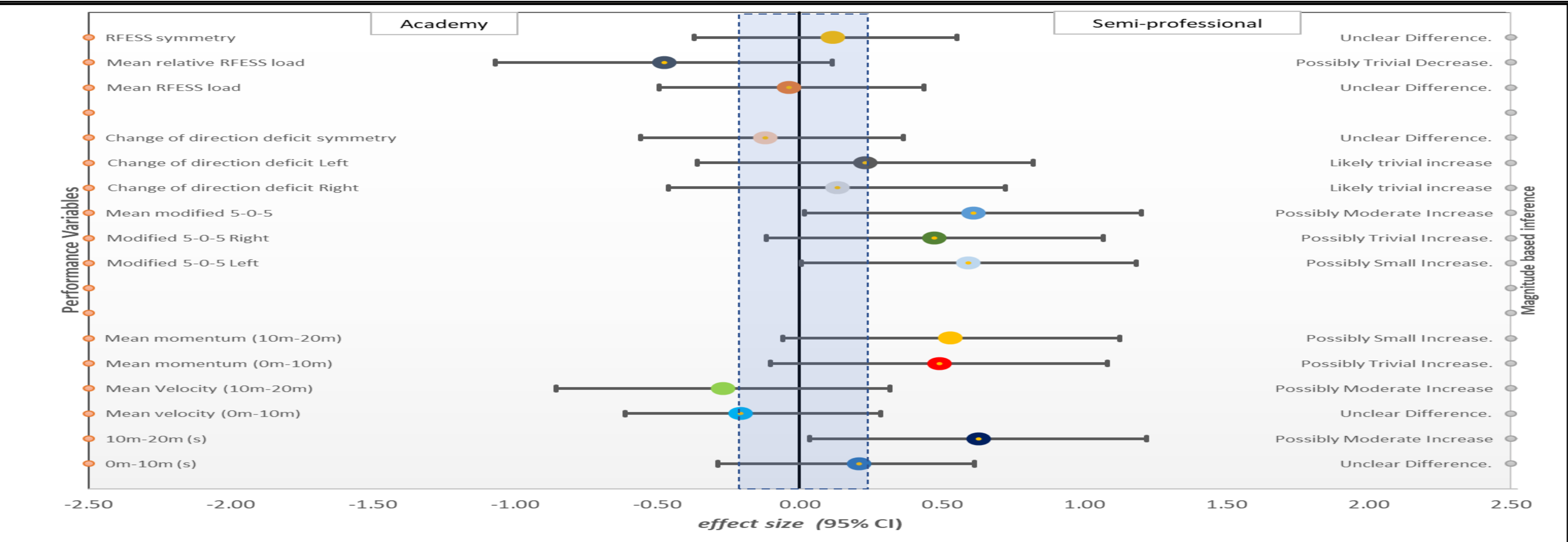
	Elite academy (n=32)	Semi-professional (n=18)	Whole Group (n=50)
Age (years)	17.3 ± 1	25.3 ± 5.3	20.71 ± 5.1
Mass (kg)	85.6 ±11.5	92.7 ±9.6	88.2 ±11.2
Height (m)	1.81 ± 0.1	1.83 ± 0.1	1.82 ± 0.1



## RESULTS

Semi-professional players were significantly heavier (+7kg, p =0.03, possibly moderate difference) than academy players, but there was no difference in height. No significant differences between groups in unilateral leg strength, either in absolute load or relative to body mass, nor was there any difference in strength symmetry.

Analysis of linear sprint speed identified no differences between academy and semi-professional players between 0 and 10m, of a 20m sprint, however, between 10and 20m academy players had a possibly moderately higher mean velocity (7.57m/s vs 7.7m/s, p =0.35). Despite the difference in body mass no significant differences in momentum was observed. There were no significant differences between either group for change of direction speed or change of direction deficit.

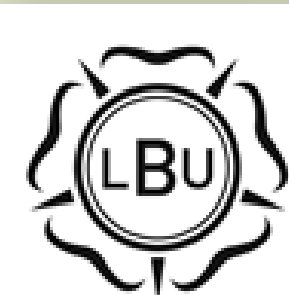


## Conclusion:

Academy and Semi-professional players exhibit comparable qualities with respect to unilateral leg strength, speed and change of direction ability. Such findings suggest that a career transition from academy to semi-professional Rugby League is an appropriate step, from a physiological perspective. However anthropometrically, the differences in body mass between groups suggests that such progression may not be so advantageous. Whilst both groups have equitable abilities, semi-professional players can perform these tasks at a significantly larger body mass, which is beneficial in collision sports. It should be concluded then, that in the transition to exit academy rugby league environments players should be focused on a strategy to simultaneously develop speed and change of direction ability, whilst accumulating greater lean body mass.



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