MATURATION, PLAYER CHARACTERISTICS AND PLAYER DEVELOPMENT IN U15 JUNIOR RUGBY IN WALES


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Abstract

INTRODUCTION:
Rugby Union requires players of various body types to fulfil a range of roles within the team. For instance, forwards are typically heavier, with greater lean tissue mass, fat mass and stature than backs [3]. Rugby is introduced to children from a young age and because of their physical attributes children can be placed into different positions or even miss out on playing and being selected due to their physical capabilities [1]. For short term competitive success more physically mature players have a higher chance of being selected as they are able to physically outperform less physically mature players. As players develop at different rates, levels of physical maturity differ between adolescents of the same chronological age [8]. Thus it is important to account for maturation in player development pathways.

AIM: To assess the effect of maturation on strength and power and psychological aspects of sub-elite junior rugby players.

METHOD:
The study recruited all players from the U15 Dewar shield squads from 22 districts across Wales (n=590; age=14.8±0.5years; weight=70.3±12.7kg; Height=173.2±7.5cm; Sitting Height=91.0±4.2cm). The anthropometric measures were repeated every 10 players to acquire a Technical Error of Measurement % (TEM%; Height=0.10%; Weight=0.39%; Sitting height=0.41%). These players were grouped (N=10) into positions. Each player was measured for stature, body mass and sitting height [5] and maturation offset (MO) calculated (1.45±0.75years) [8]. The players isometric back and leg strength was assessed using a back and leg dynamometer [2]. Leg power was assessed using a countermovement jump on a force platform [9]. Players also completed a motivational (BREQ-2, [7]) and a sporting life history questionnaire [4]. Player’s post codes were also noted for deprivation data.

RESULTS:
The players back strength was 106.1±26.2kg, leg strength 121.3±27.9kg and their lower body power output 3344±639W respectively. Pearson correlation coefficient's were used to assess the relationship between MO and power (r=0.67; P<0.05). An ANOVA revealed a significant difference in power between positions (F=p<0.05). A subsequent ANCOVA was used to correct for MO. ANOVA r²=0.17; F9,565 = 12.535 p<0.001. ANCOVA r²=0.47; F9,564 = 2.695 p=0.004. The back and leg dynamometer, questionnaires and deprivation data are yet to be analysed.

DISCUSSION:
The significant relationship between leg power and MO is partly driven by circulating androgens [6]. Power was significantly different between playing position. Maturation offset decreased the variance between groups and accounted for 30% of the difference in power between playing positions, making it a significant contribution to power independent of position. The number 8's were most and the scrum halves the least powerful even after correcting for MO. There is limited data on leg power in this age group, on average scores were high.

CONCLUSION:
In conclusion maturation measures are reliable and repeatable as demonstrated by the TEM% scores. Power was significantly related to MO. Level of maturation is an important factor to consider in the player development pathway to develop each individual player. A limitation of the study is that MO is a predictive equation.
Keywords: Maturation, Rugby Union, Sub-elite, Leg Power, back and leg isometric strength, sporting life history, motivation

REFERENCES


