Introduction

- Rugby Union requires players of various body sizes to fulfil a range of roles within the team. (Duthie, Pyne & Hooper, 2003)
- Because of physical attributes children maybe put into different positions or even miss out on playing (Armstrong & McManus, 2011)
- For short term rugby success the more physically mature players have a higher chance of being selected as they can outperform a less physically mature player.
- Levels of physical maturity differ between adolescents of the same chronological age (Mirwald, Baxter-Jones, Bailey & Beunen, 2002)

Aim: Quantify the effect of physical maturation on peak power in sub-elite junior rugby players

Methods

Participants
- Five-hundred and seventy-five (N=10) aged 14.88±4.5 years
- Sub-elite
- All selected for Dewar shield squads from around Wales

Instruments and procedures
- Anthropometric measures of height, weight and sitting height (Lohman, Roche & Martorell, 1993)
- Countermovement jump on a force platform (Owen et al., 2013)

Design an Analysis
- Observational study
- Quality assurance on anthropometric measures technical error of measurement (TEM<1%)
- Pearson’s correlation coefficient (p<.05)
- ANOVA (p<.05)
- ANCOVA (p<.05)

Results
- TEM scores for quality assurance,
  - height: 0.10%
  - weight: 0.39%
  - sitting height: 0.41%
- ANOVA
  - \( r^2 = 0.17; F_{9,565} = 12.535 \quad p<0.001 \)
  - ANCOVA
    - \( r^2 = 0.47; F_{9,564} = 2.695 \quad p = 0.004 \)

Discussion

- The significant relationship between leg power and maturation partly driven by circulating androgens (Malina, Bouchard and Bar-Or, 2004)
- MO decreased the variance between groups and accounted for 30% of the of the difference in power between playing positions
- Number 8’s were most and scrum halves the least powerful even after correcting for MO
- There is limited data on leg power in this age group average scores were high

Conclusion

- Maturation measures are reliable and repeatable as demonstrated by the TEM scores
- Power was significantly related to maturation offset
- 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

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References