28th ECSS Anniversary Congress, Paris/France, 4-7 July 2023

Relationship between anthropometric characteristics and ball velocity in elite adolescent handball players

Noutsos, K., Meletakos, P.

National & Kapodistrian University of Athens

INTRODUCTION:
The performance evolution of handball players needs to be studied in many areas such as anthropometric characteristics and ball velocity. The purpose of this study was to investigate the effects of anthropometric characteristics on ball velocity in handball.
METHODS:
In this study, 60 handball players age= 17.61±1.53 years, body height =183.77±5.9 cm, body mass = 82.68±9.03 kg, with an average training experience of 6.86 ± 2.03 years and weekly training volume 8.21 ± 2.71 (hrs) participated and were evaluated. The measurements included body height(cm), body mass, body mass index (Kg/m2), arm span(cm), hand length(cm), hand width (cm), five skin folds thicknesses (mm) (biceps, triceps, subscapular, suprailiac and calf), three circumferences(cm) [calf and biceps girth (relaxed and tensed)] and two widths(cm) (femur, humerus). Fat Mass percentage (%), fat free mass (kg), Fat mass (Kg), and Sum of 5SKFS (mm) were all calculated. The precise anatomical sites of measurement by the respective somatometric instruments and the measurement procedures were all carried out according to Norton et al., 2000. Ball velocity was measured using a Radar Gun (Sports Radar 3300, Sports Electronics Inc) with ±0.1 Km/h accuracy within a field of 10o from the gun. The Pearson's correlation coefficients were calculated between all parameters. A stepwise multiple regression analysis with the anthropometric indices as the dependent variables and ball velocity as potential predictors was carried out.
RESULTS:
A statistically significant simple positive correlation was found between age (r = 0. 423, p = 0.001), humerus breadth (r = 0. 280, p = 0.030), upper arm flexed and tensed girth (r = 0. 274, p = 0.034), upper arm relaxed girth (r = 0. 307, p = 0.017), fat free mass (r = 0. 483, p = 0.000), fat mass (r = 0. 275, p = 0.033), BMI (r = 0. 356, p = 0.005), hand width (r = 0. 347, p = 0.007), hand length (r = 0. 378, p = 0.003), and ball velocity at standing position, and a negative correlation between weekly training volume and ball velocity at standing position. The multiple linear regression identified that anthropometric characteristics provided good explanatory power for ball velocity at standing position 35% (p = 0.024). The anthropometric characteristic with the highest explanatory power in the regression model for ball velocity at standing position was fat free mass (p = 0.024) followed by age and hand length.
CONCLUSION:
Variables related to fat free mass, age, hand length may contribute to handball throwing performance.

Topic: **Coaching**

Presentation **E-poster**

European Database of Sport Science (EDSS)

Supported by SporTools GmbH

23981