Anthropometry and body composition in elite young basketball players according to their maturity status

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INTRODUCTION:
Basketball is a high-intensity team sport that requests both anaerobic ability (speed, vertical jump, explosive power, agility) and aerobic capacity [1]. Although power-quickness and strength appeared as great components in looking for future on-court performance, a study that analysed elite players involved in the NBA draft identified the length-size (set of anthropometric measures) component as the best predictor [2]. However, anthropometric features and somatotypes of players could vary with ageing and role [3, 4]. Examining maturational characteristics could help in selecting elite and non-elite basketball players [5]. So, coaches and trainers need to consider both chronological age and maturation in scouting and should compare adolescent players' progresses to appropriate profiles. Therefore, this study aimed to establish the anthropometric characteristics of adolescent basketball players and draw somatotype and bioimpedance vector (BIVA) profiles according to their maturation.
METHODS:
Sixty-six adolescent basketball players of an elite team (Vitus Segafredo® Bologna 1927) from U12 to U15 were enrolled in a cross-sectional study design. All players performed many anthropometric measures such as weight, height, sitting height, upper and lower limbs length, nine circumferences, three diameters, nine skinfold thickness (Lange skinfold caliper, Beta Technonoly Inc., Houston), and Bio-impedance analysis (BIA 101 BIVA®PRO, Akern, Italy). Maturity status was estimated according to the Mirwald equation [6] and the subjects were classified according to their maturity status. %Body Fat (%BF), Fat Mass (FM) and Fat-Free Mass (FFM) were estimated by Slaughter equation [7]. One-way ANOVA was used to detect anthropometric changes between players who were classified as early (E), on time (OT) or late (L). The significance level was set at P<0.05.
RESULTS:
Weight, Height, trunk length, thorax circumference, thigh circumference, total thigh area and thigh mass area showed significant differences between E, OT, and L in all the categories. Greater differences appeared in earlier players' FFM of U13, U14, and U15 than later and youths on time. Longer arm spam (U13: F=9.94, p<0.01; U14: F=10.35, p<0.01; U15: F=8.02, p<0.05) and upper limbs (U13: F=9.94, p<0.01; U14: F=10.44, p<0.01; U15: F=8.36, p<0.01) appeared in elder early players than in later and on time. Also, resistance was lower in U12 (641.4 ± 65.48), U13 (507.38 ± 54.01), and U15 (491.57 ± 45.45) early players than in later (677.75 ± 80.68; 648.07 ± 62.07; 570.65 ± 58.34), respectively.
CONCLUSION:
The findings of this study confirmed that several differences could appear in adolescents with similar chronological ages with different maturation statuses, despite they competed at the same level. Coaches may monitor youths' maturation to get the best results.
[1] Hoffman (2020), [2] Teramoto (2018), [3] Gryko (2018), [4] Cui, (2019), [5] Torres-Unda (2013), [6] Mirwald (2002), [7] Slaughter (1988)

Topic: **Training and Testing**

Presentation **Poster**