

Variation of agility performance controlling for size and maturation in adolescent basketball players

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Agility performance is important in many team sports including basketball. It is expected that adolescent athletes increase in body size and physical performance. Thus, this study examined the variation of agility performance of adolescent basketball players (n=59, 9-15 years) in relation to years before and after estimated age at peak height velocity (PHV) and variation in body size. Chronological age, estimated age at PHV; stature, body mass by anthropometry; and agility performance derived from the Line Drill Test were considered. Allometric modeling was used to partition variation in body size. Pearson correlations were used to estimate the associations between distance to PHV (maturity offset) and chronological age with absolute and scaled estimates of agility performance. Line Drill Test performance had a large negative association with age ($\beta = -1.28$, 95% CL -1.49 to -1.68; $r = -0.88$, 95% CL -0.77 to -0.46), note that lower time indicates better performance. Aligned to estimated age at PHV, between-players variation in the Line Drill Test performance was negative and large ($\beta = -1.02$, 95% CL -1.49 to -0.57; $r = -0.51$, 95% CL -0.68 to -0.28) through the interval of rapid growth of the adolescent spurt. Between-players variation was related to stature ($r = -0.37$, 95% CL -0.57 to -0.13) and body mass ($r = -0.30$, 95% CL -0.51 to -0.05). Allometric modeling to partition size can potentially reveal meaningful factors in the development of agility performance in adolescent basketball athletes.

Keywords: youth athletes, allometry, Line Drill Test, maturity offset, basketball.

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