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scores with being drafted, draft rank position, number of AFL games played and AFL success (40 or more games) was then analysed.

**RESULTS** Only 64% of the players, who were tested, were later drafted, with 83% making an AFL debut. Only 39% have since achieved 40 or more games (1999-2001 only considered). Overall, the results produced inconsistent and limited significant associations (of small magnitude) between the AFL Draft Camp test scores and the variables of being drafted, draft rank position, games played and AFL success.

**CONCLUSION** A number of test scores loaded strongly together (sprints and psychomotor tests) suggesting that some test items are measuring the same ability. Some tests recorded no significant association with any of the success variables for the period studied. In conclusion, the AFL Draft Camp test scores have only a small and practically insignificant relationship with being drafted and future success.

#### REFERENCES

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Pyne et al. (2005) *Journal of Science and Medicine in Sport* **8**, 321-332.

**KEY WORDS** Rookie testing, career success, Australian football, draft camp.

## O-089 Chronological versus skeletal bone age in schoolboy footballers

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**OBJECTIVE** The ability to accurately measure and confirm skeletal age in young soccer players continues to be a challenge for professionals involved in injury prevention. We are unaware of any longitudinal studies published on biological age. The aims of this study were to determine the accuracy of chronological age compared to skeletal bone age, to establish skeletal bone age trends over a five year period and to investigate the proportion of early and late developers.

**METHODS** Repeated measures, longitudinal study was carried out, with volunteer schoolboys from an English Premier League Football Academy. Left wrist x-rays were taken and bone age assessed with the TW3 and FELs method. ANOVA, with pairwise follow up was carried out on the results. The number of measures was 336 for FELs and 588 for TW3 across a five year period from 2001 to 2005. The age range was 8-16yrs, all boys. Ethical approval and full consent was obtained.

**RESULTS** ANOVA, with pairwise follow up, showed chronological age and FELs differed significantly compared to the TW3 across all years ( $p < 0.05$ ). ANOVA between the eight age groups found significant mean differences for TW3 ( $F=380$ ,  $p < 0.001$ ) and FELs ( $F=162$ ,  $p < 0.001$ ). The percentage of measurements above, within and below chronological age were 57%, 28% and 15% for FELs and 31%, 32% and 37% for TW3.

**CONCLUSION** Mean analysis of TW3 and FELs revealed that biological age varied significantly for all age groups across the study period. The use of mean comparison has its strengths statistically but has limited utility in determining early & late developers. TW3 and FELs showed that chronological age is inaccurate to the extent that two out of three cases differ significantly by 12 months from biological age.

**KEY WORDS** Injury prevention, skeletal maturity, soccer.

## O-090 Muscular strength and functional performances in elite and junior elite soccer players: What does preseason testing really teach us?

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**OBJECTIVE** Muscle strength and anaerobic power of lower extremities are neuromuscular variables that influence performance in many sports activities, including soccer. Despite frequent contradiction in the literature, it may be as-

sumed that muscle strength and balance play a key role in targeted acute muscle injuries. The purpose of the present study was to provide and compare preseason muscular strength and power profiles in professional and junior elite soccer players throughout the developmental years 15-21.

**METHODS** 57 elite and junior elite male soccer players were assigned to 3 groups: PRO, n=19; U-21, n=20 and U-17, n=18. Players benefited from knee flexors and extensors isokinetic testing consisting in concentric and eccentric exercises. A context of lingering muscle disorder was defined using statistically selected cutoffs. Functional performances were evaluated throughout squat jump and 10m sprint.

**RESULTS** PRO ran faster and jumped higher than the U-17 ( $p < 0.05$ ). FI and Q absolute PT are shown in Table 1. Individual isokinetic profile permitted the identification of 32/57 (56%) subjects presenting lower limbs muscular imbalance. 36/57 players were identified as having sustained a lower limbs previous major injury. Of these 36 players, 23 still showed significant muscular imbalance (64%).

**Table 1.** Quadriceps and hamstring peak torques (means  $\pm$  SD, in Nm) for all modes of contraction and angular velocities in professional (PRO, n=19), U-21 (n=20) and U-17 (n=18) soccer players.

	Quadriceps		Hamstrings		Hamstrings	
	C 60°.s <sup>-1</sup>	C 240°.s <sup>-1</sup>	C 60°.s <sup>-1</sup>	C 240°.s <sup>-1</sup>	E 30°.s <sup>-1</sup>	E 120°.s <sup>-1</sup>
<b>PRO</b>	224.2 <sup>a</sup> (38.8)	136.9 <sup>a</sup> (18.7)	136.8 (34.1)	100.8 (12.3)	200.1 (52.4)	197.6 (44.2)
<b>U-21</b>	231.7 <sup>a,b</sup> (30.4)	133.3 <sup>a,b</sup> (17.6)	147.1 (23.4)	102.2 (10.8)	194.2 (44.5)	196.8 (39.8)
<b>U-17</b>	194.7 (23.6)	120.3 <sup>a</sup> (15.8)	128.1 (18.8)	92.4 (15.3)	174.6 (36.7)	171.2 (41.6)

C=concentric; E=eccentric. a,b Values represent significant differences ( $P < .05$ ) between modalities of assessment for PRO, U-21, or U-17 groups.

**DISCUSSION** New trends in rational training could focus more on the imbalance risk and implement antagonist strengthening aimed at injury prevention. Such an intervention would not only benefit athletes recovering from injury, but also uninjured players. An interdisciplinary approach involving the trainers, physical coach, and medical staff is important to consider in implementing a prevention program.

**KEY WORDS** Muscular strength, vertical jump, sprint, imbalance, injury prevention.

## O-091 Physical characteristics and performances of Turkish American football players

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**OBJECTIVE** American football has been one of the most popular sports in North America within the past century and has recently received support and increased participation in Europe, as has been the case in Türkiye. Despite its development, there has been limited data about American football players attributes in Türkiye. The purpose of this study was to analyse the performance and physiological characteristics of a Turkish American football team, and to determine if body weight (BW), mean body fat (MBF), percent body fat (PBF), body mass index (BMI), flexibility, and playing experience (PE) were correlated with changes in performance in the following events: strength, power, speed, agility, and quickness.

**METHODS** Fifty-tree men American football players participated in the study. Body composition was evaluated by BIA. Strength was evaluated by max. rep. bench pres (BP) with 65kg. Speed and power were evaluated by 10(10m), 30-meter sprints(30m), vertical jump(VJ), broad jump(BJ) and phosphate recovery test(PR).Agility and quickness were evaluated short shuttle run(9.12m) and 3 Cone Drill tests(3c).

**RESULTS** Pearson product correlations were presented in Table 1. Increases in age were positively correlated with performance in BP and 9.12m. Increases in BF, MBF, PBF and BMI were positively correlated with increases in BP and PR performance, but negatively correlated with BJ, 10m and 30m performance. Increases in playing experience were positively correlated with performance BP and 9.12m (Table 1).

**DISCUSSION** These data provide a basic template for the performance characteristics of Turkish American football players and allow comparisons with other studies. Physical and performance properties of Turkish players has been determined as low, although, we have observed harmonious results to literature. Our results can be interpreted as performance of Turkish players will improve as long as training duration and PE are increased (due to correlation between age, P.E. and performance tests).