Relationship between anthropometric and physiological parameters in young soccer players of different ages

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Introduction
For many years researchers have tried to identify different factors that may be involved in performance of soccer. Physical, physiological and psychological factors may be involved (1). The objective of this study was to find the possible relationship between anthropometric and physiological characteristics that are involved in performance, of young soccer players.

Methods
In this study 245 soccer players from 5 teams of the Arenas Club de Getxo took part (aged 14-28).
Footballers underwent the following tests: 1) Anthropometric measurements: Six fatfolds (triceps, subscapular, abdominal, suprailiac, thigh and lower leg), perimeters (upper arm, thigh and lower leg) and diameters (elbow, wrist, knee and ankle). Body composition was also calculated. 2) 30 m dash: flat and with 10 cones. 3) A 5 minute Astrand’s test on a cycloergometer: to estimate absolute (l/min) and relative (ml/min/kg) maximal oxygen uptake. 4) Jump tests: squat jump, counter-movement jump and drop jump, using a Bosco’s platform.
All subjects signed a consent form, and the local ethics committee approved the project
A Pearson’s correlation coefficient and a partial correlation to control age were performed using a SPSS programme.

Results
-There was a positive correlation between muscle percentage and relative VO2 max (R= 0.405, p<0.001) which was age dependent.
-Speed and jump tests were correlated with lean body mass (R=-0.510, p<0.001), muscle percentage (R=-0.517, p<0.001) and also perimeters, specially with corrected perimeters (perimeter – fatfold measured in mm) ( corrected thigh: R=-0.559, p<0.001). These relationships were non age dependent.
-All physiological tests were negatively related to fat. Particularly, fat of the lower extremities was negatively correlated to speed (R=0.380, p<0.01), coordination (R=0.357, p<0.01) and jump tests (R=-0.347, p<0.01). This correlation did not change when age was controlled.

Discussion/Conclusion
1- In performance tests such as speed and agility, soccer players’ body muscle and perimeters are of importance. These parameters may be due to age and/or physical development of the players. It is known that young players with early maturation are more easily selected (4). Bigger young soccer players may be selected due to their physical characteristics. Factors other than physical parameters should be taken into account when selecting growing players.
2- The most important negative anthropometric factor is fat amount (2, 3). Specially, fat of lower extremities. Thus, we recommend that the six individual fatfolds are taken, instead of using formulae which sometimes do not take into account fat of the thigh and lower leg.

References

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