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Dribbling skill determinants in youth soccer players

Matteo Zago[1], Andrea G. Piovan[1], Daniela Ciprandi[1], Nicola Lovecchio[1], Massimo Giuriola[2], Virgilio F. Ferrario[1]

[1] Dept. Biomedical Sciences for Health, Università degli Studi di Milano, Italy
[2] Università degli Studi di Pavia, Italy

Dribbling and pass-kick are the most frequently performed techniques during match play. While an extensive knowledge is available about kicking biomechanics, little is known about dribbling kinematics. Given that dribbling performance can assist in the talent identification process [1], we aim at finding the biomechanics determinants of this technique.

A motion analysis system recorded the 3-D coordinates of 21 reflective markers placed upon the body of 10 youth sub-elite soccer players (12.6±0.37 years, 42.9±6.15 kg, 1.54 ± 0.07 m). Each participant performed 5 slalom-dribbling tests consisting of a 180° turning and four changes of direction. Since dribbling speed is a separating performance factor, players were split into two groups of 5 according to the execution time ("fast" and "slow"). Center of Mass (CoM) trajectory, Range of Motion (RoM), velocity and acceleration were computed along the three directions [2]. Mann-Whitney's non-parametric tests were used for comparisons.

Fast and slow players did not differ in terms of age, weight, body height, BMI, playing position and number of foot-ball contacts ($p>0.05$). While CoM average velocity and root mean square acceleration were similar in the two groups, CoM mediolateral and craniocaudal RoM were significantly lower ($p<0.05$) in faster players.

Skilled players took less time in completing the test because they were able to drive the ball while running through a shorter path. Their CoM vertical and lateral displacements were significantly lower, meaning that, at a higher skill level, dribbling technique is delivered in a more effective and economical way.

References

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Keywords

Football kinematics, body center of mass, technical skills, sport biomechanics.