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Cutting movement characteristics in reaction and nonreaction tasks in youth soccer players with functional ankle instability

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Background: Functional instability (FI) of the ankle joint may cause insufficient flexibility in movement such as change of direction. In this study, we investigated the differences in cutting movement in reaction and nonreaction conditions in youth soccer players with FI of the ankle.

Methods: Six high school soccer players (males) with FI of the ankle performed cutting movements (at 45 and 90 degrees) with a reaction and nonreaction task. All movements were recorded by four high-speed cameras. We analyzed the center of gravity (COG) and landing times and then compared these parameters in the two conditions using a t-test.

Results: A larger instability of COG was found in the reaction condition (24.4 ± 3.4 cm) than in the nonreaction condition (19.1 ± 3.5 cm) in the 45-degree task ($p < 0.05$). However, no significant difference was observed between the COG in the reaction and nonreaction conditions in the 90-degree task. Same tendency was observed for the landing times (0.33 ± 0.04 sec. vs. 0.41 ± 0.04 sec.).

Conclusion: These results suggest that FI of the ankle may influence movement during cutting tasks. However, this adverse effect on the cutting movement varies with direction (45 degrees > 90 degrees) and task condition (reaction > nonreaction).