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Specific Changes in Young Soccer Player's Fitness After Traditional Bilateral vs. Unilateral Combined Strength and Plyometric Training

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The aim of this study was to compare changes in young soccer player's fitness after traditional bilateral vs. unilateral combined plyometric and strength training. Male athletes were randomly divided in two groups; both received the same training, including strength training for knee extensors and flexors, in addition to horizontal plyometric training drills. The only difference between groups was the mode of drills technique: unilateral (UG; $n = 9$; age, 17.3 ± 1.1 years) vs. bilateral (TG; $n = 9$; age, 17.6 ± 0.5 years). One repetition maximum bilateral strength of knee muscle extensors (1RM_KE) and flexors (1RM_KF), change of direction ability (COD), horizontal and vertical jump ability with one (unilateral) and two (bilateral) legs, and limb symmetry index were measured before and after an 8-week in-season intervention period. Some regular soccer drills were replaced by combination of plyometric and strength training drills. Magnitude-based inference statistics were used for between-group and within-group comparisons. Beneficial effects ($p < 0.05$) in 1RM_KE, COD, and several test of jumping performance were found in both groups in comparison to pre-test values. The limb symmetry index was not affected in either group. The beneficial changes in 1RM_KE (8.1%; $p = 0.074$) and 1RM_KF (6.7%; $p = 0.004$), COD (3.1%; $p = 0.149$), and bilateral jump performance (from 2.7% [$p = 0.535$] to 10.5% [$p = 0.002$]) were *possible* to *most likely* beneficial in the TG than in the UG. However, unilateral jump performance measures achieved *likely* to *most likely* beneficial changes in the UG compared to the TG (from 4.5% [$p = 0.090$] to 8.6% [$p = 0.018$]). The improvements in jumping ability were specific to the type of jump performed, with greater improvements in unilateral jump performance in the UG and bilateral jump performance in the TG. Therefore, bilateral strength and plyometric training should be complemented with unilateral drills, in order to maximize adaptations.

Keywords: team-sports, football, strength, change of direction ability, young athletes