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EXTENDED ABSTRACT

Acute Effects of a Plyometric Training Session on Speed and Balance Among Futsal Players

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I. Introduction

Most sports science studies focus on long-term training, overlooking the acute effects of plyometric exercises [1]. This study investigates the immediate impact of a single plyometric training session on speed and balance among futsal players, addressing critical short-term performance dynamics that remain underexplored [2].

II. Methods

Twenty futsal players (aged 18–25) completed a 20-minute plyometric session including countermovement jump (CMJ), side jump (SJ), and double-leg bounding jump (DBLJ). Speed and balance were assessed using 20-meter sprint and single-leg stance tests, respectively, conducted before and five minutes after the session. Standard tools included cones, futsal balls, and stopwatches [5].

III. Results and Discussion

A. Speed

Plyometric training resulted in a slight, non-significant improvement in 20-meter sprint times (pre: 3.7025s; post: 3.5185s; $p = 0.063$). While most players improved, fatigue was noted [4]. However, the change did not reach statistical significance, suggesting a single session may not sufficiently influence speed in trained futsal players [3].

TABLE I
Paired Samples Statistics

Pair 1	Pre-test	Post-test
Mean	3.7025	3.5185
N	20	20
Std. Deviation	0.55872	0.44786
Std. Error Mean	0.12493	0.10015

($p = 0.063$)

B. Balance

Balance scores improved from 52.68 to 61.36, showing a strong positive correlation ($r = 0.670$, $p = 0.001$). However, the improvement was not statistically significant ($p = 0.122$). Most players showed increased balance despite mild fatigue, indicating that acute plyometric training may promote short-term balance trends without producing immediate, meaningful enhancement [5].

TABLE II
Paired Samples Statistics

Pair 1	Pre-test	Post-test
Mean	52.6805	61.3600
N	20	20
Std. Deviation	30.02940	28.92303
Std. Error Mean	6.71478	6.46739

($p = 0.122$)

IV. Conclusions

A single plyometric training session showed non-significant yet positive trends in speed and balance among futsal players. While improvements were observed, they were not statistically significant, indicating that acute plyometric exposure may not be sufficient for immediate performance gains but holds promise for short-term physical responsiveness.

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