

Acute effects of isoinertial resistance application on sprint, vertical and horizontal jump performance

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Abstract

Purpose: The purpose of this study was to investigate of the acute effects of isoinertial resistance application on sprint, vertical and horizontal jump performance.

Material: Volunteered 32 male students were divided into randomized experimental group and control group. Before and after 4-repetition maximal back squat with (for **experimental group**) or without isoinertial resistance application (for **control group**), 30 m sprint, vertical squat and countermovement jump tests with both legs, dominant leg, and non-dominant leg, **standing broad jump** and standing broad countermovement jump tests with **both legs** were assessed. Wilcoxon t test for pre- and post-test differences within the group, and Mann Whitney U test for pre- and post-test differences between the groups were used.

Results: There were no significant differences within the group and between the groups for 30m **both legs** sprint parameters except pre-test mean stride length between the groups ($Z=-2.27$; $p<0.02$). **Control group** had a significant difference between pre- and post-test **dominant leg** vertical force ($Z=-2.07$; $p<0.05$). There were significant group differences in pre-test **non-dominant leg countermovement jump** ($Z=-2.13$; $p<0.05$), pre- and post-test **non-dominant leg stride length** ($Z=-1.99$ and $Z=-2.28$; $p<0.05$, respectively).

Conclusions: As a result of the effect of acute isoinertial resistance application to **stride length** especially to **non-dominant stride length** it is concluded that long-term isoinertial resistance training can support sprint performance with tolerating stride length imbalance between **dominant leg** and **non-dominant leg**.

Keywords: Isoinertial resistance, stride length, vertical jump, horizontal jump, dominant leg, non-dominant leg