Official Title of The Study

Comparing Low-, Moderate-, and High-Intensity TRX Suspension Training in Male Adolescent Basketball Players

Document Type

Study Protocol

This document corresponds to the ClinicalTrials.gov registration record for this study.

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DETAILED TRIAL PROTOCOL

1. Structured Abstract

Background and Rationale

Suspension training using the Total Resistance Exercise (TRX) system has become an increasingly popular training modality in youth sports because it simultaneously challenges muscular strength, core stability, balance, and neuromuscular coordination. Despite its widespread application, limited evidence exists regarding the comparative effects of different TRX training intensities on sport-specific performance outcomes in adolescent basketball players.

Objectives and Hypotheses

The primary objective of this study is to compare the effects of low-, moderate-, and high-intensity TRX suspension training on agility performance measured using the Illinois Agility Test under dual-task conditions.

Secondary objectives are to evaluate changes in static balance, push-up performance, perceived exertion, and dual-task performance following the intervention.

It is hypothesized that higher-intensity TRX training will produce greater improvements in agility and muscular performance than lower-intensity protocols.

Study Design

Randomized, parallel-group interventional trial with three experimental groups (LI-TRX, MI-TRX, and HI-TRX). Participants are randomly allocated to one of the intervention groups and complete the assigned TRX training program throughout the intervention period.

Participants and Setting

Adolescent male basketball players aged 15–17 years are recruited from organized basketball teams. Training sessions and performance assessments are conducted under standardized indoor sports hall conditions.

Interventions

Participants complete one of three TRX suspension training protocols representing low-, moderate-, or high-intensity exercise. Training intensity differs according to the predefined exercise volume and workload while maintaining similar exercise selection across groups.

Primary Outcome

Illinois Agility Test performance under dual-task conditions.

Secondary Outcomes

- Static balance performance
- Push-up performance
- Rating of Perceived Exertion (RPE)
- Dual-task performance

Sample Size

Sample size was determined using G*Power software based on repeated-measures analysis of variance with an alpha level of 0.05 and statistical power of 80%.

Randomization and Blinding

Participants were randomly allocated to one of three intervention groups. Because of the nature of the exercise intervention, participant and investigator blinding was not feasible.

Statistical Analysis

Data will be analyzed using repeated-measures ANOVA to examine within-group and between-group differences. Appropriate post hoc analyses will be performed when significant effects are identified. Statistical significance is set at $p < 0.05$.