

## Study Protocol

**Title:** The Effect of Functional Training on Speed, Balance, and Functional Capacity in Adolescent Table Tennis Players: A Randomized Controlled Trial

Unique Protocol ID: E-77192459-050.99-381871

NCT Number: Not yet assigned

Document Type: Study Protocol

Date: [14.10.2024]

Sponsor: Karabük University

Principal Investigator: Dr. Aliriza Han Civan

**Note:** This document contains information related to the above-mentioned clinical study. No participant names or identifying information are included.

**Study Title:** The Effect of Functional Training on Speed, Balance, and Functional Capacity in Adolescent Table Tennis Players

**Objectives:** Examine the effects of an eight-week functional training program compared with conventional and routine training on physical performance parameters (speed, balance, agility, flexibility, vertical jump, functional movement quality) in adolescent table tennis players.

Participants: 30 adolescent table tennis athletes, aged 12–16, training  $\geq 3$  sessions per week for  $\geq 3$  years.

### Interventions:

**Functional Training Group (Experimental):** Eight-week functional training program 3x/week + routine table tennis training, including exercises targeting flexibility, agility, speed, balance, and movement quality.

**Conventional Training Group (Active Comparator):** Standard table tennis training 3x/week for eight weeks.

**Control Group (No Intervention):** Routine table tennis training without additional exercises.

**Outcome Measures:** Flexibility, agility, speed, vertical jump, functional movement scan (FMS), static-dynamic balance

**Analysis:** Repeated measures ANOVA; Bonferroni corrected post-hoc tests; significance set at  $p < 0.05$ ; effect sizes reported using Cohen's  $d$  and  $\eta^2$ .

**Ethics:** Approved by Karabük University Non-Interventional Clinical Research Ethics Committee (Decision No: 2024/1955, Approval Number: E-77192459-050.99-381871, 14.10.2024)

**Confidentiality:** All participant data are anonymized

## Statistical Analysis Plan

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Software: SPSS / R

Primary Outcomes: Agility, balance, speed, vertical jump, FMS scores

Secondary Outcomes: Functional movement quality, static-dynamic balance

Analysis: Repeated measures ANOVA; Bonferroni corrected post-hoc tests for group  $\times$  time interactions

Significance Level:  $p < 0.05$

Analysis Approach: Intention-to-treat

Effect Sizes: Cohen's d and  $\eta^2$  reported for significant differences