

STUDY PROTOCOL

Official Study Title: Effects of Powerlifting-Based Training in Athletes

ClinicalTrials.gov Identifier: NCT Not Yet Assigned

Unique Protocol ID: E-31679287-663.05-523405

Document Type: Study Protocol

Document Date: 09 September 2025

Sponsor / Institution: Dicle University

1. Background

Powerlifting-based resistance training is widely used to improve muscular strength, neuromuscular adaptations, and athletic performance. In recent years, interest has increased in understanding the physiological responses associated with structured strength training programs, particularly their effects on hormonal, metabolic, and lipid profile parameters. Hormonal responses such as testosterone, cortisol, growth hormone, and thyroid hormones play a critical role in adaptation to resistance exercise. Additionally, metabolic and lipid profile markers provide valuable information regarding cardiometabolic health and training-induced adaptations. However, evidence regarding short-term powerlifting-based interventions in trained athletes remains limited. This study aims to investigate the physiological effects of a structured powerlifting-based training program in male athletes using a randomized controlled design.

2. Objectives

Primary Objective

To evaluate the effects of a powerlifting-based training program on hormonal parameters in athletes.

Secondary Objectives

To examine changes in metabolic markers following the intervention

To assess alterations in lipid profile parameters

To compare outcomes between intervention and control groups

3. Study Design

This study is designed as a randomized controlled trial with a parallel-group design.

Study Type: Interventional

Allocation: Randomized

Masking: None (Open Label)

Number of Arms: 2

Study Duration: 8 weeks

Study Setting: University-based sports science laboratories

4. Participants

Inclusion Criteria:

Male athletes aged 18–24 years

Minimum of two years of regular sports participation

Actively training in basketball

Voluntary participation with written informed consent

Exclusion Criteria:

Musculoskeletal injury or surgery within the last 6 months

Presence of chronic disease or metabolic disorder

Use of hormonal or performance-enhancing substances

Participation in another structured training program

5. Interventions**Arm 1: Powerlifting-Based Training Group**

Participants will perform a structured powerlifting-based training program in addition to their regular basketball training.

Training characteristics:

Frequency: 3 sessions per week

Duration: 8 weeks

Session length: ~60 minutes

Exercises: Squat, bench press, deadlift

Intensity: Progressive loading

Additional components: accessory exercises and core training

Supervision: All sessions supervised by qualified staff

Arm 2: Control Group

Participants will continue their usual basketball training routines without any additional strength or powerlifting-based exercises.

6. Outcome Measures**Primary Outcomes**

Measured at baseline and after 8 weeks:

Serum total testosterone (ng/dL)

Serum cortisol (µg/dL)

Serum growth hormone (ng/mL)

Serum thyroid-stimulating hormone (µIU/mL)

Serum triiodothyronine (ng/dL)

Serum thyroxine (µg/dL)

(All measured using ELISA methods)

Secondary Outcomes

Fasting insulin ($\mu\text{IU/mL}$)

Fasting blood glucose (mg/dL)

Total cholesterol (mg/dL)

LDL cholesterol (mg/dL)

HDL cholesterol (mg/dL)

Triglycerides (mg/dL)

(All analyzed using automated biochemical analyzers)

7. Statistical Analysis

Data will be analyzed using appropriate statistical software.

Descriptive statistics will be calculated for all variables.

Normality will be assessed using the Shapiro–Wilk test.

Between-group comparisons will be performed using independent samples t-tests or non-parametric equivalents.

Within-group comparisons will be performed using paired t-tests.

Statistical significance will be set at $p < 0.05$.

8. Ethical Considerations

This study has been approved by the Ethics Committee of Dicle University (Approval No: E-31679287-663.05-523405).

All participants will provide written informed consent prior to participation. The study will be conducted in accordance with the Declaration of Helsinki.

9. Data Sharing Statement

Individual participant data will not be shared due to ethical restrictions and confidentiality concerns.

10. Contact Information

Principal Investigator:

Ramazan Erdoğan, PhD

Munzur University

Email: ramaznerdogan@hotmail.com

Phone: +90 536 290 29 79