

Clinical Trial Protocol

Iranian Registry of Clinical Trials

27 Jul 2026

The Effects of Eight Weeks of Mius Muscle Training on Upper-Limb Muscle Activity Patterns and Handgrip Strength in Pianists: A Quasi-Experimental Trial with Proximal-Distal Synergy Analysis"

Protocol summary

Study aim

Impact of 8-Week Mius Muscle Training on Upper-Limb Surface EMG and Grip Strength in Pianists

Design

Two arm parallel group outcome assessment

Settings and conduct

The study was conducted under the supervision of the University of Isfahan.

Participants/Inclusion and exclusion criteria

At least six months of continuous piano playing experience. Ability to perform staccato technique. No upper-limb musculoskeletal injury in the past six months
Exclusion criteria: Absence from more than two training sessions. Acute injury occurring during the study.
Voluntary withdrawal from participation.

Intervention groups

مطمنناً — نسخه کوتاه‌تر و فشرده‌تر برای بخش روش‌ها
The eight-week Mius Muscle program comprised two supervised 90-minute group sessions per week. Week 1 introduced upper-limb anatomy and weight transfer, emphasizing body awareness and spinal alignment. Week 2 targeted shoulder-girdle release via rotary movements, elevation, and scapular circles. Week 3 addressed wrist and finger release using three-level scapulo-thoracic exercises and movements to improve weight transfer. Week 4 emphasized energy control with fine motor drills to enhance neuromuscular coordination. Week 5 focused on spasm reduction and energy transmission. Week 6 integrated exercises from weeks 2-5, emphasizing wrist and MCP mobility. Week 7 reinforced focused attention to boost neuromuscular coordination. Week 8 consolidated gains with exercises to relieve mental and muscular fatigue. می‌خواهید باز هم خلاصه‌تر شود تا مناسب بخش یک جمله‌ای یا تیتراژ روش‌ها شود؟

Main outcome variables

flexor digitorum superficialis , extensor digitorum communis, upper trapezius , middle deltoid

General information

Reason for update

the reason of the update was to correct the English scientific title (exercise name).

Acronym

IRCT registration information

IRCT registration number: **IRCT20220905055890N1**

Registration date: **2026-07-04, 1405/04/13**

Registration timing: **prospective**

Last update: **2026-07-08, 1405/04/17**

Update count: **1**

Registration date

2026-07-04, 1405/04/13

Registrant information

Name

Volga Hovsepian

Name of organization / entity

University of Isfahan

Country

Iran (Islamic Republic of)

Phone

+98 31 3626 1478

Email address

hovsepian.v@yahoo.com

Recruitment status

Not yet recruiting

Funding source

Expected recruitment start date

2026-08-30, 1405/06/08

Expected recruitment end date

2026-11-26, 1405/09/05

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date
empty

Scientific title
The Effects of Eight Weeks of Mius Muscle Training on Upper-Limb Muscle Activity Patterns and Handgrip Strength in Pianists: A Quasi-Experimental Trial with Proximal-Distal Synergy Analysis"

Public title
Effect of MyoMuscle Training on Upper-Body Muscle Strength

Purpose
Prevention

Inclusion/Exclusion criteria
Inclusion criteria:
At least six months of continuous piano playing experience staccato technique no upper-limb musculoskeletal injury in the past six months (confirmed by the Nordic Musculoskeletal Questionnaire) no chronic neurological or musculoskeletal disease
Exclusion criteria:

Age
From **12 years** old to **40 years** old

Gender
Female

Phase
N/A

Groups that have been masked
No information

Sample size
Target sample size: **28**

Randomization (investigator's opinion)
Not randomized

Randomization description

Blinding (investigator's opinion)
Not blinded

Blinding description

Placebo
Not used

Assignment
Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics committee of University of Isfahan
Street address
Hezar jerib
City
Isfahan
Province
Isfahan

Postal code
8174673441
Approval date
2025-03-01, 1403/12/11
Ethics committee reference number
IR.UI.REC.1403.166

Health conditions studied

1

Description of health condition studied
upper body muscles damage
ICD-10 code
ICD-10 code description

Primary outcomes

1

Description
strength flexor digitorum superficialis
Timepoint
at baseline and 8 weeks after intervention
Method of measurement
Electromyography

2

Description
extensor digitorum communis
Timepoint
at baseline and 8 weeks after intervention
Method of measurement
Electromyography

3

Description
strength of middle deltoid
Timepoint
at baseline and 8 weeks after intervention
Method of measurement
Electromyography

4

Description
strength of upper trapezius
Timepoint
at baseline and 8 weeks after intervention
Method of measurement
Electromyography

5

Description
hand grip strength
Timepoint
at baseline and 8 weeks after intervention
Method of measurement
hand grip dynamometer

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: Mius muscle training two 90 minutes session per week for 8 weeks was done.

Category

Prevention

2

Description

Control group: there were no exercise training intervention

Category

Prevention

Recruitment centers

1

Recruitment center

Name of recruitment center

آکادمی موسیقی اوج اصفهان ایران

Full name of responsible person

Mehrnaz Atashpanjeh

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Esfahan University of Medical Sciences

Full name of responsible person

Shahram Lenjannejadian

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sport science faculty, university of Isfahan

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Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?

No

Title of funding source

university of isfahan

Proportion provided by this source

100

Public or private sector

Private

Domestic or foreign origin

Domestic

Category of foreign source of funding

empty

Country of origin

Type of organization providing the funding

Academic

Person responsible for general inquiries

Contact

Name of organization / entity

university of Isfahan

Full name of responsible person

Volga Hovsepian

Position

Consultant

Latest degree

Ph.D.

Other areas of specialty/work

exercise physiology

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Associate professor

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Other areas of specialty/work

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Person responsible for updating data**Contact****Name of organization / entity**

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Other areas of specialty/work

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Sharing plan**Deidentified Individual Participant Data Set (IPD)**

No - There is not a plan to make this available

Justification/reason for indecision/not sharing IPD

There is no additional information available.

Study Protocol

Yes - There is a plan to make this available

Statistical Analysis Plan

Yes - There is a plan to make this available

Informed Consent Form

Yes - There is a plan to make this available

Clinical Study Report

Yes - There is a plan to make this available

Analytic Code

Not applicable

Data Dictionary

Not applicable

Title and more details about the data/document

All data may be shared after de-identification of individuals.

When the data will become available and for how long

Access period begins 6 months after publication of results.

To whom data/document is available

Data will be available only to researchers affiliated with academic or scientific institutions.

Under which criteria data/document could be used

Documentation will be made available for scientific research studies

From where data/document is obtainable

Shahram Lenjannejadian

What processes are involved for a request to access data/document

Requests should be submitted via email.

Comments