Clinical Trial Protocol
Iranian Registry of Clinical Trials

07 Nov 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
مطمئناً — 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 تیتر 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

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Iran (Islamic Republic of)

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Recruitment status
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

Isfehan

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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s.lenjannejadian@spo.ui.ac.ir
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
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Volga Hovsepian
Position
Consultant
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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