

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

12 Oct 2026

### Acute, chronic, and detraining effects of dynamic stretching and tissue flossing on muscle function, sprint performance, balance, and proprioception, in soccer players with hamstring shortness: a three-arm parallel randomized controlled trial protocol

#### Protocol summary

##### Study aim

To investigate the acute, chronic, and detraining effects of dynamic stretching and tissue flossing on muscle function, sprint performance, balance, and proprioception in soccer players with hamstring shortness

##### Design

a three-arm parallel randomized controlled trial with a computer-generated random sequence

##### Settings and conduct

This study will be conducted in sports sciences in Qazvin, with participants randomly assigned to one of three groups: dynamic stretching, tissue flossing, or control. Assessments will occur in four phases: pre-test, immediately after the first session, after six weeks of training, and after three weeks of detraining.

##### Participants/Inclusion and exclusion criteria

Inclusion Criteria: (1) Male amateur soccer players (who play in local leagues without a financial contract) aged 14 to 17 years; (2) Minimum of 3 years of continuous soccer participation within organized soccer clubs; (3) Clinically diagnosed with hamstring shortness, defined as a score of more than 33 degrees on the active knee extension test; (4) No prohibition on using dynamic stretching or tissue flossing, with the approval of a medical professional. Exclusion Criteria: (1) Lower limb injuries during the study; (2) Inability to commit to the full study duration and prescribed protocols, including more than two consecutive or three total absences.

##### Intervention groups

Three groups will participate: the flossing group, which uses a floss band with active movements; the dynamic stretching group; and the control group. All sessions will begin with a standardized warm-up.

##### Main outcome variables

Knee extension range of motion Hip flexion range of

motion Hamstring and quadriceps strength Muscle power  
Sprint performance Dynamic balance Knee joint  
repositioning error

#### General information

##### Reason for update

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20251202068197N1**

Registration date: **2025-12-05, 1404/09/14**

Registration timing: **prospective**

Last update: **2025-12-05, 1404/09/14**

Update count: **0**

##### Registration date

2025-12-05, 1404/09/14

##### Registrant information

##### Name

Mohammad Alghosi

##### Name of organization / entity

The University of Guilan

##### Country

Iran (Islamic Republic of)

##### Phone

+98 13 3369 0274

##### Email address

mohammadalghosi@phd.guilan.ac.ir

##### Recruitment status

**Recruitment complete**

##### Funding source

##### Expected recruitment start date

2025-12-10, 1404/09/19

##### Expected recruitment end date

2025-12-30, 1404/10/09

**Actual recruitment start date**  
empty

**Actual recruitment end date**  
empty

**Trial completion date**  
empty

**Scientific title**  
Acute, chronic, and detraining effects of dynamic stretching and tissue flossing on muscle function, sprint performance, balance, and proprioception, in soccer players with hamstring shortness: a three-arm parallel randomized controlled trial protocol

**Public title**  
Effects of dynamic stretching and tissue flossing on muscle function, sprint performance, balance, and proprioception in soccer players with hamstring shortness

**Purpose**  
Supportive

**Inclusion/Exclusion criteria**  
**Inclusion criteria:**  
Male amateur soccer players (who play in local leagues without a financial contract) aged 14 to 17 years  
Minimum of 3 years of continuous soccer participation within organized soccer clubs  
Clinically diagnosed with hamstring shortness, defined as a score of more than 33 degrees on the active knee extension test  
No prohibition on using dynamic stretching or tissue flossing, with the approval of a medical professional  
**Exclusion criteria:**  
Lower limb injuries during the study  
Inability to commit to the full study duration and prescribed protocols, including more than two consecutive or three total absences

**Age**  
From **14 years** old to **17 years** old

**Gender**  
Male

**Phase**  
N/A

**Groups that have been masked**  
No information

**Sample size**  
Target sample size: **57**

**Randomization (investigator's opinion)**  
Randomized

**Randomization description**  
Eligible participants will be randomly assigned to one of three groups, including a dynamic stretching group, a tissue flossing group, or a control group, using a computer-generated randomization sequence from <https://www.randomizer.org>. The randomization list is securely stored on a password-protected computer, accessible only to the researcher responsible for participant allocation. Recruitment staff and others will not have access to this information.

**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

Research Ethics Committees of University of Guilan

##### Street address

5th Kilometer of Persian Gulf Highway, Rasht, Guilan Province, Iran

##### City

Rasht

##### Province

Guilan

##### Postal code

۴۱۹۹۶۱۳۷۷۶

#### Approval date

2025-12-01, 1404/09/10

#### Ethics committee reference number

IR.GUILAN.REC.1404.149

## Health conditions studied

### 1

#### Description of health condition studied

Limited knee range of motion

#### ICD-10 code

M25.6

#### ICD-10 code description

Stiffness of joint, not elsewhere classified

## Primary outcomes

### 1

#### Description

In the current study, hamstring shortness, knee range of motion, hamstring flexibility, muscle strength, muscle power, sprint performance, dynamic balance, and joint position sense are being investigated.

#### Timepoint

Baseline, Acute effect measurement (after the first session), Chronic effect measurement (after 6 weeks of training), and Follow-up measurement (after 3 weeks of detraining)

#### Method of measurement

The following outcome measures will be assessed using the corresponding tests: hamstring shortness and knee range of motion via the active knee extension test; hamstring flexibility via the active straight leg raise test; muscle strength (isometric and eccentric hamstring,

isometric quadriceps) using a handheld dynamometer; lower-body muscle power via the countermovement jump test; sprint performance using the MySprint app protocol; dynamic balance via the Y-Balance test; and knee joint proprioception via a joint position sense test.

## Secondary outcomes

empty

## Intervention groups

### 1

#### Description

Intervention group: Participants assigned to the tissue flossing group will undergo floss band application, which will be anchored just above the distal third of the thigh between the anterior superior iliac spine and the patella. The band will be applied in a spiral pattern from distal to proximal, maintaining 50% tension and 50% overlap between layers, and will remain continuously applied throughout each session without removal between sets. The Tissue Flossing Group will follow a 6-week progressive protocol. Weeks 1–2 involved 2 sets of 15 repetitions of two exercises (Active leg swings and Active standing toe touches), which will be performed three times per week. Weeks 3–4 progressed to 3 sets of 20 repetitions of Active leg swings and Dynamic standing hamstring stretches, also three times weekly. Weeks 5–6 involved 4 sets of 20 repetitions of Active leg swings and standing hamstring scoop exercises, which will be performed four times per week.

#### Category

Rehabilitation

### 2

#### Description

Intervention group: The Dynamic Stretching Group will complete a separate 6-week progressive protocol. Weeks 1–2 will involve 3 sets of 15 repetitions of Active leg swings and Lunges with eccentric hamstring windmills, to be performed three times per week at a controlled end-range. Weeks 3–4 will increase to 4 sets of 20 repetitions with a slightly increased range of motion. Weeks 5–6 will involve 5 sets of 20 repetitions, with further increased range and speed, to be performed four times per week. For both groups, exercises will be performed at a moderate tempo, 3 seconds per repetition (2-second eccentric, 1-second concentric), synchronized to a metronome at 60 BPM, with a 20-second rest interval between sets. All protocols will be conducted in the morning (10–12 AM) during the pre-competition active phase, with exercises performed bilaterally.

#### Category

Rehabilitation

### 3

#### Description

Control group: The control group received no other intervention, except for the same warm-up as the other

groups.

#### Category

Other

## Recruitment centers

### 1

#### Recruitment center

##### Name of recruitment center

Faculty of Physical Education and Sports Sciences, University of Guilan Complex, Persian Gulf Highway

##### Full name of responsible person

Mohammad Alghosi

##### Street address

Faculty of Physical Education and Sports Persian Gulf Highway (Km. 5 of Rasht-Qazvin Road), Rasht, Iran.

##### City

Rasht

##### Province

Guilan

##### Postal code

۴۱۹۹۶۱۳۷۷۶

##### Phone

+98 933 611 7047

##### Email

mohammadalghosi9@gmail.com

## Sponsors / Funding sources

### 1

#### Sponsor

##### Name of organization / entity

University of Guilan

##### Full name of responsible person

Hassan Daneshmandi

##### Street address

Faculty of Physical Education and Sports Sciences, University of Guilan Complex, Persian Gulf Highway (Km. 5 of Rasht-Qazvin Road), Rasht, Iran.

##### City

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##### Province

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##### Postal code

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##### Phone

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mohammadalghosi9@gmail.com

#### Grant name

#### Grant code / Reference number

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

No

#### Title of funding source

University of Guilan

#### Proportion provided by this source

1

#### 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**

Persons

**Person responsible for general inquiries****Contact****Name of organization / entity**

University of Guilan

**Full name of responsible person**

Hassan Daneshmandi

**Position**

Professor

**Latest degree**

Ph.D.

**Other areas of specialty/work**

Sport Science

**Street address**

Faculty of Physical Education and Sports Sciences,  
University of Guilan Complex, Persian Gulf Highway  
(Km. 5 of Rasht-Qazvin Road), Rasht, Iran.

**City**

Rasht

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**Email**

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

University of Guilan

**Full name of responsible person**

Mohammad Alghosi

**Position**

PhD student

**Latest degree**

Master

**Other areas of specialty/work**

Sport Science

**Street address**

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**Email**

mohammadalghosi9@gmail.com

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

Yes - There is a plan to make this available

**Study Protocol**

Yes - There is a plan to make this available

**Statistical Analysis Plan**

Undecided - It is not yet known if there will be 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**

Undecided - It is not yet known if there will be a plan to make this available

**Data Dictionary**

Not applicable

**Title and more details about the data/document**

Some of the images used in the study will be corrupted.

**When the data will become available and for how long**

From 01/03/2026 to 6 months later

**To whom data/document is available**

Researcher

**Under which criteria data/document could be used**

An official email should be used to contact the corresponding author.

**From where data/document is obtainable**

corresponding author.

**What processes are involved for a request to access****Person responsible for scientific inquiries****Contact****Name of organization / entity**

University of Guilan

**Full name of responsible person**

Mohammad Alghosi

**Position**

PhD student

**Latest degree**

Master

**Other areas of specialty/work**

Sport Science

**Street address**

Faculty of Physical Education and Sports Sciences,  
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**Phone**

+98 933 611 7047

**data/document**

official email  
**Comments**