Clinical Trial Protocol
Iranian Registry of Clinical Trials

10 Jun 2026

The effect of Mulligan`s SNAG with conventional Physical Therapy Treatment on Pain, Disability, Kinematic and Coordination Between Lumbar Spine and Hip Joint during sit to stand and vice versa in People with Lumbar Discopathy.

Protocol summary

Study aim
Investigating the Effect of Mulligan`s Sustained Natural Apophyseal Glide (SNAG) Technique Combined with Conventional Physiotherapy on Pain, Disability, Kinematics, and Lumbo-Pelvic Coordination During Sit-to-Stand and Stand-to-Sit Movements in Individuals with Lumbar Disc Herniation

Design
A single-blind randomized controlled clinical trial with stratified random sampling and parallel group design.

Settings and conduct
This study will be conducted at the School of Rehabilitation Sciences, Eligible participants who provide informed consent will be randomly assigned to two groups.Patients will be blinded to group allocation. Pre- and post-intervention assessments will be conducted by a blinded evaluator not involved in treatment delivery.

Participants/Inclusion and exclusion criteria
Inclusion criteria: Pain intensity between 3 and 7 on the Visual Analog Scale MRI or CT scan findings indicating disc protrusion Patients most have a directional preference for lumbar spine extension A positive result in at least one of the SLR or SLUMP tests The duration of pain and related symptoms between 6 weeks and 6 month Exclusion criteria: Presence of neurological signs sdeficits Spinal stenosis Spinal tumor Spondylolisthesis Serious pathologies such as malignancy, cauda equina syndrom Pregnancy History of corticostroid injection History of spinal injury Presence of significant hamstring tightness

Intervention groups
Control Group: Received standard physiotherapy including: Superficial heat therapy Superficial electrical stimulation Exercises and general advices Home exercise program Mulligan Treatment Group: Received standard physiotherapy combined with the SNAG technique

Main outcome variables
Pain, Disability, Range of motion(ROM), Coordination، Lumbopelvic rhythm,

General information

Reason for update

Acronym
SNAG

IRCT registration information
IRCT registration number: **IRCT20250531065987N1**
Registration date: **2025-08-01, 1404/05/10**
Registration timing: **prospective**

Last update: **2025-08-01, 1404/05/10**
Update count: **0**

Registration date
2025-08-01, 1404/05/10

Registrant information

Name
Elham Jannati

Name of organization / entity

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Iran (Islamic Republic of)

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2025-08-22, 1404/05/31

Expected recruitment end date

2025-10-22, 1404/07/30

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effect of Mulligan`s SNAG with conventional Physical Therapy Treatment on Pain, Disability, Kinematic and Coordination Between Lumbar Spine and Hip Joint during sit to stand and vice versa in People with Lumbar Discopathy.

Public title

The effect of Mulligan technique with conventional physical therapy on the treatment of patients with lumbar disc herniation.

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Pain intensity between 3 and 7 on the Visual Analog Scale (between 3 and 7 inclusive) MRI or CT scan findings indicating disc protrusion at L4-L5-S1 levels Patients most have a directional preference for lumbar spine extension Low back pain that is aggravated by prolonged sitting or repeated flexion of the lumbar spine A positive result in at least one of the SLR or SLUMP tests The duration of pain and related symptoms between 6 weeks and 6 months

Exclusion criteria:

Presence of neurological signs such as altred reflexes, dermatomal sensory deficits, or myotomal weakness A pathoanatomic cause of radiculopathy other than disc herniation(on MRI) Spinal stenosis Spinal tumor Spondylolisthesis Serious pathologies such as malignancy, cauda equina syndrom, and foot drop Pregnancy or childbirth within the previous 6 month History of corticostroid injection within the last 6 weeks History of spinal injury Presence of significant hamstring tightness

Age

From **25 years** old to **50 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Participant
- Outcome assessor
- Data analyser

Sample size

Target sample size: **30**

Randomization (investigator's opinion)

Randomized

Randomization description

In this study, to maintain balance between the two groups regarding the influential variable, stratified block randomization will be used. Participants will first be stratified based on gender, and then randomly assigned to two equal-sized groups: the intervention group (receiving the Mulligan mobilization technique along with conventional physiotherapy) and the control group (receiving conventional physiotherapy alone). The advantage of this method is that it not only ensures an equal number of participants in both groups, but also guarantees an even distribution of the stratifying variable across the groups. The block size will be 4, with two participants in each block allocated to the intervention group and two to the control group. Allocation concealment will be ensured using sealed opaque envelopes. Each envelope will be labeled with a number corresponding to the total number of blocks. A person who is blinded to the study protocol will use a computer-generated random number sequence to select an envelope. The number on the envelope will be matched, the envelope opened, and the predefined block inside will determine the group allocation for four participants. To minimize selection bias, the randomization procedure will be conducted by an independent person who will not be involved in any other aspect of the study.

Blinding (investigator's opinion)

Single blinded

Blinding description

Participants in the study will be blinded to their group allocation. The researcher will organize the treatment sessions in such a way that the two groups will not have any contact with each other during the intervention period. All patient assessments, including pain intensity, disability level, and kinematic evaluations, will be conducted by an independent assessor who is not involved in the treatment of participants.

Placebo

Used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics Committee of Iran University of Medical Sciences

Street address

Deputy of Research and Technology, Central Headquarters, Iran University of Medical Sciences (IUMS), Hemmat Expressway, next to Milad Tower, Tehran, Iran

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Province

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Postal code

Approval date
2025-05-25, 1404/03/04
Ethics committee reference number
IR.IUMS.REC.1404.262

Health conditions studied

1

Description of health condition studied
lumbar discopathy
ICD-10 code
M54.1
ICD-10 code description
Radiculopathy

Primary outcomes

1

Description
Pain: according to the definition by the International Association for the Study of Pain, pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage. There is no fully objective method for measuring pain, and it is often assessed through subjective approaches.
Timepoint
Before the intervention, after the completion of ten intervention sessions, and one month after the end of the intervention.
Method of measurement
In this study, the intensity of patients' pain will be measured using the Visual Analogue Scale (VAS).

2

Description
Disability: is defined as the inability or limitation in performing tasks and engaging in activities that are expected from an individual in specific social roles. These may include personal care, household chores, employment, and social interaction.
Timepoint
Before the intervention, after the completion of ten intervention sessions, and one month after the end of the intervention.
Method of measurement
The Persian-translated and culturally adapted version of the Oswestry Disability Index (ODI) was used to assess disability.

Secondary outcomes

1

Description
Range of motion: is defined as the extent of relative movement or positional change occurring between two or more anatomically connected body segments.
Timepoint
Assessments were conducted before the start and after the completion of 10 intervention sessions.
Method of measurement
This study will measure the degree of flexion and the displacement of the lumbar spine segments and the hip joint using a three-dimensional motion analysis device.

2

Description
Continuous Relative Phase: represents the phase difference between two angular signals—such as those of the hip and lumbar joints—over time. It is derived from the combination of joint angle and angular velocity, ultimately reflecting the dynamic coordination pattern between two joints or body segments.
Timepoint
Assessments were conducted before the start and after the completion of 10 intervention sessions.
Method of measurement
It is calculated based on joint angle and angular velocity, which are assessed using a 3D motion analysis system.

3

Description
Lumbo-pelvic rhythm: refers to the relative pattern of contribution between the lumbar spine and the pelvis during trunk movement in the sagittal plane.
Timepoint
Assessments were conducted before the start and after the completion of 10 intervention sessions.
Method of measurement
In the present study, this value will be obtained by calculating the amount of lumbar spine movement relative to the movement of the right hip joint during the sit-to-stand and stand-to-sit tasks.

Intervention groups

1

Description
Intervention group: Participants in the intervention group will undergo a treatment program consisting of conventional physiotherapy combined with the Mulligan Sustained Natural Apophyseal Glide (SNAG) technique. The intervention will be delivered over 10 sessions, scheduled three times per week for four consecutive weeks. The treatment protocol includes the following components:1. Superficial heat therapy applied for 15 minutes per session.2. Superficial electrical stimulation administered for 15 minutes per session.3. Motor control exercises, including activation and training of the pelvic floor muscles, transverse abdominis, and multifidus. These exercises will start in the supine position and will gradually progress to sitting, standing, and functional positions, in accordance with the patient’s ability and progression.4.General education and advice: Patients will receive a brief explanation of the pathoanatomical nature of their condition and its prognosis. They will also be advised to maintain daily activities, avoid movements or tasks that may aggravate symptoms, and follow

general self-management principles.5. Home exercise program: Patients will be instructed to perform a set of prescribed exercises at home for 30 minutes per day. Visual instructions will be provided, and patients will be asked to track their daily performance by marking completed exercises on a log sheet.Finally, the SNAG technique will be applied by the therapist in sitting and standing positions, beginning with three repetitions in the first session, progressing to ten repetitions in subsequent sessions.

Category

Rehabilitation

2

Description

Control group: Participants in the control group will receive conventional physiotherapy alone over 10 sessions, conducted three times per week for a total duration of four weeks. The treatment components include:1. Superficial heat therapy applied for 15 minutes per session.2. Superficial electrical stimulation administered for 15 minutes per session.3. Motor control exercises, targeting the pelvic floor muscles, transverse abdominis, and multifidus. These exercises will begin in the supine position and will progressively advance to sitting, standing, and functional positions, based on patient tolerance and progression.4. General advice and education, including a description of the pathoanatomical basis of the condition, discussion of the prognosis, and recommendations to maintain daily activity levels while avoiding aggravating movements.5. Home exercise program: Patients will be asked to perform prescribed exercises at home for 30 minutes daily. They will be provided with illustrated instructions, and will be instructed to check off each exercise performed daily as a part of adherence monitoring.

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

School of Rehabilitation Sciences, Iran University of Medical Sciences

Full name of responsible person

Ismail Ebrahimi Takamjani

Street address

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

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Full name of responsible person

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Grant name

Grant code / Reference number

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

Yes

Title of funding source

Iran University of Medical Sciences

Proportion provided by this source

100

Public or private sector

Public

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

Iran University of Medical Sciences

Full name of responsible person

Elham Jannati

Position

Ph.D candidate

Latest degree

Master

Other areas of specialty/work

Physiotherapy

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Sharing plan

Deidentified Individual Participant Data Set (IPD)
Undecided - It is not yet known if there will be a plan to make this available

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

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

Analytic Code
Not applicable

Data Dictionary
Not applicable