Clinical Trial Protocol
Iranian Registry of Clinical Trials

09 Nov 2026

Investigation of the effect of kinesiology tape on biomechanical variables of landing before and after fatigue in athletes with a history of anterior cruciate ligament reconstruction.

Protocol summary

Study aim

The aim of the study was to investigate the effect of using kinesiology tape on kinetic and kinematic variables of single-leg landing before and after fatigue induction in athletes with a history of anterior cruciate ligament reconstruction.

Design

Quasi-experimental interventional study with three parallel groups; no randomization; single-blind (blind analyst); sample size 30 people; including ACL-R with type, ACL-R without type, and healthy group. The study was conducted in phase 0 (exploratory).

Settings and conduct

The study was conducted in the Sports Biomechanics Laboratory of Bu-Ali Sina University. Subjects performed the single-leg landing test before and after the fatigue protocol, and kinematic and kinetic data were recorded with the Vicon system and Kistler force plate. In the ACL-R group, the assessment was repeated 24 hours after the application of kinesiotape. The data analyst was blinded to the group assignment and the data were provided to him in a coded form.

Participants/Inclusion and exclusion criteria

Inclusion criteria: Age 18–35 years, at least 1 year after ACL-R surgery, ability to land on one leg from a height of 30 cm, consent to participate. Exclusion criteria: Use of allograft, sensitivity to kinesiotherapy, strenuous activity leading to fatigue in the last 3 days, musculoskeletal abnormality, history of other lower limb surgery affecting landing.

Intervention groups

Intervention group: Subjects in this group receive active kinesiology taping with facilitating and restraining techniques. Control group: Subjects in this group do not receive any kinesiology tape (neither active nor placebo) and only undergo the single-leg landing test.

Main outcome variables

Vertical/Anterior-Posterior/Internal-External GRF; Time to Peak GRF (TTP); Loading Rate; Impulse; Hip, Knee, and Ankle Joint moment; Hip, Knee, and Ankle Joint Peak Angles

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20251115068001N1**
Registration date: **2025-12-23, 1404/10/02**
Registration timing: **prospective**

Last update: **2025-12-23, 1404/10/02**
Update count: **0**

Registration date

2025-12-23, 1404/10/02

Registrant information

Name

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Name of organization / entity

The University of Bu-Ali Sina

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2025-12-29, 1404/10/08

Expected recruitment end date

2026-01-05, 1404/10/15

Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
Investigation of the effect of kinesiology tape on biomechanical variables of landing before and after fatigue in athletes with a history of anterior cruciate ligament reconstruction.

Public title
Studying the effect of kinesiotape on athletes
Purpose
Prevention
Inclusion/Exclusion criteria
Inclusion criteria:
Subjects must be between the ages of 18-35. History of anterior cruciate ligament reconstruction surgery with at least one year's experience Ability to perform a single-leg landing from a height of 30 centimeters Consent to participate in research
Exclusion criteria:
Use of allografts Having any sensitivity or allergy to kinesiotape Having a body mass index (BMI) greater than 26 Having strenuous physical activity in the three days leading up to the test that leads to fatigue Having musculoskeletal abnormalities (including: spinal curvature, bowed knees, crossed knees, etc.) Having a history of other lower limb surgeries that may affect landing performance
Age
From **18 years** old to **35 years** old
Gender
Both

Phase
N/A
Groups that have been masked

- Data analyser

Sample size
Target sample size: **30**
Randomization (investigator's opinion)
Not randomized
Randomization description
Blinding (investigator's opinion)
Single blinded
Blinding description
In this study, blinding was performed in a single-blind manner. The person responsible for the statistical analysis was blinded to the allocation of data to the control or experimental groups at all measurement time points. After data collection, the data were coded by someone other than the analyst, and three datasets with neutral labels (Group 1, Group 2, and Group 3) were provided to the analyst. These labels did not indicate whether a dataset belonged to the control group or the experimental group, nor did they reveal the measurement time. The analyst performed the analysis solely based on the coded datasets, and after the initial analysis was completed, the assignment codes were unblinded by the principal investigator to interpret the final results.
Placebo
Not used
Assignment
Parallel
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Bu-Ali Sina University, Hamadan
Street address
Bu-Ali Sina University, Shahid Ahmadi Roshan Blvd., Hamedan.
City
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Postal code
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Approval date
2023-12-12, 1402/09/21
Ethics committee reference number
IR.BASU.REC.1402.085

Health conditions studied

1

Description of health condition studied
Anterior cruciate ligament reconstruction
ICD-10 code
S83.5
ICD-10 code description
Sprain of cruciate ligament of knee

Primary outcomes

1

Description
Vertical ground loading rate - Variable description: The rate of increase in vertical ground force during the single-leg landing phase.
Timepoint
Before kinesiotape and before fatigue (baseline) - With kinesiotape and before fatigue - Without kinesiotape and after fatigue - With kinesiotape and after fatigue
Method of measurement
Recording the vertical ground force during single-leg landing with a force gauge plate synchronized with the motion analysis system and calculating the force increase rate

2

Description
Peak knee external flexion torque - Variable description: The maximum knee joint flexion torque in the sagittal plane during landing.

Timepoint
Before kinesiotape and before fatigue (baseline) - With kinesiotape and before fatigue - Without kinesiotape and after fatigue - With kinesiotape and after fatigue

Method of measurement
Calculating knee torque by combining motion and force gauge data in a biomechanical model.

3

Description
Maximum knee flexion angle - Variable description: The maximum amount of knee joint flexion during the shock absorption phase of landing.

Timepoint
Before kinesiotape and before fatigue (baseline) - With kinesiotape and before fatigue - Without kinesiotape and after fatigue - With kinesiotape and after fatigue

Method of measurement
Recording knee angular changes through motion markers and kinematic analysis

4

Description
Peak external abductor torque Variable description: Maximum hip abductor torque in the frontal plane during landing.

Timepoint
Before kinesiotape and before fatigue (baseline) - With kinesiotape and before fatigue - Without kinesiotape and after fatigue - With kinesiotape and after fatigue

Method of measurement
Calculating hip torque using motion analysis system and force sensor data in a biomechanical model

Secondary outcomes

1

Description
Peak ankle joint torques Variable description: Maximum ankle external dorsiflexion and plantarflexion torque during landing phase

Timepoint
Before kinesiotape and before fatigue (baseline) - With kinesiotape and before fatigue - Without kinesiotape and after fatigue - With kinesiotape and after fatigue

Method of measurement
Calculating ankle torques by combining kinematic and kinetic data in an inverse biomechanical model

2

Description
Peak hip torques Variable description: Maximum hip external flexion and extensor torque during landing phase.

Timepoint
Before kinesiotape and before fatigue (baseline) - With kinesiotape and before fatigue - Without kinesiotape and after fatigue - With kinesiotape and after fatigue

Method of measurement
Calculating hip moments using inverse dynamic analysis

3

Description
Hip angles - Variable description: Maximum hip flexion and abduction angles during landing phase

Timepoint
Before kinesiotape and before fatigue (baseline) - With kinesiotape and before fatigue - Without kinesiotape and after fatigue - With kinesiotape and after fatigue

Method of measurement
Extracting joint angles from kinematic data recorded by motion markers

4

Description
Peak vertical ground reaction force - Variable description: The highest amount of vertical ground reaction force during a single-leg landing.

Timepoint
Before kinesiotape and before fatigue (baseline) - With kinesiotape and before fatigue - Without kinesiotape and after fatigue - With kinesiotape and after fatigue

Method of measurement
Direct recording of vertical ground force by force gauge plate and normalization to body weight

Intervention groups

1

Description
Control group: Subjects in this group do not receive any kinesiology tape (neither active nor placebo) and only undergo the single-leg landing test. The single-leg landing is performed first in a non-fatigue condition and then immediately after the fatigue protocol is performed. This group is used as a comparison group without intervention to examine the effect of fatigue and to establish a baseline.

Category
Other

2

Description
Intervention group: Subjects in this group receive active kinesiology taping with facilitating and restraining techniques. Kinesiotaping is applied to the hamstrings (facilitating) and quadriceps (restrictive) muscles with approximately 10–15% tension and, if necessary, in a stabilizing manner around the knee joint. Subjects perform single-leg landings in pre-fatigue conditions and immediately after the fatigue protocol with kinesiology taping. The aim is to investigate the immediate and

protective effect of kinesiology taping on landing biomechanics in ACL-R subjects.

Category
Rehabilitation

Recruitment centers

1

Recruitment center

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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
Bu Ali Sina University, Hamadan

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
Bu Ali Sina University, Hamadan

Full name of responsible person
Mahbube Alamzadeh

Position
Assistant Professor

Latest degree
Ph.D.

Other areas of specialty/work
sport biomechanics

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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 plan to publish.

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
No - There is not a plan to make this available

Data Dictionary
No - There is not a plan to make this available

Title and more details about the data/document
In this study, there are no plans to share data files or individual participant information with other researchers outside the research team. The data will be used solely for internal research analyses, and the results will be published in an aggregated, anonymized form in a scientific article.

When the data will become available and for how long

To whom data/document is available

Under which criteria data/document could be used

From where data/document is obtainable

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

Comments