Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

The effect of FIFA 11+ and SHRed warm-up programs on knee injury risk factors in female basketball players

Protocol summary

Study aim
The aim of this study was to compare the FIFA 11+ and SHRed protocols regarding ankle dorsiflexion, ankle plantarflexion, knee proprioception, and the LESS score in female basketball players.

Design
A two-arm randomized clinical trial with 30 players randomly allocated to FIFA 11+ and SHRed groups using A and B envelopes.

Settings and conduct
Thirty female basketball players aged 18 to 25 were selected and randomly assigned to two groups of 15: the FIFA 11+ group and the SHRed group. Following a pre-test assessment, the interventions were implemented over six weeks consisting of three sessions per week followed by a post-test; the protocols were carried out separately at the Yadegar-e-Imam and Rasht 6,000-seat basketball arenas.

Participants/Inclusion and exclusion criteria
Inclusion Criteria: Age range: 18–25 years At least 3 years of basketball experience Experience participating in provincial-level competitions and training sessions No history of lower-limb injury in the past 6 months (including knee ligament surgery, bone fractures, or muscle strains) Exclusion Criteria: Three non-consecutive absences or two consecutive absences during the warm-up program period Withdrawal or unwillingness to participate Failure to adhere to the warm-up program guidelines

Intervention groups
FIFA 11+: The FIFA 11+ protocol is a structured 6-week warm-up program consisting of three phases: active running and warm-up exercises; strength, plyometric, and balance exercises; and acceleration and change-of-direction drills. SHRed: Is a standardized 6-week protocol comprising three main sections and a total of 13 exercises spanning levels one and two that include aerobic, mobility, strength, agility, and balance exercises.

Main outcome variables
Ankle Range of Motion; Knee proprioception; Landing Error Screenings Score

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20260910070994N1**
Registration date: **2026-10-01, 1405/07/09**
Registration timing: **retrospective**

Last update: **2026-10-01, 1405/07/09**
Update count: **0**

Registration date
2026-10-01, 1405/07/09

Registrant information

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Name of organization / entity
The university of guilan

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2024-12-01, 1403/09/11

Expected recruitment end date
2025-02-16, 1403/11/28

Actual recruitment start date
2024-12-01, 1403/09/11

Actual recruitment end date
2025-02-16, 1403/11/28
Trial completion date
2025-02-16, 1403/11/28

Scientific title
The effect of FIFA 11+ and SHRed warm-up programs on knee injury risk factors in female basketball players

Public title
The Effect of Two Injury-Prevention Warm-Up Programs on Knee Injury Risk Factors in Basketball Players
Purpose
Prevention
Inclusion/Exclusion criteria
Inclusion criteria:
Female basketball players Aged 18 to 25 At least 3 years of experience in basketball Experience participating in provincial-level competitions and team training sessions Regular training routine (at least three sessions per week) No history of lower-limb injury within the past 6 months
Exclusion criteria:
Three non-consecutive absences or two consecutive absences during the warm-up program period Previous injury or surgery, particularly in the lower extremities History of chronic diseases or use of neurological medications Withdrawal or unwillingness to cooperate Failure to adhere to the warm-up program guidelines
Age
From **18 years** old to **25 years** old
Gender
Female

Phase
N/A
Groups that have been masked
No information
Sample size
Target sample size: **30**
Actual sample size reached: **30**
Randomization (investigator's opinion)
Randomized
Randomization description
Eligible participants were randomly allocated to two groups (15 participants in each group) using the lottery method with sealed envelopes labeled A and B. One group received the FIFA 11+ program and the other received the SHRed program.
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
University of Guilan Ethics Committee
Street address
University of Guilan Complex, Km 5 Tehran Road, Persian Gulf Highway, Rasht, Iran
City
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Province
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Postal code
۴۱۹۹۶۱۳۷۷۶
Approval date
2024-07-14, 1403/04/24
Ethics committee reference number
IR.GUILAN.REC.1403.088

Health conditions studied

1

Description of health condition studied
1. Assessment of ankle dorsiflexion range of motion 2. Assessment of ankle plantarflexion range of motion 3. Assessment of knee proprioception at 30 and 60 degrees 4. Assessment of Landing Error Screening Score
ICD-10 code
ICD-10 code description

Primary outcomes

1

Description
Measurement of ankle dorsiflexion range of motion
Timepoint
Before the intervention and after the intervention for one and a half months
Method of measurement
Using a universal goniometer

2

Description
Measurement of ankle plantarflexion range of motion
Timepoint
Before the intervention and after the intervention for one and a half months
Method of measurement
Using a universal goniometer

3

Description
Measurement of knee proprioceptive recovery at a 30-degree angle.
Timepoint
Before the intervention and after the intervention for one

and a half months

Method of measurement

Using a universal goniometer

4

Description

Measurement of knee proprioceptive recovery at a 60-degree angle.

Timepoint

Before the intervention and after the intervention for one and a half months

Method of measurement

Using a universal goniometer

5

Description

Evaluation of the Landing Error Scoring System (LESS) score

Timepoint

Before the intervention and after the intervention for one and a half months

Method of measurement

Using a specific scoring table based on a reliable reference.

Secondary outcomes

empty

Intervention groups

1

Description

The FIFA 11+ protocol is a standardized warm-up program that consists of three main parts: the first part is active running and warm-up exercises, the second part is strength, plyometric, and balance exercises, and the third part is acceleration and change of direction. This protocol was usually performed for 6 weeks, three sessions per week, each session lasting 20 minutes. The warm-up program began with easy-level exercises in the first sessions, and the level of difficulty of the exercises increased over time. Studies have shown that performing FIFA 11+ can reduce the risk factors for knee injuries, including neuromuscular control and muscle balance. The warm-up process in FIFA 11+ was implemented as follows: first, the athlete performed light running exercises and active movements; then, with strength, balance, and jumping exercises, the muscles and joints were prepared for explosive movements and rapid changes of direction; and finally, the warm-up ended with explosive running and agility exercises. Also, the level of exercises (from Level 1-3), number of sets, and repetitions were adjusted each week according to the participants' overall progress.

Category

Prevention

2

Description

The SHRed is a standardized 10–15 min protocol that includes three main parts and 13 exercises in total. It includes aerobic and mobility exercises (e.g., running and changing direction), strength exercises (e.g., core stability and Nordic hamstring exercises), agility exercises (e.g., changing direction and cutting), and balance exercises (e.g., standing on one leg). In the present study, the protocol was conducted by the participants for 6 weeks, with three sessions per week, each lasting 10 - 15 min, under the supervision of the researcher and a physiotherapist with 3 years of clinical experience before each training session. Also, according to the original protocol instructions, the exercise level in each part ranged from level 1 to level 2, depending on participants' progress in each part.

Category

Prevention

Recruitment centers

1

Recruitment center

Name of recruitment center

Yadegar-e-Imam Basketball Hall, Rasht

Full name of responsible person

Zahra Zahedi

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88, Yadgar Imam St., Golsar Blvd., Yadgar Imam Sports Complex, Golbagh Namaz Neighborhood, Rasht

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2

Recruitment center

Name of recruitment center

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Full name of responsible person

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Sponsors / Funding sources

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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
The University of Guilan
Proportion provided by this source
50
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
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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
No - There is not a plan to make this available

Statistical Analysis Plan
Not applicable

Informed Consent Form
No - There is not a plan to make this available

Clinical Study Report
No - There is not a plan to make this available

Analytic Code
No - There is not a plan to make this available

Data Dictionary
Not applicable