Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Comparative effects of clubbell and plyometric exercises on shoulder pain, range of motion and performance in bowlers.

Protocol summary

Study aim
To determine the effects of clubbell and plyometric exercises on shoulder pain, range of motion and performance in bowlers

Design
RANDOMIZED CONTROLLED TRIAL

Settings and conduct
1. Pakistan Sports Board 2. Aleem Dar Cricket Academy 3. Shoaib Akhtar Cricket Academy

Participants/Inclusion and exclusion criteria
Inclusion Criteria: • Male Cricket Players • Empty Can Test Positive • Numeric Pain Scale Reading 4+ • Restricted Range of Motion • Age from 17 – 30 years old Exclusion Criteria: • Female Cricket Players • Physically Unfit and out of form players • Recent Surgery (Upper limb) • Cardiac Issues • Any Sports related other injury (Specially injuries of upper limb)

Intervention groups
Group A will perform Clubbell Exercise Plan Group B will be assigned Plyometric Exercise program

Main outcome variables
As this study focuses on three outcome measures which are pain, Range of Motion and Performance in Bowlers. Thus three different tools for each outcome will be used. Which are given as under; 1. For Pain: Numeric Pain Rating Scale 2. For ROM: Goniometer 3. For Performance: • Seated Medicine Ball Throw Test • Closed Kinetic Chain Upper Extremities Stability Test • One Repitition Maximum (Bench Press)

General information

Reason for update

Acronym
ROM

IRCT registration information
IRCT registration number: **IRCT20250505065604N1**
Registration date: **2025-05-17, 1404/02/27**
Registration timing: **registered_while_recruiting**
Last update: **2025-05-17, 1404/02/27**
Update count: **0**

Registration date
2025-05-17, 1404/02/27

Registrant information

Name
Shahzaib Sajjad

Name of organization / entity
Riphah International University

Country
Pakistan

Phone
+92 300 9425452

Email address
drshahzaibsajjad@gmail.com

Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2024-09-01, 1403/06/11

Expected recruitment end date
2025-06-01, 1404/03/11

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
Comparative effects of clubbell and plyometric exercises on shoulder pain, range of motion and performance in bowlers.

Public title
Comparative effects of clubbell and plyometric exercises on shoulder pain, range of motion and performance in bowlers.

Purpose

Health service research

Inclusion/Exclusion criteria

Inclusion criteria:

Male Cricket Player Empty Can Test Positive Numeric pain reading 4+ Restricted Range of Motion Age from 17 to 30 years.

Exclusion criteria:

Physically unfit or out of form players Recent Surgery (specially upper limb) Cardiac Issues Any sports related injuries (specially in upper limb) Players who's bowling action is not according to ICC criteria

Age

From **17 years** old to **30 years** old

Gender

Male

Phase

N/A

Groups that have been masked

- Care provider
- Outcome assessor

Sample size

Target sample size: **58**

Randomization (investigator's opinion)

Randomized

Randomization description

Randomization Methodology Method of Randomization: The study used cluster randomization. Clusters, rather than individuals, were randomly assigned to one of two intervention groups. This approach was used to prevent contamination between participants in different interventions. Unit of Randomization: The unit of randomization was the cluster. Clusters were formed based on predetermined criteria such as location, team affiliation, or training schedule. Stratification: Stratified randomization was employed to ensure balance across key variables. Clusters were stratified by training schedule before random assignment. This helped control for potential differences in training intensity or frequency. Tools Used for Randomization: The randomization sequence was generated using computer software—specifically, a random number generator in Microsoft Excel (using the RAND() function) or a statistical program such as R or SPSS. Random Sequence Generation: A list of clusters within each stratum was compiled. A random number was assigned to each cluster using the selected software. The clusters were then sorted based on these numbers. The top 50% were allocated to the Clubbell Exercise Protocol, and the remaining 50% were assigned to the Plyometric Exercise Regimen. This process was done separately within each stratum to maintain balance. Allocation Concealment: Allocation concealment was implemented to reduce selection bias. The person generating the random sequence was independent of the recruitment and intervention teams. Group assignments were stored in sealed, opaque envelopes, labeled with the cluster ID, and opened only after baseline assessments were completed.

Blinding (investigator's opinion)

Double blinded

Blinding description

Blinding in this study involves making sure that the evaluations who measure outcome variables (pain, power, speed and agility) are uninformed of which participants are in which intervention cluster groups. This double-blind strategy helps to avoid measurement biasness.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Research & Ethics Committee - Riphah College of Rehabilitation and Allied Health Sciences, Faculty o

Street address

26 - M Gulberg 3 lahore.

City

Lahore

Postal code

54600

Approval date

2024-07-30, 1403/05/09

Ethics committee reference number

REC/RCR&AHS/24/0443

Health conditions studied

1

Description of health condition studied

we are not studying any specific health condition, we are only studying about the effects of interventions on pain, range of motion and performance in bowlers

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

The primary outcome measure is 'PAIN', Which will be measured by (numeric pain rating scale)

Timepoint

AT BASELINE, AT THE END OF SECOND WEEK, AT THE END OF FOURTH WEEK, AT THE END OF SIXTH WEEK

Method of measurement

The NRS is a modified version of the VAS that consists of a segmented numerical scale with 11 points ranging from 0 to 10. Patients are asked to select a corresponding number to indicate the pain intensity they

are experiencing. This scale can be administered verbally or graphically

Secondary outcomes

1

Description

The second outcome measure is Range of Motion, which will be measured by (Goniometer)

Timepoint

At baseline, at the end of second week, at the end of fourth week, at the end of sixth week

Method of measurement

A goniometer is an instrument that either measures an angle or allows an object to be rotated to a precise angular position. We can perfectly measure the exact Range of motion of the particular region (shoulder, arm, leg etc)

2

Description

The third outcome measure is performance which will be measured by various tests.

Timepoint

At baseline, at the end of second week, at the end of fourth week, at the end of sixth week

Method of measurement

For Performance: Seated Medicine Ball Throw Test Closed Kinetic Chain Upper Extremities Stability Test One Repitition Maximum (Bench Press)

Intervention groups

1

Description

Intervention Group 1 – Plyometric Exercises: Participants in Intervention Group 1 will undergo a structured plyometric training program specifically designed to target the shoulder complex. Plyometric exercises utilize the stretch-shortening cycle of muscles to enhance neuromuscular performance, power, and dynamic stability. The intervention will include activities such as medicine ball chest passes, overhead throws, plyometric push-ups, and rebound catches against a wall. These exercises aim to improve proprioception, joint stability, and muscle activation patterns around the shoulder joint, which are critical for repetitive overhead movements in bowling. The training will be progressive in nature, starting with low-impact drills and gradually incorporating more explosive movements as tolerated. Sessions will be conducted 3 times a week for a duration of 6–8 weeks, with each session lasting approximately 30–40 minutes. The primary goal of this intervention is to reduce shoulder pain, enhance range of motion, and improve functional performance through increased muscular power and joint control.

Category

Other

2

Description

Intervention Group 2 – Clubbell Exercises: Participants in Intervention Group 2 will be engaged in a clubbell training regimen, focusing on mobility, strength, and coordination of the shoulder girdle. Clubbells are weighted tools with a displaced center of mass that create torque and require high levels of muscular control during swinging movements. This training will include exercises such as shoulder circles, mills, gamma casts, and shield casts, which emphasize rotational strength, shoulder stability, and endurance. The asymmetrical loading pattern of clubbells challenges the stabilizing muscles of the shoulder and scapula, promoting enhanced motor control and joint integrity essential for bowlers. The intervention will also follow a progressive overload model, beginning with lighter weights and simpler movements and advancing to complex multi-planar patterns over the course of the 6–8-week program, with sessions held 3 times per week. The clubbell exercises aim to alleviate shoulder discomfort, increase joint mobility, and improve the kinetic efficiency and control necessary for repetitive bowling actions.

Category

Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Pakistan Sports Board

Full name of responsible person

Farhan

Street address

Pakistan Sports Board, Lahore-Kasur Road, Block E2, Gulberg 3, Lahore.

City

Lahore

Postal code

54600

Phone

+92 309 6670876

Email

farhangujjar607@gmail.com

2

Recruitment center

Name of recruitment center

New Ittefaq Cricket Club

Full name of responsible person

Usman Hammad

Street address

new ittefaq cricket club, aAbul hasan isfahani road, model town ext, block N, GOR-4, model town, Lahore

City

Lahore

Postal code

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Phone

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Email

dr.m.usman.hammad.sports.rehab@gmail.com

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Riphah International University

Full name of responsible person

Dr. Danish Hassan

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26 M block Gulberg 3, Lahore.

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Phone

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Email

usmanhammad507@gmail.com

Grant name

Grant code / Reference number

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

Yes

Title of funding source

Riphah International University

Proportion provided by this source

40

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

Riphah International University

Full name of responsible person

Shahzaib Sajjad

Position

Student

Latest degree

Bachelor

Other areas of specialty/work

Physiotherapy

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Person responsible for scientific inquiries

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Name of organization / entity

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Full name of responsible person

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Position

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Latest degree

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Other areas of specialty/work

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Person responsible for updating data

Contact

Name of organization / entity

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Position

Student

Latest degree

Bachelor

Other areas of specialty/work

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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

No - There is not 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

COMPARATIVE EFFECTS OF CLUBBELL AND PLYOMETRIC EXERCISES ON SHOULDER PAIN, RANGE OF MOTION AND PERFORMANCE IN BOWLERS. Deidentified Individual Participant Data Set (IPD) Study Protocol Informed Consent Form Clinical Study Report

When the data will become available and for how long

After September 2025

To whom data/document is available

Researchers Student doctors Teachers Scientists

Under which criteria data/document could be used

For the purpose of Rehabilitation and best treatment to the relative athletes

From where data/document is obtainable

Online Publication as well as in hard copies as well

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

if the relative person wants the data online then he have to search the article.

Comments