RAPID RESEARCH

@physicaltherapyresearch

September 2022

Inside This Week:

Shoulder Injury Risk Factors: ROM & Ankles

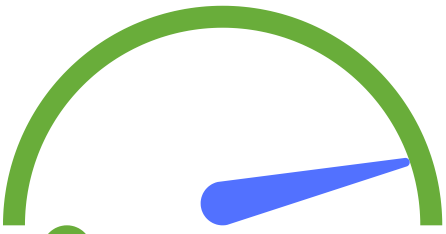
- Shoulder Range of Motion & Injury Risk
- Shoulder Internal Rotation Deficit (GIRD) and risk of injury
- Ankle Dorsiflexion Deficit: Risk Factor for Shoulder Injury

SHOULDER RANGE OF MOTION & INJURY RISK

SEPTEMBER 2022

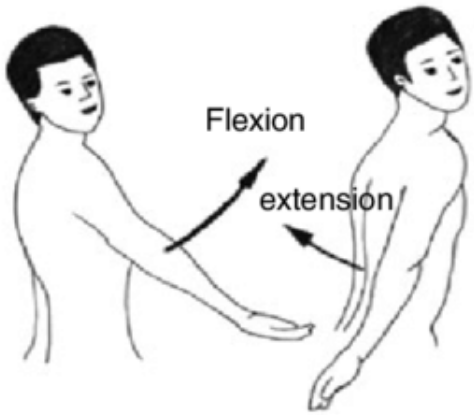
Click for Full Text (Pozzi et al. 2020)

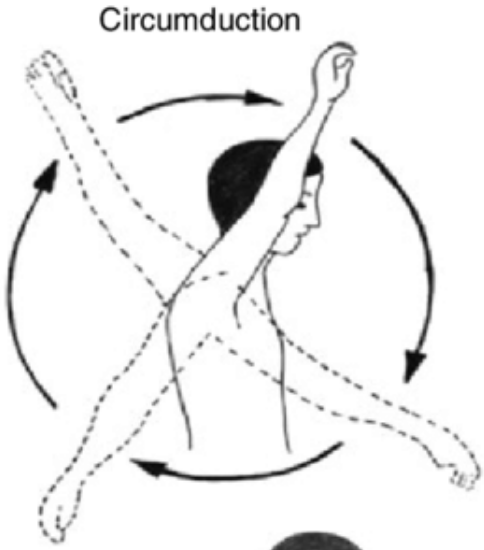
JBI 10/11 [90%]

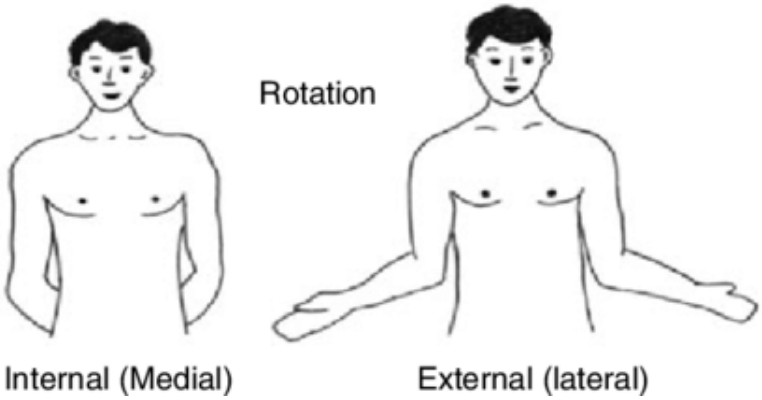


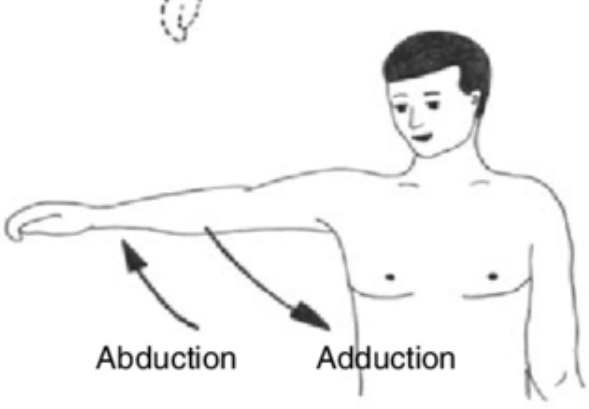
Quality Check
*see appx

This systematic review evaluated the association of preseason shoulder range of motion (ROM) with future risk of shoulder and elbow injuries in overhead athletes.









KEY FINDINGS

15 studies included; involving 3314 overhead athletes.
Baseball (74.6%)
Softball (3.1%)
Handball (16.1%)
Tennis (2.0%)
Volleyball (2.0%)
Swimming (2.2%)

Swimmers with **low (<93°) or high (>100°) shoulder external rotation** were at higher risk of injuries.

In baseball pitchers, **shoulder external rotation insufficiency (throwing arm <5° greater than the non-throwing arm)** was associated with injury.

MAIN TAKEAWAYS

Shoulder ROM isn't a consistent independent risk factors for shoulder and elbow injuries across different overhead athletes.

External rotation ROM in the throwing arm at least 5° greater than their non-throwing arm= 2x as likely to sustain in-season shoulder or elbow injuries.

Swimmers with abnormally low or high external rotation are at higher risk of shoulder injuries.

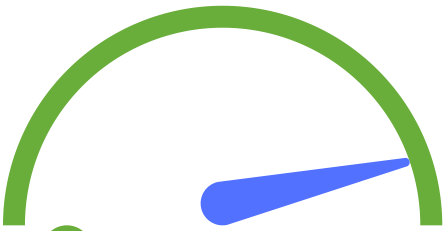
ROM screening may not be effective to identify handball, softball, volleyball and tennis players at risk of shoulder and elbow injuries

SEPTEMBER 2022

SHOULDER INTERNAL ROTATION DEFICIT (GIRD) & RISK OF INJURY

Click for Full Text (Keller et al. 2018)

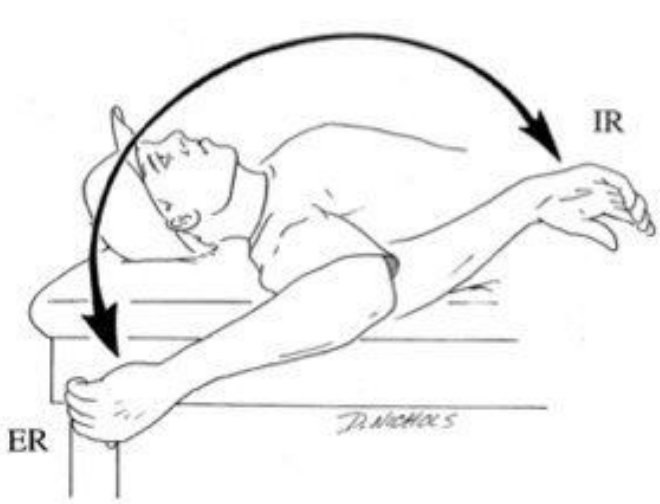
JBI 10/11 [90%]

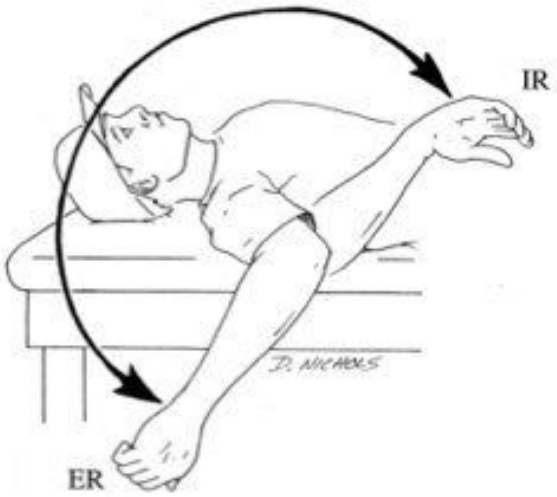


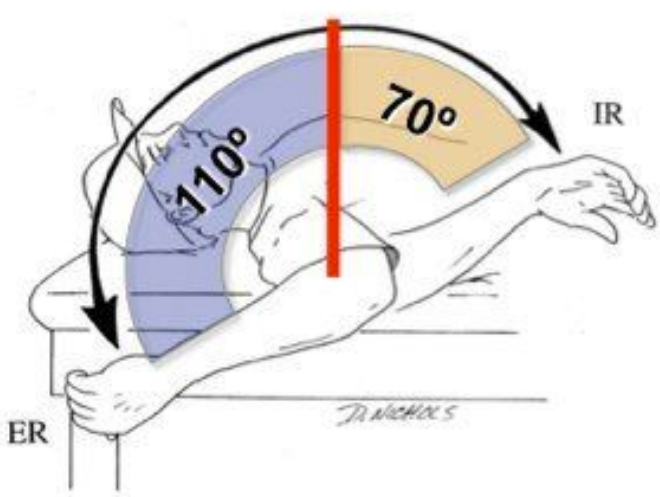
Quality Check

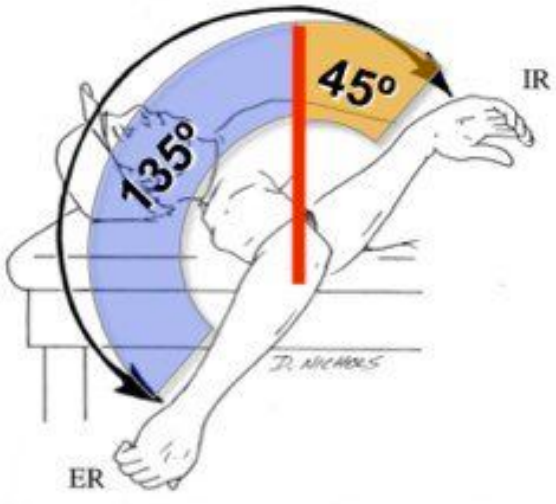
*see appx

This systematic review and meta-analyses determined whether adaptations in glenohumeral range of motion in overhead athletes lead to injuries of the upper extremity, specifically in the shoulder or elbow.









KEY FINDINGS

17 studies were included.
2195 athletes (1889 males, 306 females), avg age of 20.8 years.

Shoulders with GIRD **favored an upper extremity injury**, with a mean difference of 3.11°.

Shoulder total range of motion suggested:
Increased motion (avg difference, 2.97°) **correlated with no injury.**
Less total motion (avg difference, 1.95°) **favored injury.**

External rotational gain also favored injury, with a mean difference of 1.93°.

MAIN TAKEAWAYS

The pooled results of this systematic review and meta-analysis did not reach statistical significance for any shoulder motion measurement and its correlation to shoulder or elbow injury.

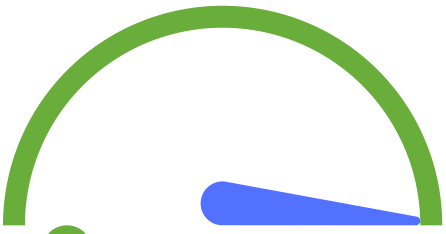
Results, though not reaching significance, favored injury in overhead athletes with GIRD as well as rotational loss and external rotational gain.

ANKLE DORSIFLEXION DEFICIT: RISK FACTOR FOR SHOULDER INJURY

SEPTEMBER 2022

Click for Full Text (Llurda-Almuzara et al. 2021)

JBI 11/11 [100%]



Quality Check
*see appx

This 12-month prospective cohort study evaluated the age, height, weight, playing position, shoulder, elbow, and ankle function of 228 enrolled baseball players. Shoulder and elbow injuries were tracked during the season.

KEY FINDINGS

228 athletes were included; incidence of injury was 43/228 (18.8%).
Shoulder (7), Elbow (32); Shoulder & Elbow (4).

Factors Significantly Greater in Injured vs. Non-injured group.
Age, height & weight.
ROM of elbow flexion in the dominant arm.
Muscle strength ratio of shoulder abduction
Likelihood of being a pitcher or a catcher

Factors Significantly Less in Injured vs. Non-injured group.
ROM of shoulder abduction-external/internal rotation
Shoulder total arc on the dominant arm
Ankle joint dorsiflexion
Plantar flexion on the back (non-lead) and front (lead) legs

MAIN TAKEAWAYS

In young baseball players, an **ankle dorsiflexion deficit in the back leg was a significant risk factor for shoulder and elbow injuries.**

Other risk factors included:
Increased age, being a pitcher, decreased shoulder abduction-external rotation on the dominant side, and increased elbow flexion on the dominant side.

This evidence should be considered when designing injury prevention programs for baseball-related injuries.

GIVE US YOUR FEEDBACK!

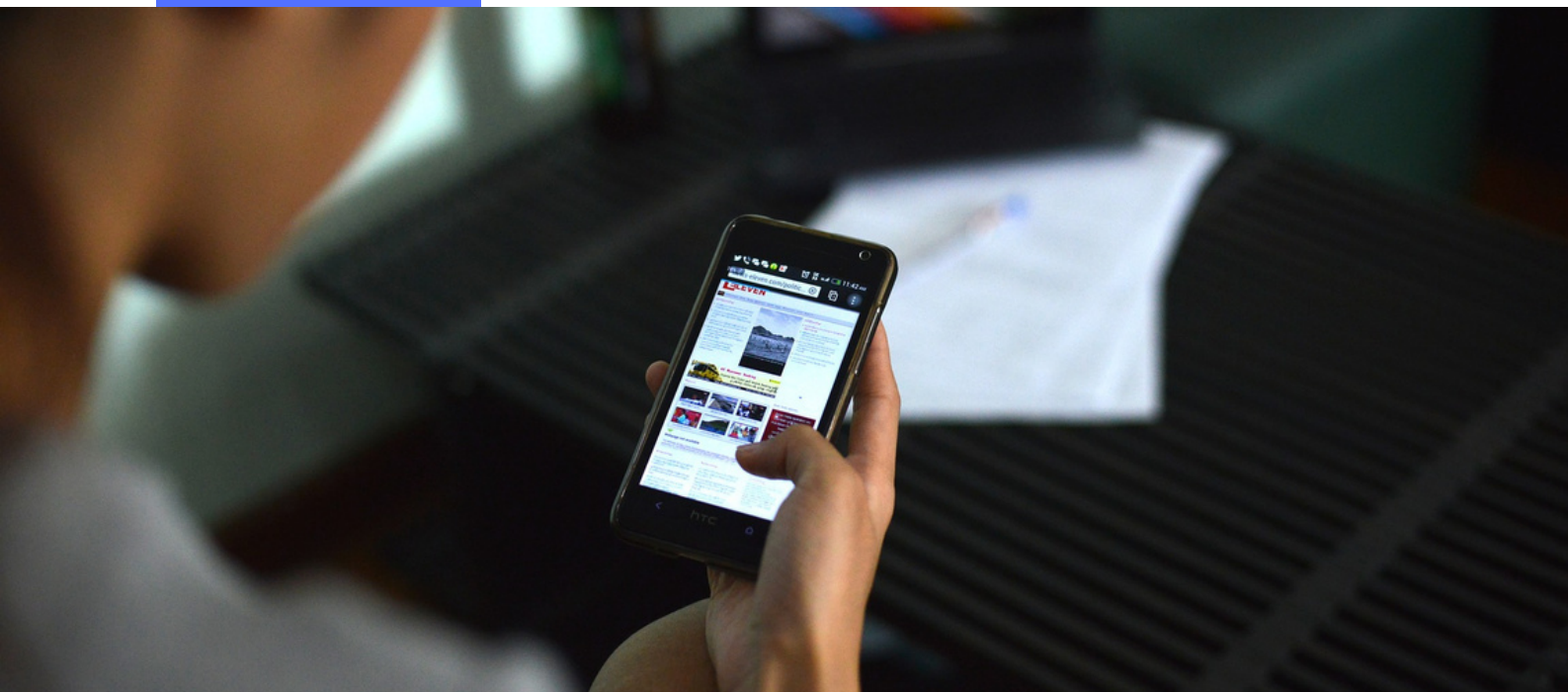
MEMBERS

We are on a mission to make research more accessible, easier to interpret, and quicker to implement.

Help us by giving 1 minute of your time to leave feedback for us.

We would greatly appreciate any feedback you have, as it helps us continually improve!

Leave Review



JBI Critical Appraisal Checklist for systematic reviews and research syntheses

Author: Pozzi et al. Year: 2020

		Yes	No	Unclear	Not applicable
1.	Is the review question clearly and explicitly stated?	+	☐	☐	☐
2.	Were the inclusion criteria appropriate for the review question?	+	☐	☐	☐
3.	Was the search strategy appropriate?	+	☐	☐	☐
4.	Were the sources and resources used to search for studies adequate?	+	☐	☐	☐
5.	Were the criteria for appraising studies appropriate?	+	☐	☐	☐
6.	Was critical appraisal conducted by two or more reviewers independently?	+	☐	☐	☐
7.	Were there methods to minimize errors in data extraction?	+	☐	☐	☐
8.	Were the methods used to combine studies appropriate?	+	☐	☐	☐
9.	Was the likelihood of publication bias assessed?	+	☐	☐	☐
10.	Were recommendations for policy and/or practice supported by the reported data?	☐	X	☐	☐
11.	Were the specific directives for new research appropriate?	+	☐	☐	☐

Overall appraisal: 10/11 (90%)

Comments:

Overall, this is a good quality study, including a robust research methodology. The findings and takeaways are well laid out. The findings are scattered, however there are indications that ROM deficits or differences do in some part correlate with injury risk in season. The conclusions report ROM screening isn't effective, however with the findings I would say it is effective to understand potential risks and imbalances.

JBI Critical Appraisal Checklist for systematic reviews and research syntheses

Author: Keller et al. Year: 2018

		Yes	No	Unclear	Not applicable
1.	Is the review question clearly and explicitly stated?	+	☐	☐	☐
2.	Were the inclusion criteria appropriate for the review question?	+	☐	☐	☐
3.	Was the search strategy appropriate?	+	☐	☐	☐
4.	Were the sources and resources used to search for studies adequate?	+	☐	☐	☐
5.	Were the criteria for appraising studies appropriate?	+	☐	☐	☐
6.	Was critical appraisal conducted by two or more reviewers independently?	+	☐	☐	☐
7.	Were there methods to minimize errors in data extraction?	+	☐	☐	☐
8.	Were the methods used to combine studies appropriate?	+	☐	☐	☐
9.	Was the likelihood of publication bias assessed?	☐	X	☐	☐
10.	Were recommendations for policy and/or practice supported by the reported data?	+	☐	☐	☐
11.	Were the specific directives for new research appropriate?	+	☐	☐	☐

Overall appraisal: 10/11 (90%)

Comments:

Overall, this is a good quality study, including many athletes screened for GIRD and potential injury after. The results did not reach significance, however there appeared to be a general favoring toward injuries when GIRD was present.

JBI Critical Appraisal Checklist for Cohort studies

Author Shitara et al Year 2021

	Yes	No	Unclear	Not applicable
1. Were the two groups similar and recruited from the same population?	+	☐	☐	☐
2. Were the exposures measured similarly to assign people to both exposed and unexposed groups?	+	☐	☐	☐
3. Was the exposure measured in a valid and reliable way?	+	☐	☐	☐
4. Were confounding factors identified?	+	☐	☐	☐
5. Were strategies to deal with confounding factors stated?	+	☐	☐	☐
6. Were the groups/participants free of the outcome at the start of the study (or at the moment of exposure)?	+	☐	☐	☐
7. Were the outcomes measured in a valid and reliable way?	+	☐	☐	☐
8. Was the follow up time reported and sufficient to be long enough for outcomes to occur?	+	☐	☐	☐
9. Was follow up complete, and if not, were the reasons to loss to follow up described and explored?	+	☐	☐	☐
10. Were strategies to address incomplete follow up utilized?	+	☐	☐	☐
11. Was appropriate statistical analysis used?	+	☐	☐	☐

Comments:

This research was performed well and had good outcomes. The findings were well supported and further suggest athletes and human injury/performance need to be assessed as a whole, not just in singular body parts. Mechanics of major movement patterns in any sport should be assessed for athletes suffering with injury and pain.