

Investigating Injuries

Shoulder Dislocation & Return to Play



Introductions



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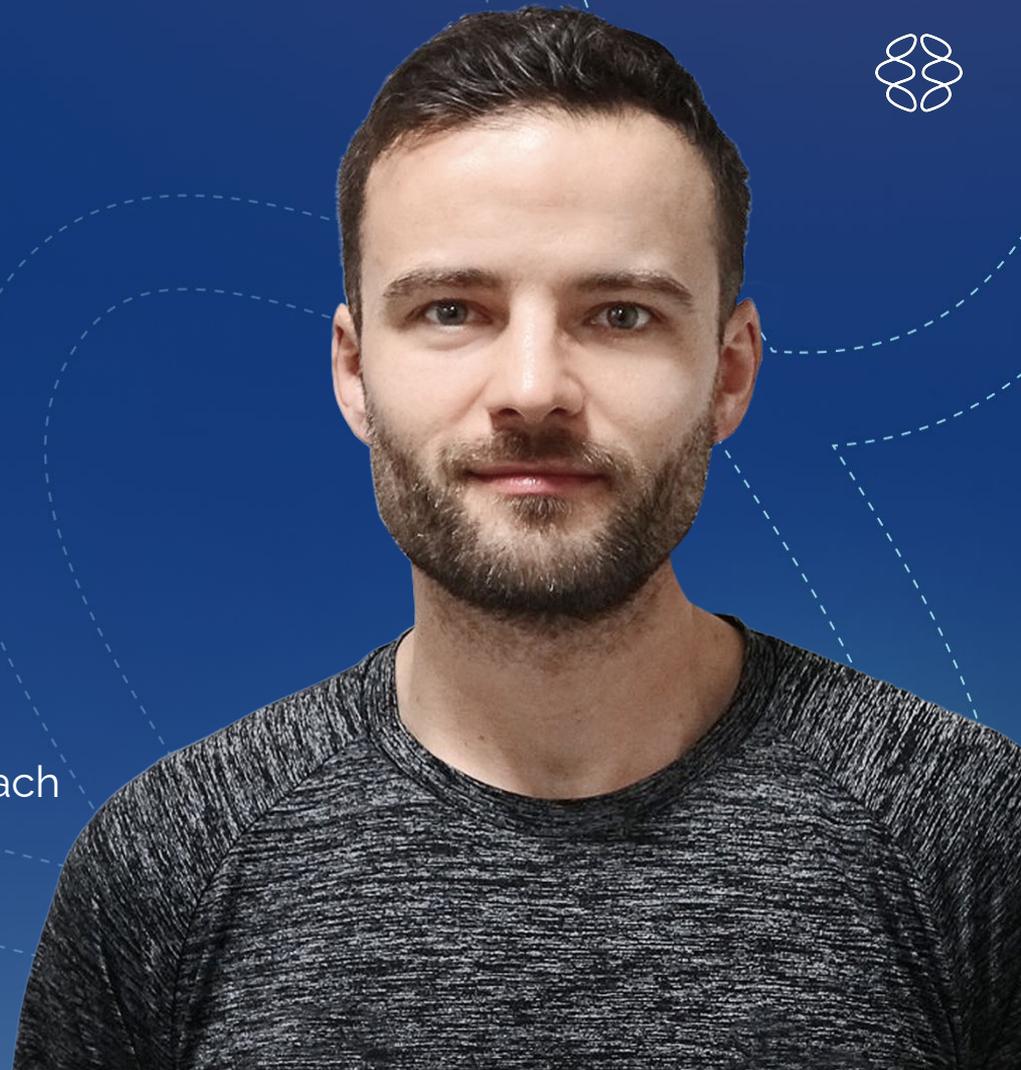


Introductions



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Agenda

- Introduction
- Understanding Shoulder Dislocation
 - Clinical Presentations and Mechanism of Injury
 - Common Causes and Risk Factors
- Clinical Assessment
 - Range of Motion: Shoulder Internal and External Rotation, and Flexion
 - Muscle Testing with HHD: Shoulder Internal, External Rotation and the Athletic Shoulder Test
- Case Study
 - Data Review and Analysis
 - Treatment and Rehabilitation Strategies
- Q&A

Return to Play Shoulder Dislocation



Shoulder Dislocation

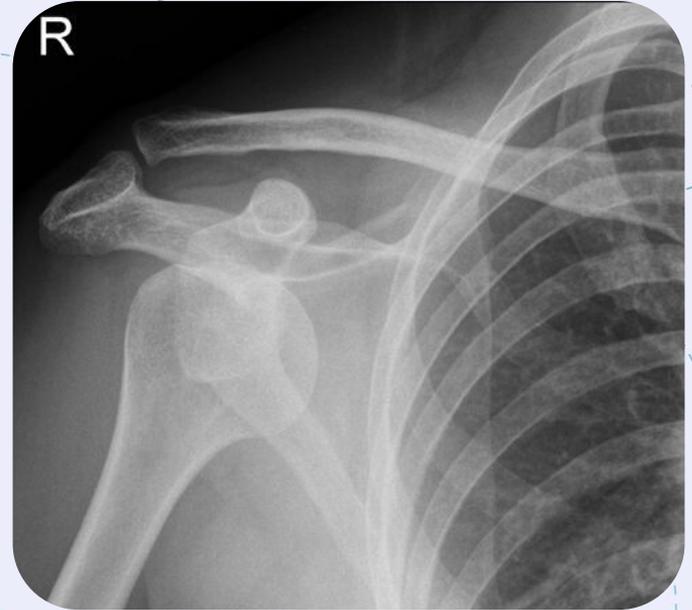
- Shoulder Dislocation is an injury that involves the separation between the humeral head (ball) from the glenoid of the scapula (socket) at the glenohumeral joint.
- Shoulder dislocations can be complete or partial, and usually occur after a trauma, such as a fall or motor vehicle collision.





Shoulder Dislocation

- This type of dislocation represents 50% of all major joint dislocations being the most regularly dislocated joint in the body.
- The shoulder can dislocate in directions:
 - Anteriorly (95% of shoulder dislocations)
 - Posteriorly
 - Inferiorly
- In these cases, fibrous tissues joining the bones are stretched or torn, complicating a dislocation.



Right Anterior Shoulder Dislocation



Risk Factors



- Repetitive overhead movement
 - Athletes in swimming, volleyball, and baseball.
- Previous dislocation
 - The joint structure is more vulnerable to re-injury due to stretched surrounding tissues causing shoulder instability.
- Genetics
 - Individuals naturally born with more lax, malleable connective tissues in their body



Mechanism of Injury

Tackler

Try scorer

Direct impact

Crichton et al (2012)





Surgical

Good shoulder function

>13.5% of glenoid width bone loss¹

Further structural damage i.e. labrum

High PRIS score²

1. Tokish et al (2020)

2. Olds et al (2020)

Conservative

Poor shoulder function

<13.5% of glenoid width bone loss

Minimal structural damage i.e. labrum

Low PRIS score



Bern Consensus Statement

Schwank et al (2022)





Range of Motion Shoulder Internal Rotation



Werner et al (2014)



Range of Motion Shoulder External Rotation



Werner et al (2014)



Range of Motion Shoulder Flexion



Morrison et al (2014)



Muscle Testing with HDD Shoulder Internal Rotation



Cools et al (2016)



Muscle Testing with HDD Shoulder External Rotation



Cools et al (2016)



Muscle Testing with HDD Athletic Shoulder Test



Ashworth et al (2018)

Case Study



Clinical Presentation

History of present condition –

30 year old Premier League footballer. Fell onto outstretched hand onto the ball during training. Felt something move in shoulder but had dead arm sensation before becoming extremely stiff. Managed with rehab and strapping for final 2 games of the season before stabilisation procedure. Seen at Athletic Shoulder 1 week after operation. Pre season starts in 7 weeks time.

Aggravating factors –

Flexion beyond 90 degrees
Coming out of sling

Eases –

Rest

Diurnal pattern –

Dependent on activity

Past medical history -

Asthmatic



Clinical Presentation

Observation –

Bruising and swelling round anterior shoulder

Range of movement –

Limited range of movement in all directions

Special tests –

Notes from 8 weeks post op

Hawkins Kennedy, Jobes and Neers tests -ve

Speeds and Yergassons tests -ve

Scarf test -ve

Sulcus and load and shift tests -ve

Apprehension test +ve with +ve relocation sign

Palpation – No tenderness on palpation of ACJ

Diagnosis – Bankart repair following anterior dislocation



Symptoms



Noticeable change in symptoms by 28-06-2024 based on other patients with Shoulder pain (Hefford 2008).

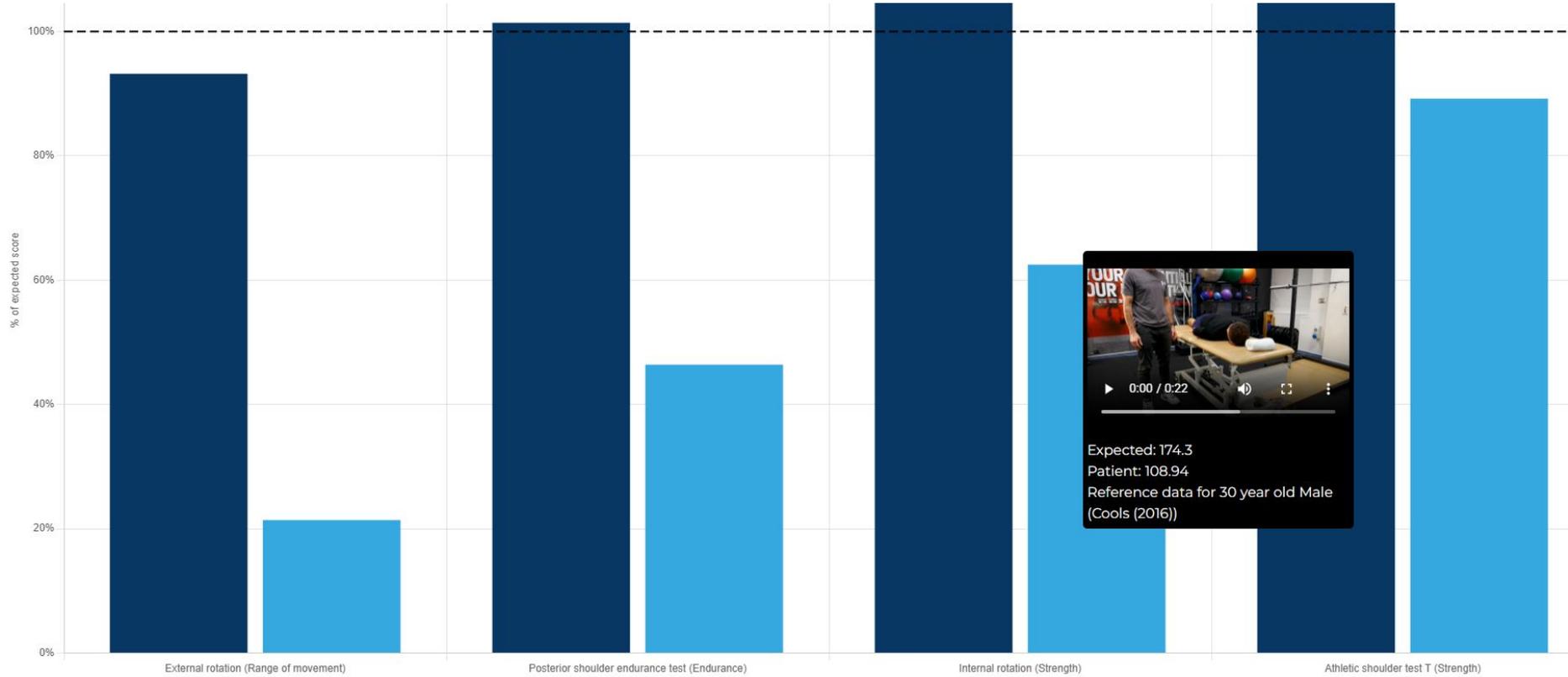
Minimal clinically important difference and average change are to be used as a rough guide only. Recovery is influenced by multiple factors such as duration of symptoms and severity of injury.

	Test	Unit	Expected	Left %	Right %	No Laterality %	Select
	Internal rotation (Shoulder)	Degrees	42.0	157.1%	159.5%	-	<input type="checkbox"/>
	Flexion (Shoulder)	Degrees	175.0	97.7%	88.0%	-	<input type="checkbox"/>
	External rotation (Shoulder)	Degrees	103.0	93.2%	21.4%	-	<input type="checkbox"/>
	Posterior shoulder endurance test (Shoulder)	Time	69.0	101.4%	46.4%	-	<input type="checkbox"/>
	Internal rotation (Shoulder)	Newtons	174.3	116.5%	62.5%	-	<input type="checkbox"/>
	External rotation (Shoulder)	Newtons	107.9	140.9%	87.1%	-	<input type="checkbox"/>
	Athletic shoulder test Y (Shoulder)	Newtons	105.4	125.2%	118.6%	-	<input type="checkbox"/>
	Athletic shoulder test T (Shoulder)	Newtons	105.4	115.7%	89.2%	-	<input type="checkbox"/>

Less than 75% of expected score

75%-99% of expected score

100% or more than expected score





Road Map

Block periodization





Block 1

Range of movement and muscular endurance

- Objectives:

- Increase range of movement into flexion and external rotation.
- Improve endurance of the posterior shoulder muscles
- Daily mobility exercises into flexion and external rotation
- High volume, low load exercises 3 x per week



Shoulder Range of movement External rotation

Progression 1

Exercise	Sets	Reps	Load	Rest	Frequency	
Broom handle stretch @ 90	3	30s	None	30	3	
Supine wall angels	3	30s	None	30	3	

Total sets per week: 18

[Add Exercise](#)

Shoulder Endurance Posterior shoulder endurance test

Target exercise

Exercise	Sets	Reps	Load	Rest	Frequency	
Reverse fly	4	15	3-5 RIR	60	3	
Band pull apart	4	15	3-5 RIR	60	3	

Total sets per week: 24

[Add Exercise](#)

RIR = repetitions in reserve

SIR = seconds in reserve



Block 2

Rotator cuff strength

- Objectives:

- Increase strength of rotator cuff
- High volume, low load exercises into internal and external rotation



Shoulder Strength Internal rotation

Regression 1

Exercise	Sets	Reps	Load	Rest	Frequency	
Standing internal rotation neutral	3	6	1-3 SIR	120	3	
Seated cable internal rotation @ 90	3	6	1-3 RIR	120	3	

Total sets per week: 18

[Add Exercise](#)

Shoulder Strength External rotation

Target exercise

Exercise	Sets	Reps	Load	Rest	Frequency	
Knee supported external rotation	3	6	1-3 RIR	120	3	
Prone external rotation	3	6	1-3 RIR	120	3	

Total sets per week: 18

[Add Exercise](#)

RIR = repetitions in reserve

SIR = seconds in reserve



Block 3

Long lever strength

- Objectives:

- Improve strength in long lever positions
- Increase push and pull force production
- High load, low volume exercises 3 x per week



Shoulder Strength Athletic shoulder test T

Target exercise

Exercise	Sets	Reps	Load	Rest	Frequency	
Single arm fly	3	6	1-3 RIR	120	3	
Towel slider to T	3	6	1-3 RIR	120	3	

Total sets per week: 18

Add Exercise

Compound movement

Exercise	Sets	Reps	Load	Rest	Frequency	
Bench press	4	8	1-3 RIR	120	2	
Bent over row	4	8	1-3 RIR	120	2	

Total sets per week: 16

Add Exercise

RIR = repetitions in reserve

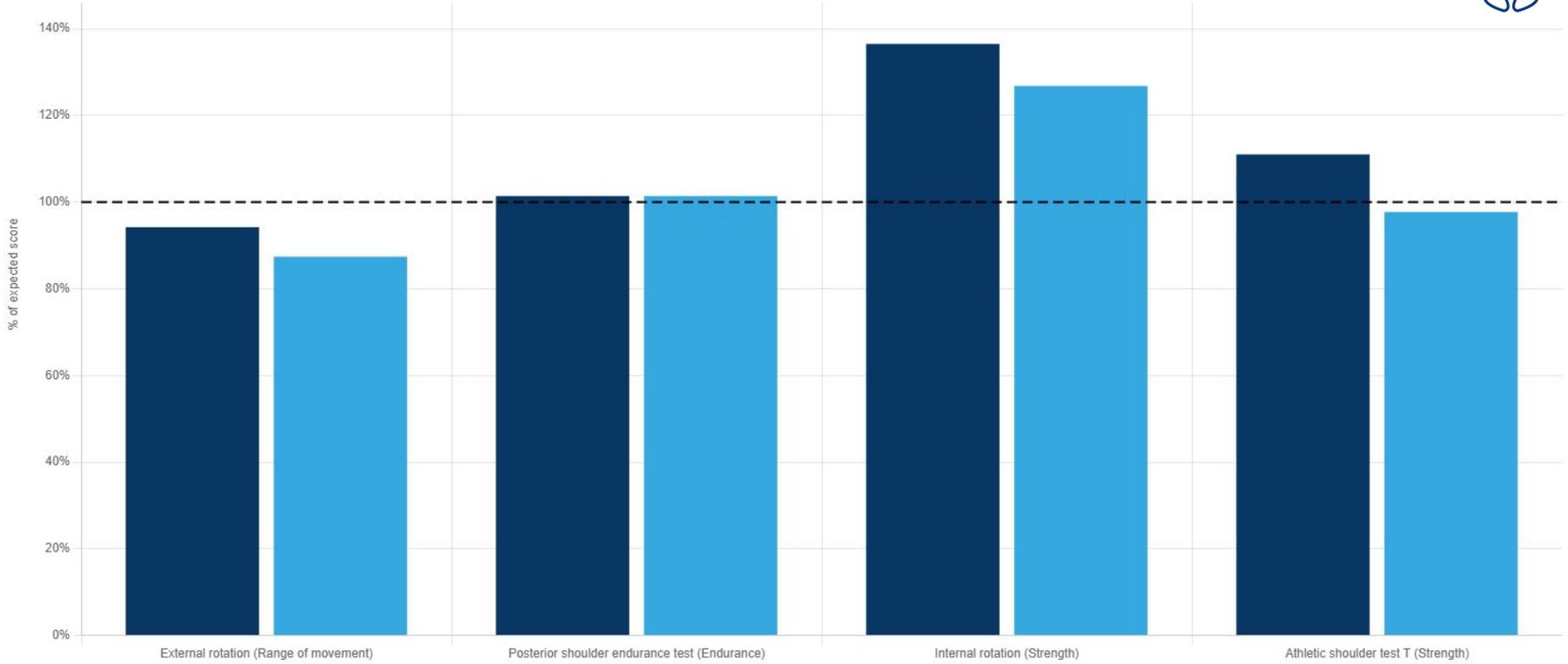
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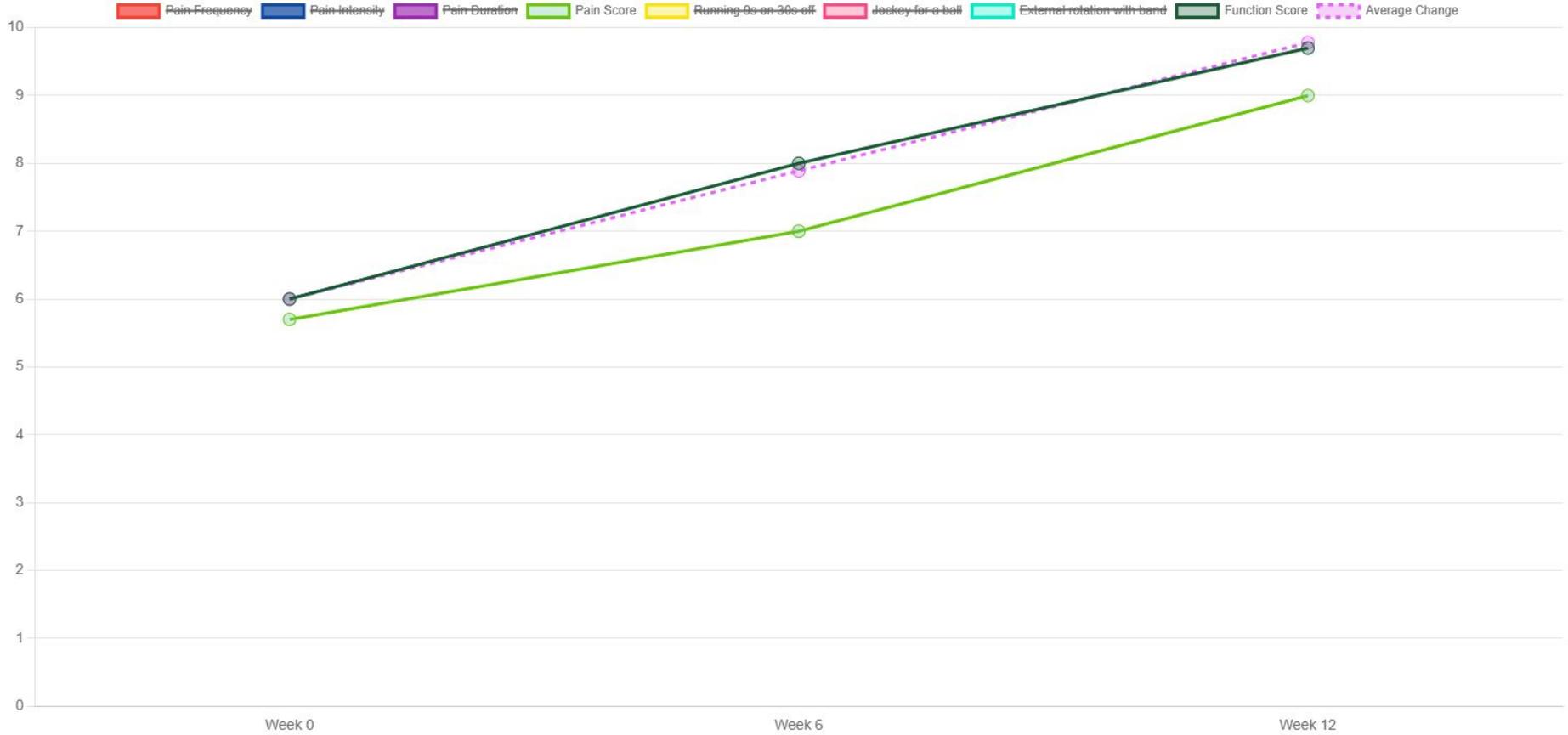


Change over time





Symptoms





BENCHMARK

All protocols, data and data visualisation was taken from **Benchmark**

Practitioners can create a free account at **www.benchmarkps.org**

For further information regarding Benchmark please contact:
gus@benchmarkps.org

Reference List

- Ashworth, B., Hogben, P., Singh, N., Tulloch, L., & Cohen, D. D. (2018). The Athletic Shoulder (ASH) test: reliability of a novel upper body isometric strength test in elite rugby players. *BMJ Open Sport & Exercise Medicine*, *4*(1), e000365.
- Cools, A. M., Vanderstukken, F., Vereecken, F., Duprez, M., Heyman, K., Goethals, N., & Johansson, F. (2016). Eccentric and isometric shoulder rotator cuff strength testing using a hand-held dynamometer: reference values for overhead athletes. *Knee Surgery, Sports Traumatology, Arthroscopy*, *24*(12), 3838-3847.
- Crichton, J., Jones, D. R., & Funk, L. (2012). Mechanisms of traumatic shoulder injury in elite rugby players. *British journal of sports medicine*, *46*(7), 538-542.
- Morrison, G., Ashworth, B., & Read, P. J. (2024). Test-Training Integration to Optimize Performance and Health in Baseball Pitchers: An Outcome Driven Approach. *Strength & Conditioning Journal*, *46*(6), 646-658.
- Olds, M., Ellis, R., & Kersten, P. (2020). Predicting Recurrent Instability of the Shoulder (PRIS): a valid tool to predict which patients will not have repeat shoulder instability after first-time traumatic anterior dislocation. *Journal of Orthopaedic & Sports Physical Therapy*, *50*(8), 431-437.
- Schwank, A., Blazey, P., Asker, M., Møller, M., Hägglund, M., Gard, S., ... & Athlete Shoulder Consensus Group. (2022). 2022 Bern consensus statement on shoulder injury prevention, rehabilitation, and return to sport for athletes at all participation levels. *journal of orthopaedic & sports physical therapy*, *52*(1), 11-28.
- Tokish, J. M., Kuhn, J. E., Ayers, G. D., Arciero, R. A., Burks, R. T., Dines, D. M., ... & Cordasco, F. A. (2020). Decision making in treatment after a first-time anterior glenohumeral dislocation: a Delphi approach by the Neer Circle of the American Shoulder and Elbow Surgeons. *Journal of Shoulder and Elbow Surgery*, *29*(12), 2429-2445.
- Werner, B. C., Holzgrefe, R. E., Griffin, J. W., Lyons, M. L., Cosgrove, C. T., Hart, J. M., & Brockmeier, S. F. (2014). Validation of an innovative method of shoulder range-of-motion measurement using a smartphone clinometer application. *Journal of shoulder and elbow surgery*, *23*(11), e275-e282.