

Sporting Shoulder

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Based on Physio Edge podcast episode 43 with Jo Gibson

In sports, recurrence rates for shoulder pathology are up to 75% in overhead contact sports

How can we make the shoulder more robust?

Key areas to shoulder rehabilitation include:

1. How we are communicating with our patients
2. Exercise prescription we provide, and how we build this into our patients programs long term
3. Incorporating proprioception, movement and strength

Rotator Cuff (RC)

Peak activation of the RC in elite athletes are lower than in amateur athletes, indicating their cuff is more efficient. The only time we have co-contraction of the RC is in Abduction in the Coronal plane.

RC provides pre-setting and proprioception, getting the system ready for action. After the pre-setting action, one side of the cuff works harder than the other to counterbalance the torque-producing muscles.

Torque production - if transfer through the system is efficient, there is less need for the RC to balance the forces

Treatment can be designed to improve the efficiency of the RC, create dynamic pre-setting and balance of the RC, rather than pure strength, which will allow your system to be more robust.

History

Clear history or trauma. Only a history of trauma resulting in a RC or SLAP tear will do well with surgery. Atraumatic RC and SLAP tears will do less well with surgery.

Is the shoulder stiff?

Limited movement will decrease the ability of the RC to switch on. Postero-superior capsular or bursal restriction may increase the anterior-superior movement of the humeral head, as the body takes the path of least resistance.

GIRD testing identifies restriction in the postero-inferior capsule more than the postero-superior capsule. The postero-superior capsule or bursa is more implicated in shoulder pain, and restriction can be identified with Internal Rotation in neutral, elbow extended, asking the patient to turn the thumb backwards. The elbow can be used as a visual guide to identify range of movement restriction. At least 70% of the range of the unaffected side is ideal.

Bursal involvement & Imaging

Overload history, background ache, pain lying on that side and block to passive abduction may indicate a bursal effusion. Imaging in isolation is almost useless, so this history along with imaging may implicate the bursa.

In the younger, athletic sporting population, they will naturally have changes in the tendon, and using cortisone may progress degenerative tendon changes.

RC activation

- 1 Gripping harder with the hand, making a fist
- 2 Shortening the lever arm by bending the elbow makes RC activation easier
- 3 External rotation resistance
- 4 Compression of the humerus into the glenoid

Symptom modification with the above will help you identify treatment and exercise progressions.

Manual Therapy (MT)

May have negative connotations due to the potential to be simply a passive intervention. You can be clear with your patients that MT can be a facilitatory treatment, potentially providing proprioceptive input, allows the patient to access the dynamic system, or provides time for the therapist to talk to the patient.

MT may involve IR in neutral, fixing the scapula with one hand and providing a longitudinal distraction of the humerus, while holding above the elbow. This can provide the ROM necessary to get the RC to work through the full ROM.

Stretches - Low cross-adduction stretch can help to localise the stretch to the postero-superior aspect of the cuff.

Innervation to the cuff and bursa is from C5/6. Evidence demonstrates that lateral glides to the C/sp may increase the Pain-Pressure Threshold (PPT) in the Upper Limb, improve RC strength and reduce RC stiffness. The neuromodulatory effect may allow you to get the dynamic/muscle system working.

With all MT techniques, you are looking for a change in pain and objective change in range of movement immediately.

Movement of the arm will also change fluid viscosity in the bursa, so supporting the arm on a ball, or do short to long lever activity on the wall to improve range of movement.

Treating pain in Loaded and OH activities

Using an improvement test - changing their pain immediately. Engage the dynamic stability system, and RC activation will often improve scapular mechanics.

In a short lever position, provide some manual compression of the humerus into the glenoid, or loading against the wall painfree. Use some external rotation resistance. The cuff can need reminding to work in particular position, by using theraband around the wrists in a bench press to resist ER, or in handstand against the wall (for a gymnast).

If unable to change pain in the shoulder with the above, is the pain being generated from somewhere else?

Exercises

- Weight bearing - Prone with the ball under the thighs, hands in slight external rotation. Roll the body back around the ball, then forward so the ball is under the shins. If it is not painfree, adding Theraband addition can help eliminate pain.
- Dissociating the body around the arm - wall squat with gym ball behind them. Elbows flexed, Loop of theraband around the wrists, pushing into shoulder external rotation, then as they squat push up into a narrow V.

Use these 2 exercises as a switch on for the RC and to incorporate the kinetic chain, then reassess pain and ROM. Lower quadrant F/E or thoracic rotation can improve local recruitment

Managing Load

Upper limb injury risk is higher in the subsequent years in OH athletes following injury to the lower limb, implicating the necessity of incorporating lower limb rehab and the kinetic chain.

We need efficient force transfer through the system, and incorporating the rest of the body can help achieve this.

Activate the RC activation prior to movement, and improving the efficiency of the cuff and the kinetic chain will help to offload the shoulder.

Central Sensitisation

PPT are affected bilaterally, and get changes in their central representation with central sensitisation. We therefore need to make their rehab bilateral and functionally specific to light up more of their brain.

Throwing athletes

The thoracic spine is often involved, and can be retrained. Exaggerate the pathway, encourage thoracic rotation and emphasise the system you would like to switch on.

- Loop of theraband around wrists.
- Start with R foot in front of L, with some knee bend.
- Stepback with R, emphasising force generation from the lower limb.
- Emphasise thoracic rotation by taking both arms around to the right with resistance on the theraband.

Monitoring and maintenance

Monitor GIRD and Thoracic rotation to identify cuff activation, as GIRD gets worse in swimmers with cuff and overall fatigue. Assess S&C response by avoiding provoking pain, no stiffness or bursal involvement the following day.

If cuff is switched on prior to strengthening program, provide the best chance of protecting the cuff. Exercises can be designed to be active through the thorax and avoiding scapular depression.

Communication

Effective communication will make a huge difference in the recovery of your patient, especially on your first patient consult, and allow you to unravel your patients fears about their shoulder pain.

Fear of reinjury can hamper a patients rehabilitation. If the patient believes the therapist, this impacts whether the patient returns to play in the future. Allowing plenty of time for the patient to discuss their history and issues, will help you identify emotional cues.

Using the patients language to acknowledge their feelings, restate back to them how they are feeling, the patient can feel understood and help them to move on.

Ask the patient what they want to know about. Do they want to know about pain, recovery times, or find out which factors are important to the patient.

Addressing structural concerns

With a history of trauma, SLAP or RC tears may have a positive outcome with early surgery.

Without a history of trauma, tears are a normal part of playing sport and are normal changes with loading your shoulder every day. If the dynamic local system is doing it's job, the shoulder can become painfree and fully functional, irrespective of the signs on a scan.

Ask the athlete if they feel ready to return to sport. If they do not feel ready, even with full strength, return to sport should be delayed.