PRINCIPLES OF SHOULDER REHABILITATION AND RETURN TO SPORT

Presented by: Joel Werman

Specialist Sports Physiotherapist

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Joel Werman

• Specialist Sports Physiotherapist and Fellow of the Australian College of Physiotherapy.
• Specialized in the treatment of shoulders for over 23 years
• Founding member of the Shoulder and Elbow Physiotherapists of Australia group
• Lectured extensively on the subject of the shoulder covering a wide range of subjects
• Through extensive clinical experience has devised own approach to assessment and treatment of the shoulder which is based on a structured clinical reasoning model.

Andrew Ellis

BSc (Ex. Sci), M. Physy

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PRINCIPLES OF SHOULDER REHABILITATION AND RETURN TO SPORT

Joel Werman
APA Specialist Sports Physiotherapist
Fellow of The Australian College of Physiotherapists

THREE CATEGORIES OF SHOULDER PROBLEMS:

1. Structural
2. Functional
3. Combination

It is imperative to determine which category the patient falls into so as to establish appropriate goals, expectations and management outcomes.

THREE CATEGORIES OF SHOULDER PROBLEMS:

1. Structural

- Should you proceed immediately to radiological investigations and/or specialist referral?

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THREE CATEGORIES OF SHOULDER PROBLEMS:

- LISTEN to the history…
- was there a significant trauma or incident?
- has this built up over many years?
- unable to sleep at night due to the pain

- LOOK at the patient…
- Severe pain and disability

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THREE CATAGORIES OF SHOULDER PROBLEMS:

2. Functional Timing and tuning.
   - The objective of the shoulder is for the ball to stay centered in the middle of the socket throughout a full range of movement.

THREE CATAGORIES OF SHOULDER PROBLEMS:

3. Combination (structural and functional):
   - The existence of some structural issues combined with (often) secondary/compensatory functional deficits.
   - You must understand the extent of the structural concerns together with the needs and expectations of the patient to determine the management options.

ASSESSMENT

- Posture, symmetry, general muscle tone,
- Signs of hyper-mobility
- Active range of motion - assess quality of movement with respect to scapular dyskinesia, pain and end range.

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ASSESSMENT

- Scapular ‘dumping’: support under the inferior angle of the scapular and reassess active forward elevation &/or active range of external rotation in neutral.

ASSESSMENT

- Strength testing:
  - manually
  - Hand held dynamometer
  - Re-test with active scapular retraction

RESEARCH / EVIDENCE:

The Cochrane Collaboration - Cochrane Reviews 2003
Physiotherapy interventions for shoulder pain
Green S, Buchbinder R, Herrick SE

Main results
Twenty six trials met inclusion criteria. Methodological quality was variable and trial populations were generally small (median sample size = 46, range 14 to 180). Exercise was demonstrated to be effective in the short term in rotator cuff tears (RR 0.74 (0.57, 0.97), 0.32, and longer term benefit with respect to function (RR 1.45 (1.24, 1.66). Combining mobilisation with exercise resulted in additional benefit when compared to exercise alone for rotator cuff disease. Laser therapy was demonstrated to be more effective than placebo (RR 3.71 (1.89, 7.28) for adhesive capsulitis but not for rotator cuff tendinitis. Both ultrasound and pulsed electromagnetic field therapy resulted in improvement compared to placebo in calcific tendinitis (RR 1.81 (1.26, 2.60) and RR 1.9 (1.16, 3.2)) respectively. There is no evidence of the effect of ultrasound in shoulder pain (mixed diagnosis), adhesive capsulitis or rotator cuff tendinitis. When compared to exercises, ultrasound is of no additional benefit over and above exercise alone.

There is some evidence that for rotator cuff disease, corticosteroid injections are superior to physiotherapy and no evidence that physiotherapy alone is of benefit for adhesive capsulitis.

WHAT DOESN’T WORK:

- Electrotherapy:
  - interferential
  - ultrasound
  - laser
  - short wave
RESEARCH / EVIDENCE:

Does Passive Mobilization of Shoulder Region Joints Provide Additional Benefit Over Advice and Exercise Alone for People Who Have Shoulder Pain and Minimal Movement Restriction? A Randomized Controlled Trial

Ross Yiasemides, Mark Halaki, Ian Cathers and Karen A. Ginn
Physical Therapy February 2011 vol. 91 no. 2 178-189

Conclusion This randomized controlled clinical trial does not provide evidence that the addition of passive mobilization, applied to shoulder region joints, to exercise and advice is more effective than exercise and advice alone in the treatment of people with shoulder pain and minimal movement restriction.

WHAT DOESN'T WORK:

- Most other passive interventions, particularly in isolation

WHAT DOES WORK:

- Exercise therapy

EXERCISE THERAPY:

Addresses:

- a. Flexibility
- b. Strength
  - neuromuscular control
  - muscle hypertrophy

The relevance of an exercise is how it relates to the patient’s problem. Clinical reasoning requires the physio to justify the choice of intervention as dictated by the initial examination.
**OBJECTIVES:**

Goal of Physiotherapy:

- to ‘normalize’ the shoulder girdle mechanics to allow the humeral head to stay centered in the glenoid fossa through a full range of movement.

**ABNORMAL BIOMECHANICS**

**PAIN AND NEUROMUSCULAR CONTROL:**

- Neuromuscular control of scapular musculature is diminished in the presence of pathology (Ludewig, 2000).
- Pain inhibits muscle activation at a central level.

**EXERCISE THERAPY:**

b. **Strength:**

- The scapular provides a dynamic platform for the arm.
- Alteration of the normal anchoring function of the scapular stabilizers results in compromise to the subacromial space.

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**EXERCISE THERAPY:**

Crane analogy:

If the base is not anchored securely, the crane is unable to lift the load.
4 PHASES OF REHABILITATION

- Crawl walk run sprint !
- "Would you ask your limping patient to go for a run?"
- "Would you expect a crane to lift a load if the base was not securely anchored?"
- Phase 1: Reactivate the scapular stabilizers
- Phase 2: Add light resistance
- Phase 3: Muscle hypertrophy
- Phase 4: Sport specific rehabilitation

THEORY:

How do you reactivate the scapular stabilizers?


Mottram, S.L., Woledge, R.C., Morrisse, D. Motion

"Examples of cues included passive/assisted movements into the SOE position, tactile feedback with gentle pressure on the acromion to encourage upward rotation, recognition of a feeling of widening the chest to encourage posterior tilt, demonstration of common wrongly directed movements, demonstration and verbal feedback"

THEORY:

The subacromial impingement syndrome of the shoulder treated by conventional physiotherapy, self-training, and a shoulder brace:

Results of a prospective, randomized study

Markus Walther, MD, PhD a, Andreas Werner, MD, PhD b, Theresa Stahlschmidt, MD c, Rainer Woelfel, MD, PhD 2004

Journal of Shoulder and Elbow Surgery

'Pull the shoulder blades back and push the sternum forward'

PHASE 1

Scapular setting:

- Early rehabilitation focuses on re-establishing normal scapular control. Setting the scapular back and level ( NOT DOWN !) while raising the arm away from the body.
- The ability to dissociate movement of the arm from the scapular is the essential building block of restoring normal biomechanics.
- Unilateral control initially.
**PHASE 2**
- Begin adding external loads to the arm while performing exercises in an inner range of movement.
- All exercises must be performed with the scapular anchored in its retracted (back & level) position.
- All exercises must be performed without symptoms!

**PHASE 3 (early)**
- Increase loads and begin training in outer ranges, working to include aspects of endurance, speed and sport specificity...
- All with an emphasis on control

**PHASE 3 (late)**
- After the initial phase of scapular retraining, progression of the rehabilitation should allow for more advanced upper body strengthening while the scapular is allowed to naturally adopt its appropriate position.

**PHASE 4**
- How do you know when the athlete is ready to return to sport?
  - When the objective findings have normalized to the extent that they are compatible with the demands of the individual’s sport
  - Must be able to understand the biomechanical requirements of the sport

**RETURN TO SPORT**
- Must be graduated with consideration to the variables of intensity, frequency, duration, environment, equipment and technique

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EXPECTATIONS / OUTCOMES:

- Rule of thumb: Initial improvement generally takes as many weeks as it has been months, that the problem has existed.
- By 12 weeks you will have 80% of your potential improvement behind you.
- Average patient requires about 4–6 visits over a two to three month period.

PATIENT COMPLIANCE:

- “How do you get your patients to do their exercises?”
- Appropriate education
- Goal setting – written out in the form of a contract
- Make the exercises achievable – set the patient up for success, not for failure
- Write everything down – clear diagrams, instructions re repetitions/frequency

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EXERCISE THERAPY:

- Exercise prescription:
  - Which exercise?
  - How many?
  - How often?
  - What force / resistance?
  - Pain?
  - Technique

THE THROWING SHOULDER

PHASES:

- Windup
- Grip
- Arm cocking
- Arm extension
- Max Velocity
- Release
- Max R
- Follow-through
THE THROWING SHOULDER

Glenohumeral internal rotation deficiency (GIRD):

When the amount of IR or total arc of motion difference reaches a certain threshold (typically 20 or more degrees of IR or 8 degrees total arc difference), it is known as glenohumeral internal rotation deficit or total arc of motion deficit.

A detailed consideration must be given to the entire kinetic chain when assessing the shoulder of the throwing athlete.
THE THROWING SHOULDER

Treatment:

- As previously discussed, the objective of rehabilitation of the throwing shoulder is to identify the deficient biomechanical components and set about strategies to correct them.
- Assess issues of flexibility, neuromuscular control and strength as relevant to the thrower.
- Establish an appropriate plan of action with the patient.

CONCLUSION

- Physiotherapy rehabilitation for shoulder pathology aims to normalize deficient shoulder mechanics.
- A targeted, clinically reasoned approach, determined from the initial objective examination, addressing issues of flexibility and/or muscle control and strength, is essential.

CONCLUSION

- Rehabilitation programs must be suitably structured to work in a graduated manner from least to more demanding exercises.
- Use this logical approach to help make treating shoulders easy!

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“Past, Present and Future Directions in Running Shoes”

David Ferguson, Podiatrist

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