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SWIMMER'S SHOULDER PHYSICAL THERAPY PRESCRIPTION

UNDERLYING PROBLEM INCLUDES:

Weakness / fatigue of scapular stabilizers (especially retractors)

Inflexibility of pectoral muscles

Anterior capsular laxity

Posterior capsular/Rotator cuff tightness

Posterior Rotator cuff weakness

___ Development of core strength: lumbar stabilization, abdominals, pelvic girdle

___ Avoid / Correct excessive anterior pelvic tilt / lumbar lordosis

___ Initial phase (Acute pain):

Modalities as needed – Phonophoresis / Iontophoresis / Soft Tissue Mobilization /
E-stim Cryotherapy / Ultrasound

Submaximal isometrics

Progress to isotonic exercises

___ Endurance training for scapular stabilizers: focus on Serratus Anterior, Rhomboids,

Lower Trapezius, and Subscapularis: Push-ups
with a plus Scapular elevation (scaption)

Rows

Press-ups

Upper body ergometry for endurance training Prone lying
horizontal flys

Side-lying external rotation, prone rowing into external rotation

Push-ups onto a ball

_____ Proprioceptive Neuromuscular Facilitation (PNF) patterns to facilitate
agonist / antagonist muscle co-contractions.

___ Rotator cuff (external rotation) strengthening: goal is ER:IR ratio at
least 65%

___ Stretching of pectoral muscles, posterior capsule, posterior rotator
cuff, latissimus

Generally, do not need to stretch anterior shoulder

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SHOULDER PAIN FROM SWIMMING

PATHOLOGY

Underlying pathology is Rotator Cuff tendonitis / bursitis due to:

1) Impingement of Rotator Cuff tendons during swimming stroke.
Rotator Cuff fatigue due to overuse – contributes to impingement.
Imbalance between internal and external rotators, resulting in impingement.
Joint laxity often plays some role.

STROKE FLAWS ASSOCIATED WITH SHOULDER PAIN

- 1) Hand entry that crosses midline
- 2) Impingement exacerbated by thumb-first hand entry
- 3) Lack of body roll
- 4) Breathing only on one side may lead to compensatory cross-over on non-breathing side
- 5) Improper head position (eyes forward is WRONG > this impedes normal scapulothoracic motion)
- 6) New freestyle teaching is to use early hand exit
- 7) Proper balance in water comes from pushing the center of buoyancy (sternum) and head into water in order to float the legs

STROKE ALTERATIONS TO DECREASE PAIN

- 1) Avoid straight arm recovery
- 2) More body roll
- 3) Breathe bilateral
- 4) Early catch, early recovery
- 5) Don't keep head up (look down)
- 6) Little finger first hand entry

TREATMENT FOR EARLY PHASE

Ice BEFORE and AFTER practice

Proper warm-up before hard training sets

Identify and minimize / avoid strokes which precipitate pain. Train with different strokes. Decrease use of hand paddles. Do more kicking sets to provide shoulder rest.

Stretching shoulder and periscapular muscles. Emphasize posterior shoulder capsule stretching.

Specific strengthening exercises for external rotators, scapular stabilizer muscles. Perform exercises below horizontal (below eye level).

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BASIC PRINCIPLES

Rotator Cuff and scapular stabilizer strengthening
Avoidance of impingement positions during rehabilitation
Restoration of muscle strength, balance, and flexibility
Emphasis on Serratus Anterior and Subscapularis

STRENGTHENING EXERCISES

General Principles: Start with low loads. As endurance improves, may progress to sport-mimicking exercise, such as swim bench. Maintain proper scapulohumeral rhythm during exercises. Exercises should begin in the scapular plane. Start with open chain exercises.

IF PAIN PROGRESSES

Reduction in training volume and dryland training. Eliminate painful strokes for 2-3 weeks, then gradually resume.

Continue icing, stretching.
Anti-inflammatory medication (non-steroidal anti-inflammatory medication)
Consider subacromial injection (only if refractory)
X-Ray

MANAGEMENT OF SHOULDER PROBLEMS IN SWIMMING

Contributing factors for swimmer's shoulder include (1) overuse and subsequent fatigue of the shoulder and peri-scapular musculature (2) glenohumeral laxity and (3) the mechanics of the swimming stroke, in which impingement can occur in various phases. Other associated findings include muscle imbalances and inflexibility, such as tightness of the pectoral muscles, posterior rotator cuff and posterior capsule. Because of their continuous activity during the swimming stroke, the serratus anterior and subscapularis are susceptible to fatigue. Although muscle fatigue and/or shoulder instability with excessive glenohumeral translation can by themselves cause pain, it is likely that some element of impingement and subsequent rotator cuff tendonitis is the final common pathway causing shoulder pain. Impingement may be caused by the particular mechanics of the swimming stroke as well as altered glenohumeral kinematics due to muscle fatigue and/or glenohumeral laxity. Recent studies demonstrate supraspinatus tendinopathy in swimmers with shoulder pain.

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As in any injury, an accurate diagnosis begins with a careful history and examination. A comprehensive examination is performed with specific attention to glenohumeral laxity, strength of the rotator cuff and peri-scapular muscles, and impingement signs. Insight into the cause of pain may be gained from careful analysis of the swimming stroke. MRI may demonstrate thickening of the capsule (indicative of previous instability episodes) and signal change in the rotator cuff consistent with tendinosis (suggestive of tendon overload). Diagnostic injection may be helpful to confirm the source of pain. Treatment begins with relative rest, avoidance of strokes and training exercises that exacerbate the pain, use of ice, and a short course of NSAIDs. Modalities such as electrical stimulation and ultrasound are useful to control pain and inflammation in the initial treatment phase. The most important part of the rehabilitation program is identification of any deficits in muscle strength, endurance, balance and flexibility. Operative management is generally indicated only after a comprehensive course of conservative treatment. Surgical intervention is most commonly required to address instability and secondary impingement.

Prevention is the most important factor in management of shoulder pain in swimmers. A comprehensive program to develop strength, endurance, balance, and flexibility of the muscles is recommended. A comprehensive program for the shoulder and peri-scapular muscles is required, with emphasis placed on endurance training/strengthening for the serratus anterior, rhomboids, lower trapezius and subscapularis. The muscles of the low back, abdomen and pelvis that make up the 'core' of the body should also be addressed.