PICO Question: For competitive swimmers between 10-25 years old, does a scapular strengthening program vs. no strengthening program, decrease the risk of seasonal shoulder injuries?

The average competitive swimmer practices 5-7 days a week, completes 6,000 – 10,000 meters a day and 60,000-80,000 meters a week.[1] The upper extremities provide about 90% of the propulsive force, exerting tremendous amounts of stress on the glenohumeral joint and shoulder girdle.[1] It is no surprise that shoulder pain is the most common musculoskeletal complaint among competitive swimmers. Due to the relatively high incidence of shoulder pain and risk for injury, an injury prevention program should be implemented as additional training to prevent shoulder pain and injuries. The current literature recommends prevention training for competitive swimmers; however, there are a limited number of studies that investigate this issue.[1,10] The available evidence focused on functional exercise, posture, and muscle balance during shoulder and scapular strengthening.

Keys points from the literature review:

Functional exercise aims to improve neuromuscular control, encourage force couples to work in concert, and improve joint protection while mimicking the demands of the sport in a controlled environment.[6] This additional training resulted in increased strength [1,6] and decreased the incidence of shoulder pain[6].

Postural malalignments can cause muscle imbalances surrounding the shoulder and scapula, and are associated with painful shoulders in swimmers.[3,4] Strengthening exercises that focused on posture resulted in significant improvements in posture[3,4], strength gains[3], and also decreased the incidence of shoulder pain[3].

Swim training alone contributes to muscle imbalances of the shoulder rotators, abnormal scapular kinematics, shoulder pain and injury.[1,2,7,8] Therefore, strength training should be targeted at correcting muscle imbalance, especially of the external and internal rotators.[8] Correcting muscle imbalances may be more critical in preventing shoulder injuries than general strengthening.[5,7,8]

Strength gains, postural correction, and muscle balance can be attained with high frequency, short duration intervention.[1-6] However, a season long intervention may result in greater strength improvements, identify long term outcomes, and success of the intervention.[1,4,6]

This evidence is unable to definitively answer the proposed PICO question at this time. Nevertheless, the evidence has proven useful by demonstrating interventions that lower the incidence of shoulder pain, providing strengthening exercises to utilize in the clinic, and identifying swimming related factors that increase the risk of shoulder injuries. Therefore, this literature provides physical therapists with the basic treatment strategies when presented with this population in clinical practice.

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