

Risk Factors for Shoulder Pain in Swimmers Across the Lifespan



Purpose of our Study

- Determine the percentage of female competitive swimmers aged 8-77 years with shoulder pain
- Determine if physical characteristics, training variables or exposure differs between swimmers with and without pain and disability. If differences were found, they might be used as a basis for a shoulder pain prevention program

Methods

- We studied 236 competitive female swimmers who took a survey and underwent a physical exam, which looked at:
 - core strength
 - shoulder mobility
 - shoulder strength
 - muscle flexibility
 - shoulder blade (scapula) motion patterns

Results

What Percentage of Competitive Swimmers Have Pain?

	Ages 8-11	Ages 12-14	Ages 15-19	Masters aged 23-77
Pain at Rest	7%	14%	29%	19%
Pain with Normal Activities	5%	12%	43%	19%
Pain with Swimming	31%	56%	81%	64%

What Factors were Associated with Pain, Disability, and Dissatisfaction with Swimmers' Shoulders?

<p>For the 8-11 year old swimmers:</p> <ul style="list-style-type: none"> • Not playing a different sport, esp. soccer • Breathing to both sides • Reduced shoulder flexibility • Weak mid back muscles • Shortened chest (pectoral) muscles 	<p>For the 15-19 year old swimmers (High School):</p> <ul style="list-style-type: none"> • More years swimming • Playing water polo • Breathing to one side • History of shoulder injury • Reported feeling of instability • Shortened chest (pectoral) muscles • Reduced core endurance
<p>For the 12-14 year old swimmers:</p> <ul style="list-style-type: none"> • Reported feeling of instability • History of prior shoulder injury • Weak shoulder rotator cuff muscles • Reduced core endurance 	<p>For the Masters Group:</p> <ul style="list-style-type: none"> • Not running/walking on a regular basis • More hours spent swimming/year • More hours spent swimming/week • History of shoulder injury

Our Study Shows:

- Pain is present in swimmers aged 8-11 while Pain and Disability...
 - are present in swimmers from age 12 through Masters level
 - are highest in High School swimmers
- Swimming exposure in terms of hours and yardage...
 - is highest in High School swimmers, who also have the most pain and disability (Swimmers covering 10,000 meters may make 4,000 shoulder revolutions per day!)

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- Swimmers with Pain and Disability...
 - were more likely to play high school water polo
 - were more likely to have a history of prior shoulder injury or feeling of instability
- Swimmers without Pain and Disability...
 - play another sport in the young and run or walk in the Masters level group
- The high prevalence of pain and disability found in swimmers across the lifespan warrants the development of *exposure guidelines* and shoulder symptom prevention programs. Although the effect of a prevention program has not been yet been determined, our data suggests that further research be done in the following areas:
 - *Defining optimal yardage and/or swimming practice times for each age group*
 - *Cross training*
 - *Implementing core endurance training and pectoral stretching*

Core Endurance

Plank Exercise



Side Plank Exercise



Pectoral Muscle Stretching

Starting Position



Ending Position



Cross training/Running/Walking



If you have additional questions, contact:

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