

the healthy swimmer



Study Sheds Light On Shoulder Pain Risk Factors

A recent study funded in part by the U.S. Masters Swimming Endowment Fund looks at variables in shoulder pain in 236 competitive female swimmers aged 8 to 77. The purpose of the study was to look at the percentage of swimmers with shoulder pain, and determine what variables or exposure differences existed among them so the information might be used to create a shoulder pain prevention program.

Angela Tate, a physical therapist and associate faculty member at Arcadia University in Pennsylvania, conducted the study, which is currently under review by the *American Journal of Sports Medicine*. Tate, a one-time competitive swimmer, did her doctoral dissertation on shoulder research, looking at 142 NCAA Division I and III athletes, mostly swimmers and water polo players.

"During my research, and observing my own daughter's teammates and competitors, I encountered many swimmers with shoulder pain. In my physical therapy practice, I treat shoulder symptoms in swimmers from age 8 through Masters level. This has evolved into my specialty as I love working with such highly motivated athletes," Tate says.

For the current study, the swimmers were divided into four age groups: 8-11, 12-14, 15-19 and Masters aged 23-77, and examined for core strength, shoulder mobility, shoulder strength, muscle flexibility and shoulder blade motion patterns.

Tate found that shoulder pain and disability was highest among high school students, many of whom swim 10,000 meters a day, were more likely to play water polo, or had a history of prior shoulder injury. The five high school team swimmers in the study practiced an average of 16 hours per week. About 81 percent had pain with strenuous activities and 43 percent had pain with normal activities. Tate believes their practice times may be excessive.

"Pitch count guidelines exist for youth baseball pitchers, no guidelines for safe swimming exposure are currently available to assist coaches in determining appropriate swimming yardage or practice time," she says.

The study looked at swimmers who experience pain at rest, pain during normal activities and pain while swimming, and found that the highest percentage of pain experienced for all age groups was considerably higher during swimming, yet the percentage of pain experienced across the board was significantly higher for high school students, followed by Masters

aged swimmers.

"Almost two-thirds of the Masters study participants had pain with strenuous activity such as swimming but those that were involved in a regular walking or running program were less likely to experience shoulder pain, lending support for cross-training," Tate says.

The factors associated with pain and disability varied among the different age groups. History of shoulder injury was associated with pain in all the different age groups except the 8-11 age group. In the 8-11 and 12-14 age groups, weak shoulder or back muscles was a common factor. For the Masters group, not running or walking on a regular basis and more hours spent in the pool on a weekly and yearly basis were significant factors for shoulder pain. Playing water polo, breathing to one side and shortened chest were factors that affected high school students. For the 12-14 age group and high school students, reduced core endurance was also a factor.

Tate says shoulder pain, dissatisfaction, and disability were positively correlated with increased repetitive arm usage in terms of greater swimming practice and participation in water polo, while being negatively correlated with participation in another sport.

"Specifically, soccer for the young and

