

## **FLEXIBILITY: ACTIVE-ISOLATED STRETCHING: PART ONE**

By Marlene Royle

Power, length, and rate are three factors that determine the speed of the boat. Every crew and sculler needs to find the right technical balance to link how fast the boat travels, how far the boat runs, with the number of strokes rowed per minute to perform their best. Stroke length is often the first component to deteriorate in a racing situation due to shortening of the slide and missed entry timing. Preparing for a stroke, your head is up to maintain posture, the chest comes against the thighs keeping the lower back firm, and your shins are vertical to create a strong position for the quads to work. Achieving this poised position means good hamstring and ankle flexibility are a must. Improving the ability of these muscles to lengthen as you compress helps you hold your body preparation, keeping the connection to the blade as you apply your legs first. This is critical especially in races at higher stroke rates.

Indifference to stretching is rare. You love it, hate it, or know you should do it, but don't. Flexibility work gets pushed aside in a training program when time is tight. Every season I hear masters say, "Stretching is so uncomfortable, I avoid it," and juniors groan lazily, "Do we have to do it?" Inflexibility in our posterior muscles is a major limiting factor in technique. Reasons for lack of flexibility include: muscle imbalance, injury, overuse, aging, or periods of rapid growth. Today's lifestyle exacerbates the situation because sitting at a computer or driving long hours keeps these muscles shortened for extended periods. The rowing motion then demands them to be lengthened repeatedly every practice. Last summer, I was amazed to see such a high percentage of high school rowers already unable to touch their toes. Finding flexibility exercises for people who shy from stretching is one solution to the problem.

Active-Isolated Stretching employs the contracting muscles opposite to the muscles that are to be lengthened as the movement force. I have found this method, popularized by Sarasota-based kinesiologist, Aaron Mattes, to be excellent for targeting the posterior muscles we need for developing stroke length. They are very comfortable to do and not time consuming. In order to fully appreciate this system of exercise, we need to understand a bit about the mechanism of stretch.

The stretch reflex is a regulatory mechanism that assists the body to maintain muscle tone, posture, and protect muscle from overstretching. In his book, *Flexibility: Active and Assisted Stretching*, Mattes explains, "When someone does not possess adequate flexibility for a required movement, the stretch reflex contraction exerts force against the desired movement, thus requiring more energy to overcome the stretch reflex force and increasing the possibility of injury." There are two components of the stretch reflex that you need to know about: the muscle spindle and the Golgi tendon organ.

When muscle is stretched, the muscle spindle signals to contract, preventing overextension. If a stretch is hard, the contraction is proportionately strong and injury potential increases. The

spindle is also responsible for the reciprocal innervation of the agonist and antagonist muscle groups that provide for smooth movement. Put simply, this means when one muscle works, the opposite muscle relaxes. For example, as the biceps contracts, the triceps relax to allow the biceps to flex the elbow joint. Without reciprocal innervation our movements would be jerky or cogwheel-like; Compression into the entry would certainly be very difficult.

The Golgi tendon organ is located where the muscle fibers and the tendons join. They are sensitive to changes in muscle length but cannot differentiate between muscle contraction and muscle stretch. They react to any tension in the muscle. When they discharge, they cause the working muscle to be inhibited so that it may not overstretch the opposite muscle. There is a window of time, approximately two seconds, when a muscle can be stretched before the Golgi tendon organs kick in to interrupt the increased tension. Active-Isolated Stretching utilizes this two-second window to perform, and then release, the motion without activating the stretch reflex. In part two, I will review specific exercises that you can easily incorporate into your routine to improve your flexibility and lower body compression into the entry.