

STRETCHING DEMYSTIFIED

Why, When, How, How Often, How Much?

by Michael J. Stott

Fact: In 2000, at the age of 36, Wally Dicks of Fairfax, Va., became the oldest male swimmer to qualify for Olympic Trials. Lesser-known fact: He stretched before and after every practice and sometimes in front of the television—for a minimum of 30 minutes every day. “Mentally we may be stronger,” he says of maturity, “but as we get older, we lose elasticity.”

For many swimmers, stretching is an afterthought. In the book, *Swimming Past 50*, authors Mel Goldstein, former USMS president, and

Mike Stott, a contributing writer for *SWIMMER*, is a member of Virginia Masters.

Dave Tanner of the University of Indiana Performance Lab, opine that people know they should stretch but choose not to because it takes time away from swimming. “What a big mistake,” they lament, noting that flexibility decline begins as early as age 20. The good news is that studies show stretching can decrease muscle soreness, increase neuromuscular coordination and, in concert with a progressive-resistance exercise program, improve all-important range of motion.

The ennui associated with stretching is probably best overcome with a good dose of “just do it,” which leaves the uninitiated with “How?” and “Where do I start?” questions. Investigating the various types of stretching is just the beginning.

Steven Thompson of Novato, Calif., is a registered physical therapist and a past instructor



at the USMS/USA Swimming/ U.S. Olympic Training Camp. A couple of years back, he taught a session on four types of active and passive stretching. Thompson defines active stretching (static, ballistic and dynamic) as when an athlete applies force. Passive stretching (Proprioceptive Neuromuscular Facilitation, or PNF) is when a stretching partner or device provides force.

To oversimplify, static stretch-

ing, the most widely used, is a position held for 10 to 60 seconds, which allows for relaxation and elongation of the muscle tissue. A ballistic stretch includes the more dangerous, bouncing movements taught by grade school physical education coaches prior to 1970. Dynamic stretches use more controlled sport-specific movements, such as technique drills for individual swimming strokes.

Thompson classifies PNF

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stretches as Hold-Relax, Contract-Relax and Slow Reversal Hold Relax. A benefit of PNF, notes Thompson, is that, done properly, it can add muscle strengthening to the agonist and antagonist muscles. A major drawback to PNF, says William E. Prentice, author of *Rehabilitation Techniques in Sports Medicine*, is that it usually requires a partner, a main reason why many coaches have ceased endorsing partner stretches.

Goldstein and Tanner, both coaches themselves, are even more pointed in their assessment. "Partner stretches, so popular in swimming a few years ago, are definitely not advised. *You* must be in control of how much your joint is being moved. Only *you* will know how much is too much. Stretching is not a team sport!"

Dicks stretched every day. Nadine Day, a multi-national Masters champion and physical therapist in Champaign, Ill., endorses the regularity. "The minimum would be three times per week to maintain one's flex-

ibility or to make slight improvements," she says. She also advocates knowing the purpose of the stretch and having awareness of the target muscle.

But in reality, limberness comes down to genetic code. "It depends on the individual," says Matt Wren, a 1984 Olympic Trials swimmer, former coach and now physical therapist in central Virginia. "It's a DNA issue. Some people are tight, some are naturally flexible." Wren, who sees dozens of age group and Masters swimmers every month doesn't encourage the extremely flexible ones to stretch at all. "Most will get the flexibility through swimming," he says.

"I'm a big believer in active motion to warm things up," he says. He advises swimmers to warm up with entire body movements for up to 15 minutes. "I like stretches to mimic what swimmers will do athletically. You can stretch muscles and tendons to loosen up, but I would never, ever stretch ligaments," he says.

"Sport-specific stretches

Stretching Basics

- Warm up first with some active motion.
- When you begin, spend 10 to 30 seconds in an easy stretch.
- Go to the point of mild tension. Relax and hold.
- Focus on the muscles being stretched.
- Move a fraction farther, feeling mild tension and hold 10 to 30 seconds.
- Repeat three to five times, holding the stretch for 30 seconds or longer.
- Breathing should be slow, rhythmical, under control.
- No bouncing.
- Proper stretching should not cause pain.

Sample Stretches

Steven W. Thompson, MPT, CSCS, provides these suggested stretching exercises for swimmers.

1 LATISSIMUS DORSI (BACK) >>> Grasp the blocks or bars on the blocks, or the railings on the ladder to exit the pool. Walk your feet up the wall as far as possible. If the pool has a gutter, and you are flexible enough, rest your toes on top of the gutter. Slowly lower your buttocks back into the pool as you lean back, dropping your head below your arms. The stretch should be felt along the sides of your body and the sides of your shoulders. You can intensify the stretches by crossing your arms.



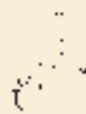
2 CHEST AND SHOULDERS >>> Grasp the handles of the ladder rails or the edge of the pool so that your arms are stretched behind you and your back is to the wall. Place your feet on the pool floor or on the wall behind you. Slowly bend your knees to create the stretch. Keep your chest up and draw your shoulder blades down toward your spine.



3 HAMSTRINGS >>> Place your heel on the bench in the locker room and your knee will be straight. Stand up tall with spine erect and slowly bend forward at the waist until a stretch is felt behind your thigh. Keep spine angle straight and hips facing forward.



4 QUADRICEPS/SHINS >>> Stand facing the chair back and bend one knee to bring your foot up to your buttocks. Grasp your foot at the toes and pull your toes toward the buttocks. The stretch should be felt in the front of your lower leg and in front of the thigh. Next grasp your ankle so you now pull your heel toward the buttocks. The stretch should be felt in the front of the thigh.



5 INNER THIGH >>> Sit either on the deck next to the pool or on a wide bench in the locker room. Bring your feet together in front of you so your knees are bent out to the side. Sit up tall and gently push your knees down to the floor or deck, gently bending forward. The stretch should be felt on the inner thigh.



6 DOWNWARD DOG >>> From the seated position, get on your hands and knees or lie on your stomach. Push your buttocks up into the air while keeping your back straight. Extend your elbows and knees as far as possible, keeping your weight evenly distributed between your hands and feet. Your knees may not straighten completely if you have tight hamstrings. Imagine trying to raise your tailbone to the sky.



swimmers can gently exaggerate the entire stroke motion to loosen up the trunk, shoulders, hips and legs.

Some physiologists and coaches also advocate easy pacing in-water prior to the beginning of the workout followed by 8 to 10 minutes of on-deck, sport-specific stretches. Such an approach involves pulling swimmers out of the water to stretch. "Stretching after you are warmed up allows for maximal gain in muscle lengthening and minimizes injury from stretching," says Thompson. The downside is that coaches are often reluctant to subject their charges to the cold on deck after warm-up. However, stretching after workouts receives a thumbs up from most experts since muscles are decidedly looser after sustained activity.

In their book *A Clinical Guide to Sports Injuries*, editors Roald Bahr and Sverre Maehlum distinguish between moderate exercise, warm-up/static stretching prep for maximal exertion and flexibility training, which is designed for increasing maximum joint range of motion. Such a distinction begs the oft-asked and controversial question, "Does stretching prevent injuries?"

The jury is still out. In 2004, S.B. Thacker and colleagues at the U.S. Centers for Disease Control and Prevention examined the hypothesis and performed a meta-analysis. The researchers found limited evidence supporting the position that flexibility training actually prevented injuries. They concluded that there was "not sufficient evidence to endorse or discontinue pre- or post-event stretching to prevent injury among competitive or recreational athletes." They did, however, cite clear evidence that stretching increased flexibility and might still benefit injury prevention and enhance performance.

On a related issue, the American Academy of Medicine

incorporated as drills help to achieve a full and extended position of the arms during the stroke of choice and properly prepares the athlete for the workout session," agrees Thompson. Such motion elongates the muscles of the shoulders, chest, hips and trunk. For example, he suggests that backstrokers gradually work on reaching overhead as the hands enter into the water. Breaststrokers can gently overextend the hands forward during the stroke. Butterfly

"No pain, no gain," may be alive and well in American sport, but it is slowly dying in the halls of physical therapy clinics as both practitioners and patients realize that there are limitations to the punishment the human body can withstand. In the past, athletes often overlooked or dismissed that harbinger of injury—pain. "Pain is not the enemy. Pain is a warning sign."

Good Pain Versus Bad Pain

GOOD PAIN

- Occurs when you push yourself 90 to 100 percent effort in a workout.
- Feels like fatigue, burning or aching in the muscle group exercised.
- Typically diminishes in a few minutes.
- Muscles that are tight and sore for one to three days after a workout.

BAD PAIN

- Very specific to an area of the body.
- Feels sharp, stabbing, radiating, nagging or nauseating.
- Persists for more than four days.
- Can have a sudden onset or progressively worsen over many days/weeks.

Source: Steven W. Thompson, MPT, CSCS

has weighed in, averring that there is no evidence that stretching will improve athletic performance. Physical therapist Wren disagrees and has a body of patients who support his position. One, afflicted with a stiff upper back and spine, tight hip flexors and weak gluteals, was the proverbial poster child for the Masters swimmer who didn't stretch. After rehabbing with Wren, the patient committed to a 30-minute-per-day stretching regimen. Within three months and without any increase in yardage, the 59-year-old male began recording times that were among his best in five years.

"With the appropriate amount of flexibility," says Wren, "you can achieve an appropriate streamline and improve your body position in the water." This is a concept that will resonate with any owner of the Richard Quick videos that pound home the persistent "posture, line and balance" message.

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"Pain is not the enemy," says Wren. "Pain is a warning sign. It is telling you there is something wrong, that you have an overuse, weakness or flexibility problem. I liken it to a dashboard light. You can do something about it or ignore it."

Most swimmers experience pain at some point along their fitness or competitive path. Understanding pain behavior and symptoms of an injury can help determine when it is OK to continue exercising and when it's time to seek professional treatment. There are several types of normal pain, and there are other types that are indicative of an injury.

Good pain is pain that occurs when you push yourself at 90 to 100 percent effort. Typically, the result may be fatigue and/or burning in an emphasized muscle group. As an example, says Thompson, a swimmer may feel burning in the muscle and fatigue in both legs after performing a maximal effort kick set. Another common symptom of a good effort is when a swimmer feels burning in the chest and lungs after an all-out exertion. Normal pain typically diminishes after a minute of rest.

It is normal, Thompson notes, to feel sore and tight muscles one to three days after an intense workout in the pool or after increasing repetitions at maximal effort in the gym. This is called delayed onset of muscle soreness, or DOMS. Typically, DOMS can progressively worsen from the second to third day after a hard workout, he says, but is usually lessened or eliminated by gentle stretching of the exercised muscles and by applying heat to the sore muscles. The best method to alleviate DOMS, says Thompson, is to perform an easy workout doing the exact same exercise that made you sore.

In short, good pain can be

described as "tired or fatigued, short term (minutes) aching, burning in the muscle belly, soreness in large areas or in large or multiple muscle groups when felt for only a few minutes, or soreness that develops two to three days after hard exercise," says Thompson.

Bad pain is another matter. It is often very specific to an area of the body, i.e., the top of the shoulder, the inside of the knee, the neck or back or inside of the elbow. "It can be sharp, stabbing, radiating, nagging, nauseating or persistent for more than four days. The onset of bad pain is often sudden, but it *can* develop

slowly over several days to weeks," says Thompson.

Bad pain is often present before workouts, decreasing or abolished at the beginning of the workout, but nearly always returning worse than before two to three hours after a workout. Bad pain can arise from tendonitis, bursitis, strain/sprain of muscles and tendons or a pinched nerve in the neck or lower back, says Thompson. The cause usually can be traced to overexerting at a specific moment of a stroke, poor technique or poor training.

Unfortunately, reports Thompson, "a swimmer usually never feels the first injury. Over time, the tissue repairs itself with scar tissue. Chronic, repeated stress to an injured tissue leads to tissue disorganization, pain and weakness." Critical to the healing process

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Expert Advice

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