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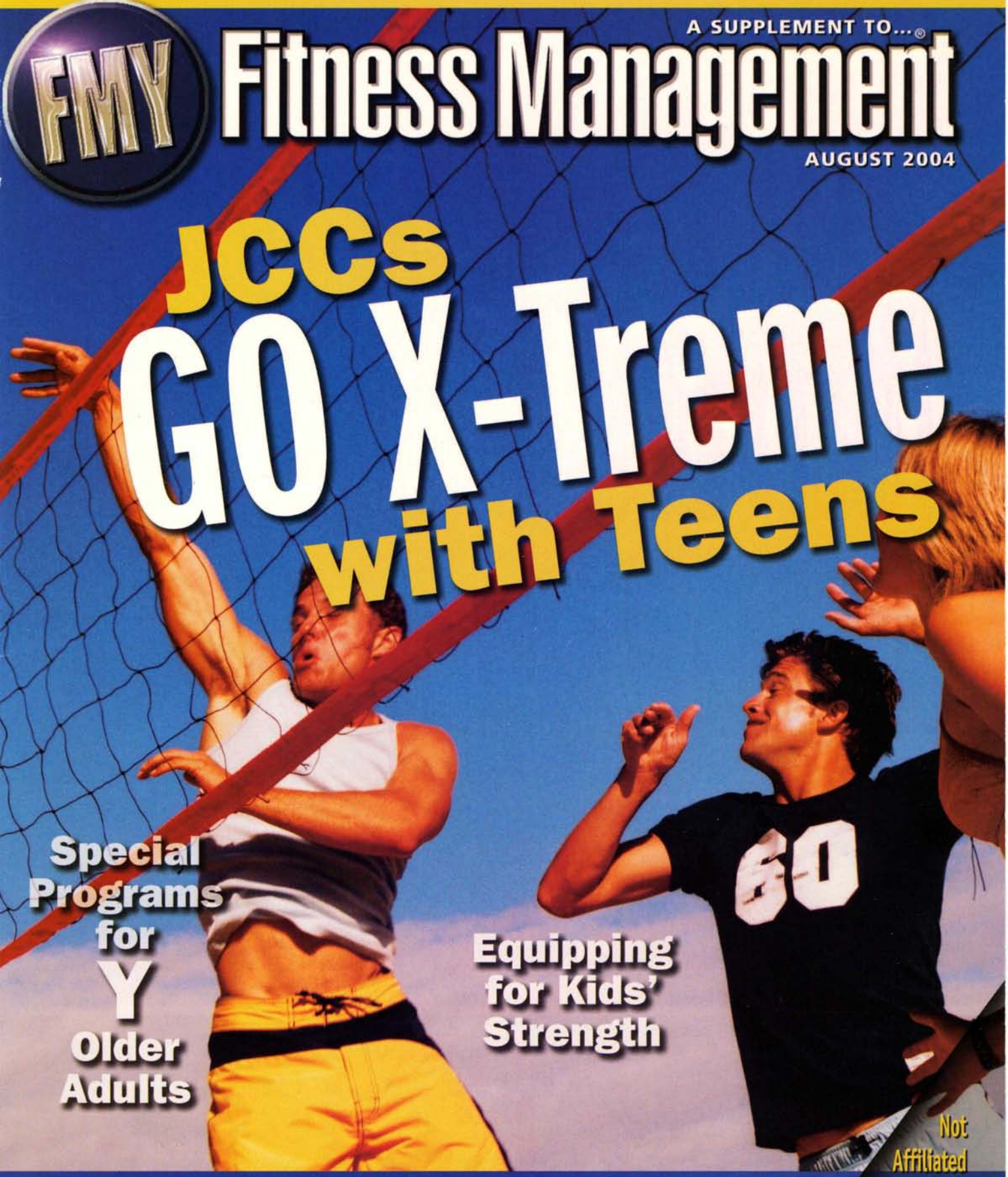

Special Programs for Y Older Adults

Equipping for Kids' Strength

- MYTHS OF FLEXIBILITY
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10 MYTHS ABOUT FLEXIBILITY TRAINING

Despite the efforts of the scientific and academic communities, myths continue to abound about many aspects of physical fitness. The following myths are among the most prevalent about flexibility training.

Myth No. 1: Stretching is a waste of time

Stretching the muscles is undoubtedly the simplest and most effortless type of training — the exertion level is quite low and relaxation is an absolute requirement. Nevertheless, many people often overlook or underemphasize stretching.

There are several reasons why engaging in a regular, sound stretching program is a good idea. First, improving flexibility allows an individual to move the joints through a greater range of motion. Second, being more flexible enables an individual to exert strength over a greater range of motion. Third, becoming more flexible may make an individual less susceptible to injury. And think about this: It has been estimated that 80 percent of the world's population will experience low-back pain some time in their lives. One of the contributing factors that is often cited for this problem is a lack of flexibility in the hip flexors and lower back.

Remember, stretching does not take an inordinate amount of time. A comprehensive program of stretching can be completed in about 10 minutes or less.

Myth No. 2: Older individuals cannot improve their flexibility

In general, there is a distinct relationship between age and flexibility. The greatest increase in flexibility usually occurs between the ages of seven and 12. Flexibility tends to plateau during early adolescence, and then begins to decline with increasing age.

Having said that, it appears as if the most significant contributor to decreased flexibility is not the aging process itself; rather, it is due to a decrease in — or lack of — physical activity. Clearly, then, older individuals can avoid a significant loss of flexibility, and perhaps improve it, simply by participating in physical activities on a consistent basis.

In addition to level of activity, flexibility is affected by several genetic characteristics, such as the insertion points of the tendons, and body fat percentage (especially fat around the mid-section). An individual's range of motion also has genetic limitations that are structural, which includes the bones, tendons, ligaments and skin, along with the extensibility of the muscles.

Myth No. 3: The sit-and-reach test is a good way to assess flexibility

A sit-and-reach test is widely used to measure the flexibility of the lower back and hamstrings. But the results of a sit-and-reach test can be misleading. In the test, a person sits down on the floor with straight legs and reaches forward as far as possible. The distance that a person reaches is then measured. Understand that the test does not take into consideration limb length. Everything else being equal, those with long arms and/or short legs have a distinct anatomical advantage in a sit-and-reach test. These individuals may appear to be quite flexible, but may actually be quite inflexible. Conversely, those with short arms and/or long legs have a distinct anatomical disadvantage in a sit-and-reach test. These individuals may appear to be quite inflexible, but may really be quite flexible. In the case of a sit-and-reach test, using a goniometer to measure the angle of flexion between the lumbar spine and the upper legs yields an appraisal of flexibility that is more impartial. (A goniometer is a protractor-like instrument with two movable arms that enable the tester to measure joint angles.)

Myth No. 4: A person who is flexible in one joint is flexible in other joints

Flexibility is joint-specific — a high degree of flexibility in one joint does not necessarily indicate

a high degree of flexibility in other joints. So a person who exhibits an adequate level of flexibility in the lower back and hamstrings during a sit-and-reach test, for example, may not be flexible in the shoulders and ankles.

Along these lines, it would not be uncommon for flexibility to vary from one side of the body to the other. In some instances, this may be the result of a previous injury to a muscle or connective tissue on one side of the body. Furthermore, immobilizing a joint during the healing process may cause the connective tissue to adapt to its shortest functional length, thereby reducing the range of motion of the joint.

Myth No. 5: Warming up is the same as stretching

Quite often, warming up is viewed as being synonymous with stretching. In reality, however, warming up and stretching are two separate entities. Warming up the muscles is meant to produce a short-term change to prepare an individual for an upcoming session of physical activity; stretching the muscles is meant to induce a more long-term change in an individual's range of motion.

Warming up should precede stretching. Warm-up activities usually consist of low-intensity movements, such as light jogging or calisthenics. Regardless of the warm-up activity, the idea is to systematically increase the temperature of the body and the blood flow to the muscles. Breaking a light sweat during the warm-up is a good indication that the core temperature has been raised sufficiently, and that an individual is ready to begin stretching the muscles. When the environmental temperature is high, it is likely that the core temperature is already elevated enough for an individual to start stretching the muscles.

Muscles and connective tissues that are warmed up have increased flexibility and extensibility. This would mean that the tissue is most flexible at the end of a physical activity when the body temperature is elevated. Because of this, some authorities recommend that stretching should be performed after an individual completes physical activity. Doing so may also relieve and/or reduce the general muscular soreness that sometimes results from performing unfamiliar activities or intense physical training (although this has yet to be corroborated by research).

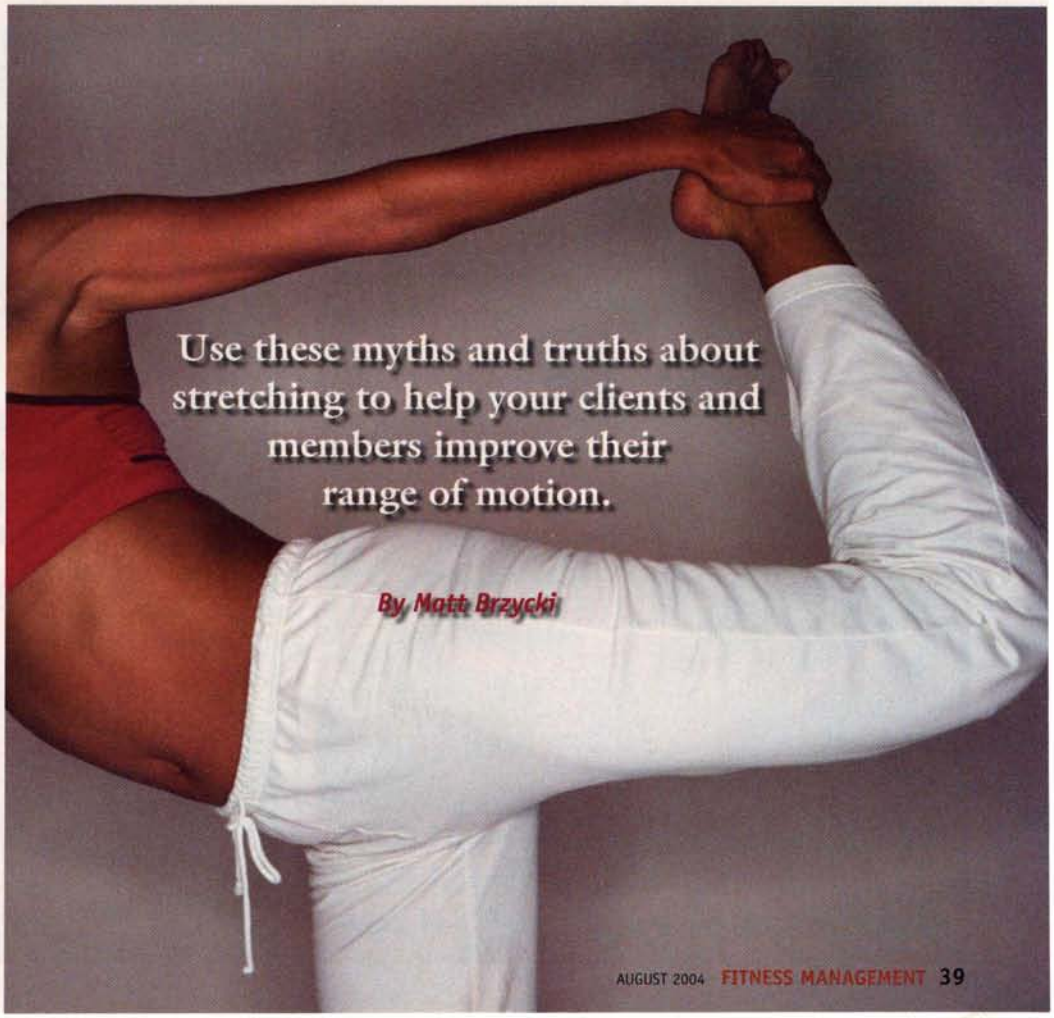
While on the subject, there are two types of warm-ups: passive and active. Passive warm-ups use an external method to increase core temperature (such as hot showers and heating pads); active warm-ups use exercise to achieve this effect. Surprisingly, the research regarding the need for a warm-up offers conflicting results. Some studies have shown that performances with a prior warm-up are better than those without a warm-up; other studies have shown that performances with a prior warm-up are no different than those without a warm-up. In a few studies, performances actually worsened following a warm-up (possibly because the warm-up produced too much fatigue and/or did not allow sufficient recovery prior to the performance). Nevertheless, a warm-up has both physiological and psychological importance.

Myth No. 6: Stretching prior to physical activity will reduce the risk of injury

There is little research that has investigated the effects of pre-exercise/activity stretching on the risk of injury. But two studies that involved a total of 2,630 military recruits (men ages 17 to 35) who were going through basic training found that stretching prior to an activity reduced the risk of injury by 5 percent (which was not statistically significant). Over the same period, the expected risk of injury was 20 percent. This suggests that a 5 percent reduction in the risk of injury would translate into a reduction in absolute risk by a mere 1 percent. Stretching would seem to be most beneficial when performed prior to dynamic, short-duration activities that involve rapid muscular contractions, such as sprinting.

Myth No. 7: The preferred way to stretch is to "bounce" into and out of the stretched position

There are two common methods of stretching: static and dynamic. Static stretching is done by easing into a stretch and holding that position; dynamic stretching is done by bouncing repeatedly (and rapid-



For **stretching to be safer** and **more effective,** an individual should **ease into** the stretched **position.**

ly) into and out of a stretched position. A person should stretch under control without bouncing, bobbing or jerking movements. Bouncing during the stretch actually makes the movement more painful, and increases the risk of muscular soreness and tissue damage.

Besides being less dangerous than dynamic stretching, static stretching is also more effective. Muscles and tendons have stretch receptors that respond to changes in length and tension. Muscle spindles, for instance, are embedded within muscles. They are highly sensitive to changes in muscle length. (Golgi tendon organs are embedded within tendons. They are highly sensitive to changes in muscle tension.) When a muscle is stretched (lengthened) too rapidly, the spindles send a message to the central nervous system (CNS). The CNS replies back to the muscle with a message that ultimately triggers the myotatic (or "stretch") reflex. This contracts the muscle that is being stretched. The protective contraction neutralizes the stretch as a way of preventing injury. Essentially, then, the stretch receptors serve as protective mechanisms.

A classic example of this system in action is during a patellar reflex test that is administered by a physician. In the test, the physician taps the patellar ligament of a patient with a reflex hammer, which causes it to stretch. This, in turn, quickly stretches the muscles of the quadriceps. The rapid change in the length of the quadriceps stimulates its muscle spindles, which alert the CNS. The response from the CNS activates the stretch reflex, which contracts the quadriceps. The contraction of this muscle causes the lower leg to extend — the proverbial "knee-jerk response" — and demonstrates to the physician that this particular reflex arc is functioning properly.

For stretching to be safer and more effective, an individual should ease into the stretched position. Once in this position, the stretch should be held for a given amount of time. No one knows exactly how long this should be, but most authorities — including the American College of Sports Medicine — recommend that each stretch be held in a static positionz for about 10 to 30 seconds.

Myth No. 8: Lifting weights makes an individual "muscle-bound" and inflexible

There is no correlation whatsoever between muscle mass and flexibility. While some individuals who are very muscular have poor flexibility, other muscular individuals have outstanding flexibility. Consider John Grimek, who was perhaps the most muscular man of his generation. He won the 1940 and 1941 AAU (Amateur Athletic Union) Mr. America, the 1946 AAU America's Most Muscular Physique and the 1948 Mr. Universe (where he beat the legendary Steve Reeves of Hercules

fame). By the way, Grimek was also exceptionally strong. He competed for the United States in the 1936 Olympics in Germany, and placed fourth at the 1938 World Weightlifting Championships in Vienna. At any rate, Grimek had an extremely muscular physique, but was flexible enough to do a front split.

Individuals who lift weights can lose flexibility if they perform repetitions throughout a limited range of motion. Those who do not fully extend their arms during a bicep curl, for example, will eventually lose flexibility in their elbow joints. But performing repetitions throughout a full range of motion will maintain — or even improve — flexibility. Individuals who have residual fears that lifting weights will make them less flexible can stretch their muscles immediately after the completion of each exercise.

Myth No. 9: Stretching must be painful to be effective

The adage "no pain, no gain" does not apply to stretching. When stretching, an individual should be relaxed mentally, as well as physically. This permits the muscles to be stretched throughout a greater range of motion. Needless to say, a person will not be able to stretch effectively if pain is present. Moreover, pain is an indication that a muscle is being stretched at or near its structural limits. Therefore, an individual should stretch comfortably in a pain-free manner. A good rule of thumb is to stretch only to the point of mild discomfort.

Myth No. 10: There is an optimal program for stretching the muscles

Similar to other types of training, there is not one optimal program for stretching. The program should be individualized to suit personal preferences and special needs. Some individuals, for example, may have a greater need to address the flexibility of their hamstrings than others.

Fortunately, an infinite number of possibilities exist for designing a stretching program that is comprehensive and effective. Keep in mind that the body has more than 660 muscles. Those muscles influence roughly 200 joints, ranging from those that are relatively immovable (such as the sutures of the skull) to those that are freely movable (such as the hips and elbows). Be that as it may, it is not necessary to perform a stretch for each muscle. Individuals should simply stretch their major muscles. A comprehensive program that addresses all of the major muscles can be performed using about 12 different stretches. In general, the best way to organize the stretches is from head to toe. So the order of stretching might be neck, chest, upper back, shoulders, mid-section, hips, hamstrings, quadriceps, calves and dorsi flexors. This sequence will help an individual remember the entire program, and ensure that no major muscles are ignored. Keep in mind, too, that many stretches influence more than one muscle. **FMY**

Matt Brzycki is coordinator of recreational fitness and wellness at Princeton University, Princeton, N.J. He has authored, co-authored and edited 11 books on strength and fitness.