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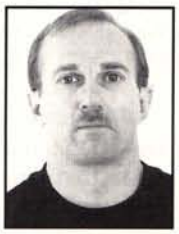
Anatomy Of A Stretching Program



By Matt Brzycki
Coordinator of Health Fitness, Strength and Conditioning
Princeton University

Flexibility can be defined as the range of motion (ROM) throughout which your joints can move. The best way for you to maintain -- or improve -- the ROM of your joints is to perform specific flexibility movements to stretch the surrounding muscles. Flexibility movements are undoubtedly the simplest and most effortless physical activity that you can perform -- the exertion level is quite low and relaxation is an absolute requirement. Nevertheless, many athletes often overlook or underemphasize their flexibility training.

Increasing your flexibility serves several purposes. First of all, becoming more flexible generally makes you less susceptible to injury. Secondly, being more flexible enables you to exert your strength over a greater ROM. Finally, stretching your muscles is a way of relieving and/or reducing general muscle soreness that may result from unfamiliar activities or intense workouts.

FACTORS AFFECTING FLEXIBILITY

There are many factors which also affect your ROM -- some of which you have little or no control over. For example, there is a distinct relationship between your age and the degree of your flexibility. The greatest increase in flexibility usually occurs up to and between the ages of 7 and 12. During early adolescence, flexibility tends to level off and thereafter begins to decline with increasing age.

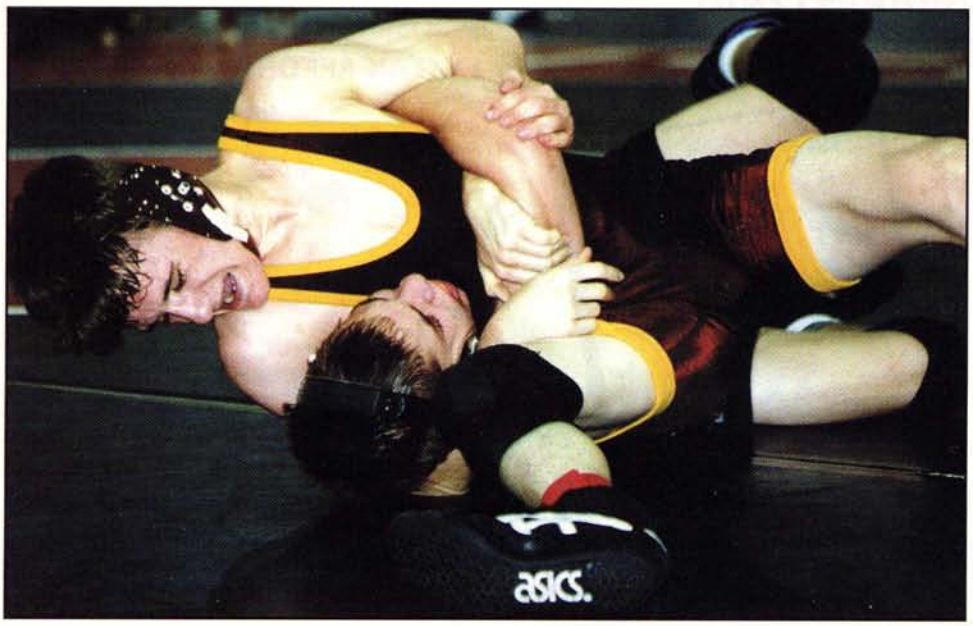
Therefore, one of the goals of your flexibility program is to slow or perhaps reverse this decline.

To a degree, your flexibility is also related to your gender. Although some males are more flexible than some females, males are generally less flexible than females.

In addition, it's important to understand that your flexibility is affected by several genetic or inherited characteristics such as the insertion points of your muscles and your ratio of muscle-to-fat (i.e., excessive body fat).

Your ROM also has genetic structural limitations including your bones, tendons, ligaments and skin along with the extensibility of your muscles.

Previous injury to a muscle or connective tissue may also affect your ROM. Furthermore, immobilizing a joint during rehabilitation may cause your connective tissue to adapt to its shortest functional length thereby reducing the ROM of the joint.



Florida's Curt Diehl of St. Cloud, has his opponent in a tight headlock just before the fall. Photo by Debbie Lorenzano.

Finally, your body temperature is another factor that influences joint flexibility. Muscles and connective tissue that are warmed-up will be more flexible and extensible than muscles and connective tissue that aren't warmed-up.

ASSESSING FLEXIBILITY

Because your ROM is affected by the aforementioned factors, it's difficult to assess flexibility in a fair manner. In addition, some measurements of flexibility can be misleading. A perfect example of this is the traditional sit-and-reach test in which a person sits down and reaches as far as possible. This test is often used to measure the flexibility of the lower back and the hamstrings. However, a sit-and-reach test does not take into consideration limb lengths. Everything else being equal, those with long arms and/or short legs have a distinct biomechanical advantage in a sit-and-reach test. These individuals may appear to be flexible but may actually be quite inflexible. Conversely, those with short arms and/or long legs have a distinct biomechanical disadvantage in a sit-and-reach test. These individuals may appear to be inflexible but may really be quite flexible. In the case of a sit-and-reach test, measuring the angle of flexion between the lumbar spine and the upper legs with a goniometer yields a more fair appraisal of flexibility. (A goniometer is a protractor-like instrument with two movable arms that enable you to measure joint angles.)

Lastly, it should be noted that your flexibility is joint-specific -- a high degree of flexibility in one joint doesn't necessarily indicate high flexibility in other joints. Along these lines, it would not be uncommon for your flexibility to vary from one side of your body to the other.

In short, the purpose of assessing flexibility should not be to compare your performance to that of someone else. Flexibility assessments are much more

meaningful when your present flexibility is compared to your past flexibility.

"WARMING UP"

The research regarding the need for a "warm-up" seems to be inconclusive. Some studies have shown that a warm-up facilitates performance; other studies have shown that performances without a prior warm-up are no different than those with a warm-up. Nevertheless, a warm-up has both physiological and psychological importance.

For years, warming up was synonymous with stretching. However, warming up and stretching are two separate entities and must be treated as such. A warm-up is meant to prepare you for an upcoming activity. On the other hand, the purpose of stretching is to induce a more long-term change in your ROM.

A warm-up should precede your flexibility training. 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 your body temperature and the blood flow to your muscles. Breaking a light sweat during the warm-up indicates that your body temperature has been raised sufficiently and that you are ready to begin stretching your muscles. As noted previously, muscles and connective tissue that are warmed-up have increased flexibility and extensibility. (In all likelihood, when the environmental temperature is high your body temperature is already elevated sufficiently to start stretching.)

Your biological tissue is most extensible at the end of an activity when your body temperature is elevated. Because of this, some authorities recommend that stretching should be performed after you have completed an activity. This may also reduce general muscle soreness after an intense activity.

By the way, there's no need for you to warm-up or stretch prior to strength training -- provided that a relatively high number of repetitions are performed and the weight is lifted in a controlled manner. However, warming up prior to an activity involving rapid muscle contractions -- such as drilling or sprinting -- is advisable to reduce your risk of injury.

SEVEN STRETCHING STRATEGIES

Though the level of your flexibility may be limited by one or more of the factors previously mentioned, you can improve your ROM through an organized stretching program. Like all other forms of exercise, stretching movements have certain guidelines that must be followed in order to make the stretches safe and effective. Adopting these guidelines permits you to maintain or improve your current ROM. Additionally, you'll be less likely to get injured and will perform closer to your performance potential.

1. **STRETCH** under control without bouncing, bobbing or jerking movements. Bouncing during the stretch actually makes the movement more painful and increases your risk of muscle soreness and tissue damage.
2. **INHALE and EXHALE** normally during the stretch without holding your breath. Holding your breath elevates your blood pressure which disrupts your balance and breathing mechanisms.
3. **STRETCH** comfortably in a pain-free manner. Since pain is an indication that you are stretching at or near your structural limits, you should only stretch to a point of mild discomfort.
4. **RELAX** during the stretch. Relaxing mentally and physically allows you to stretch your muscles throughout a greater ROM.
5. **HOLD** the stretched position for 30 - 60 seconds. Gradually stretching your muscles to a point of mild discomfort, holding that position and then gradually returning them to their pre-stretched state enables you to stretch farther with little risk of pain or injury.
6. **ATTEMPT** to stretch a little bit farther than the last time. Progressively increasing your ROM -- and the time that each stretch is held -- improves your flexibility.
7. **PERFORM** flexibility movements on a regular basis. You should stretch at least once a day, especially before a practice, match, conditioning workout or any other activity that involves explosive, ballistic movements.

FLEXIBILITY EXERCISES

Although your body has roughly 200 joints, it isn't necessary to perform a flexibility movement for each one. Your joints range from those that are relatively immovable (e.g., the sutures of your skull) to those that are freely movable (e.g., your hips and your elbows). You can stretch your muscles in a comprehensive manner by simply performing flexibility movements for your major muscles: your buttocks, groin, hamstrings, quadriceps, calves, dorsi flexors, chest, upper back (the "lats"), shoulders, biceps, triceps, abdominals and lower back. There are numerous stretches with many variations that address these muscle groups. As such, your stretching program can be individualized to meet your personal preferences.