

Health Benefits Of Stretching

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Introduction

Human movement is dependent on the amount of range of motion (ROM) available in synovial joints. In general, ROM may be limited by 2 anatomical entities: joints and muscles. Joint restraints include joint geometry and congruency as well as the capsuloligamentous structures that surround the joint. Muscle provides both passive and active tension: passive muscle tension is dependent on structural properties of the muscle and surrounding fascia, while dynamic muscle contraction provides active tension. Structurally, muscle has viscoelastic properties that provide passive tension. Active tension results from the neuroreflexive properties of muscle, specifically peripheral motor neuron innervation and reflexive activation.

Are there different types of stretching?

There are numerous different types of stretching including ballistic stretching, which involves bobbing the body up and down and forcing a muscle beyond its normal range of motion. For example: bouncing up and down to try and touch our toes. This type of stretching will not be used in physical education, for it can easily lead to injury. Passive stretching is another type where the intensity of the stretch is increased as a partner applies additional pressure. Passive stretching is closely related to static stretching, where a position is held by another part of your body (or some other apparatus) for a certain amount of time. Dynamic stretching is the fourth type of stretching, and arguably the most effective and or most common. It consists of controlled leg and arm swings that take us to the limits of our range of motion. Dynamic stretching is not only useful in athletics, but also in physical education as we warm up for fitness testing, active games, dances, etc.

Benefits of stretching:

There are several benefits and reasons we stretch before and after exercise. Firstly, we stretch to increase flexibility, which carries over to everyday

life; tasks such as bending down or reaching up to move an object. The more flexible we are, the easier it is to move around and work on different planes. We also stretch to improve blood circulation to our entire body, especially the muscles being used while exercising. Another benefit to stretching is to improve and increase our range of motion, especially to our joints. Specifically, stretching gives us better balance as our range of motion becomes greater. Finally, we stretch to relieve tension and relax the muscles in our body. As students, we may have tight or tense muscles as we are often stressed out about our homework, tests, and projects. We may even be stressed about social aspects of school and simply stretching in Physical Education can help us relax.

1. Increased Circulation

While it is widely debated whether or not stretching prevents injury, it has been proven to increase circulation. Although stretching does not necessarily directly prevent injury from overuse, it does increase the blood flow and supply of nutrients to muscles and cartilage. This reduces muscle soreness after working out. The less sore your muscles are, the less painful it will be to work the same muscles and to exercise in general, and the more comfortable your day-to-day life will be.

2. Flexibility

There are four main measures of overall fitness: aerobic, muscular, body composition and flexibility. The main way to increase your flexibility is by stretching. As you age, your muscles gradually become shorter and tighter, reducing your overall flexibility. This restriction makes you more susceptible to muscle, tendon and joint injuries. Stretching is primarily responsible for increasing flexibility, and reduces these risks. Increased flexibility also allows you to exercise more easily.

3. Increased Range of Motion

Stretching has been shown to effectively increase range of motion in joints. Better range of motion enables you to keep better balance. Better

balance means you are less susceptible to falls and the resulting injuries (of particular importance as you age). Increased range of motion also helps to keep you up and moving.

4. Reduce Stress

Everyone has stress. Everyone is constantly looking for new methods of relief. Like all types of exercise, flexibility exercises like stretching have powerful stress-busting abilities. Stress causes your muscles to contract, becoming tense. This tension can have negative effects on just about every part of your body. Gentle stretching exercises relax tense muscles associated with stress. Also, since stretching is an exercise, it has the same endorphin-boosting effects, improving your mood and the way you feel in general.

5. Alleviate Lower Back Pain

Millions of people struggle with chronic lower back pain. Stretching is an excellent way to strengthen the lower back muscles, alleviating soreness and pain. Since many muscles (quadriceps, hamstrings, lower back muscles and hip flexors) contribute to your posture, stretching these muscles has the ability to greatly reduce or eliminate lower back pain. The truth of whether or not stretching prevents injury can change from one day to the next, depending on what expert you're consulting. However, the fact still remains that stretching has numerous benefits outside of preventing injury. You can live a more comfortable daily life, increase your flexibility and alleviate stress and pain just by doing a few stretches before, after or separate from your workout.

Stretching to improve flexibility:

Flexibility is an intrinsic property of the body tissues that determines the range of motion achievable without injury at a joint or group of joints. There are several methods of stretching aimed at improving flexibility like passive, static, isometric, ballistic and proprioceptive neuromuscular facilitation (PNF). Passive and PNF techniques require a second person with specific skills. PNF techniques might increase the risk of injuries because of the resulting increase in stretching tolerance. That method is the most effective to improve the range of motion. Static stretching is the easiest and the most frequently used method. The practice of ballistic stretching has caused some connective tissue damage

and has fallen out of favour. The literature on flexibility includes several studies looking at the effects of diverse methods of stretching on joints and muscles. Whatever was the technique used to test the flexibility, stretching was demonstrated to increase mobility about the knee, hip, trunk, ankle and shoulder including muscle and connective tissue. Although there is evidence that PNF is more effective in improving flexibility, the apparent result might be related to other factors like posture during stretching. A 15-s or 30-s passive stretch is more effective than shorter duration stretches and as effective as stretches of longer duration. Passive stretching is more effective than dynamic. The efficiency of different protocols such as timing of rest periods, placement within a workout schedule and repeated passive stretching have also been tested. The duration of improved flexibility after stretching program is from 6 to 90 minutes, although an extensive program of several weeks duration had produced increased mobility that persists for several weeks. In summary, according to the data currently available in the literature, one can say that stretching techniques are effective in improving the articular and muscular amplitude. This improvement is temporary except in the case of intensive exercises of stretching.

Stretching and warm-up in preventing injury

What is the interest of stretching during the preparation to a competition? The defenders of the stretching affirm that the stretching allows a rise in the local temperature in the stretched muscles. In fact, the rise in the muscular temperature depends on vascularization. The latter is optimized by an alternation of contractions and muscular relaxation. However, the stretching causes an increase in the muscular tension which involves an interruption of blood circulation, therefore a reverse effect to what is researched. Preparation for athletic activity often includes both stretching and warm-up, making it difficult to assess their independent effects on injury prevention. Stretching increases flexibility but has not been shown to prevent muscle soreness. Stretching combined with warm-up, strength and balance training seem to prevent ankle and knee injuries, but the independent effects of warm-up and stretching were not determined.

Stretching and risk of injuries

Before discussing the available literature looking at the relationship between stretching and injury prevention, we need to understand how stretching can reduce the risk for athletic performance. The compliance of the «muscle-tendon» unit is essential. According to Safran, the ability of a muscle to absorb energy depends upon both components: the muscle and the tendon. When the contractile elements are active to a high level, more energy can be absorbed by a compliant tendon tissue, thereby reducing the exposition of muscle fibres to trauma. In case of low compliance of the tendon, the forces are transferred to the contractile apparatus. After stretching of the muscle-tendon unit, we observe a lengthening of the tendinous fibres which lose their effectiveness for shock absorbance. This phenomenon (creeping effect) is reversible and persists more than one hour after stretching. The energy is thus transmitted directly to the muscle fibres with an increased risk to generate a muscle injury and a reduction in flexibility. In contrary, a more compliant tendon with greater energy-absorbing capacities may reduce the risk of muscle damage. Based upon these considerations, stretching exercise seems not to be recommended in case of warm-up before training. For years, it has been considered that stretching during warmup had a positive effect on injury prevention. However, several studies showed the opposite. In 1993, van Mechelen et al. studied the effect of a health-education intervention on jogging injuries. The intervention consisted of information, education, and a standardised protocol including warm-up, cooling-down and stretching exercises.

Stretching and recovery

It is usually admitted that stretching is necessary and essential to facilitate a good recovery after a competition or training. Current studies do not confirm this statement. However, there are three aspects in the recovery process, where stretching has been shown to be effective: – an increase in blood circulation in the stretched muscles which would facilitate the elimination of possible waste – prevention or reduction of the Delayed Onset Muscle Soreness (DOMS) – an action on the viscoelastic properties of muscles.

Conclusion:

This review of the available information demonstrates that stretching is important to athletic performance by increasing muscle-joint mobility. Studies also suggest that great lack of mobility increases the risk of injury. However, within limits of normal flexibility, there is no evidence in the literature for a preventive effect of stretching on the occurrence of injuries. Dynamic range of motion is greater than static range of motion due to the enhanced tissue elasticity and to the relaxation of opposing muscles during activity.

Qualitative flexibility is important in sports activities. At the same time, it is not clear whether there is a flexibility threshold for optimal performance or if additional mobility is necessary. In any case, several studies seem to indicate that performance might be decreased at the limits of flexibility.

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