INTERNATIONAL JOURNAL OF
INTEGRATIVE AND
MODERN MEDICINE

Achievements of Sports Flexibility in Sports

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Annotation: Anatomical factors such as the flexibility of your joints, muscles, fascia, tendons, and even muscle temperature can have a huge impact on your overall flexibility. In fact, even the shape of your bones and joints can limit your range of motion and therefore affect your performance. The good thing is that your range of motion and the ability of tissues to withstand stretching can improve significantly after just a few weeks of flexibility training. However, the actual structural changes usually occur after 6-8 weeks of continuous stretching.

Keywords: joint, muscles, nervous system, range of motion, musculoskeletal system, endurance.

A passive lifestyle not only causes overweight problems, but is also the main cause of most problems that occur in our musculoskeletal system (muscles, bones, ligaments, tendons, connective tissue and fascia), including muscle tension, poor posture and back pain. For an athlete, these effects can reduce performance, slow down progress and even lead to a long period of rehabilitation due to injuries - and this is not what each of us wants. Flexibility is used to describe the mobility of one limb, joint, or muscle. This, on the other hand, is crucial to your ability to move your body efficiently and safely. Flexibility also involves every component of your body and varies from person to person and from joint to joint. This means that each of your joints, tendons, muscles and ligaments have their own characteristics and mechanical properties. Therefore, the development of flexibility is also determined by how you perform your usual physical activities, as well as what kind of stretching you do. After all, your goal is to optimize the range of motion you need in your sport while maintaining joint stability. The simple fact is that if a muscle is tense and inflexible, you will not be able to fully utilize its strength potential. And, since the body works as a combination of muscles, one weak muscle can destroy the entire kinetic chain (movement through several body segments). Consequently, athletes must maintain the sufficient range of motion required in their sport to ensure athletic progress without the risk of injury. It is important to note that the relationship between flexibility and athletic performance depends on the sport, and not all sports require the same flexibility. In fact, increased muscle stiffness may even be beneficial in some high-intensity sports due to greater strength production. Excessive flexibility can even lead to joint health problems in the future.

Factors affecting an athlete's flexibility:

1. Physiological features of the body structure;
2. Type of joints;
3. Elasticity of the tendons and ligaments surrounding the joint;
4. The ability of the muscle to relax and contract;
5. Body temperature;
6. The gender of the athlete [1].

Another thing worth noting is that in a sporting context, flexibility and stretching come in many different forms. For example, you can divide flexibility into active and passive flexibility, or compare different stretching techniques that should be performed before or after a workout, or even as a

separate training program. There are also many different ways to stretch, which vary in technique, intensity, duration, and the physical effect they have on your body.

Flexibility can be divided into two different categories: the flexibility that involves movement is called dynamic flexibility, and the one that is not related to movement is called static flexibility. Although both are related to your body's ability to move freely without physical limitations, they are based on slightly different mechanisms. Dynamic flexibility, also known as kinetic flexibility, describes your ability to move freely within the full range of motion of a limb or joint with muscular work. Dynamic stretching is great for increasing range of motion, muscle temperature and nervous system activity, which makes it an excellent choice for warming up in various sports.

Static-active flexibility, also called active flexibility, describes your ability to take a position and maintain it in order to create a stretch elsewhere. More technically speaking, active flexibility uses agonists (muscles that create movement) and synergists (muscles that stabilize joints during movement) to stretch opposing muscles, known as antagonists. Active flexibility also always stays within your current range of motion, which means you are much less likely to damage the muscle.

Static-passive flexibility, or passive flexibility, describes how flexible your muscles are when relaxed. It depends on your ability to stay on the stretch longer using body weight or external assistance such as a belt, wall or other light resistance. Some passive flexibility techniques are performed even with a partner to gently push you outside your comfort zone. Stretching the inner thigh on the back and splits are excellent examples of passive stretching that does not require muscle contraction. These types of longer passive stretches also tend to relax muscles and improve flexibility, so they also need a separate workout.

Strength training exercises can, for the most part, simultaneously be exercises for stretching muscles and ligaments. Conversely, stretching exercises should be aimed at strengthening the ligaments and muscles covering the joints. Therefore, when selecting exercises, it is necessary to take into account their predominant effect on individual muscle groups [2]. The type of flexibility you need depends heavily on the sport you are involved in. For example, dynamic and active flexibility is necessary, especially in aesthetic sports such as gymnastics, diving and figure skating. On the other hand, swimmers should also have a good range of movement in their shoulders while crawling. This helps them reduce drag in the water by moving forward with each stroke. Passive flexibility, however, is useful in those activities where you have to stay in stretching for longer without active muscle work. For example, yoga, and even circus-style acrobats often rely on passive flexibility. Anatomical factors such as the flexibility of your joints, muscles, fascia, tendons, and even muscle temperature can have a huge impact on your overall flexibility. In fact, even the shape of your bones and joints can limit your range of motion and therefore affect your performance. The good thing is that your range of motion and the ability of tissues to withstand stretching can improve significantly after just a few weeks of flexibility training. However, the actual structural changes usually occur after 6-8 weeks of continuous stretching.

The reason these anatomical factors are so important for healthy athletic progress is because the flexibility of your connective tissue (joints, tendons, ligaments, and fascia) is crucial to maintaining good posture. This prevents unfavorable alignment of the joints, which can cause muscle imbalance and unnecessary strain on the spine. Simply put, increased flexibility helps maintain the natural mobility of the joint, which can increase your productivity through better strength development and improved mechanics. The greater your range of motion, the higher the efficiency of your movement. Flexibility also supports the functionality of your kinetic chain, which describes your body's ability to make movements through the coordination of multiple body segments. Суставы относятся к областям, где две или более костей встречаются друг с другом. По сути, они отвечают за соединение всего тела воедино. В теле есть три различных типа суставов:

1. Joints that do not allow movement, for example, some bones of the skull (synarthrodial joints)
2. 2.Joints that allow minimal movement, for example, the spine (amphiarthrodial joints)

3. Joints that allow significant movement, for example, arms or legs (diarthrodial joints)

Joints that do not allow movement are designed to maintain the same position throughout life. On the other hand, joints with minimal movement, such as the spine, must be both flexible and stable. This is also one of the reasons why almost 80% of people suffer from back pain at some point in their lives. The joints that provide the most mobility are also responsible for your overall feeling of stiffness or flexibility.

Muscles also have a strong connection to your flexibility. Although muscle tissue is often considered one of the main culprits of stiffness, this is not entirely true. In fact, if you consider a muscle to be a rubber band (stretching-shortening cycle), the extra flexibility can even negatively affect elasticity and therefore power generation. It is important to note that regular stretching does not stretch muscles, but forces your nervous system to adapt to constant stretching.

Fascia is a web of connective tissue that covers every muscle, organ, tendon and ligament in your body. Their function is to stabilize the muscles, separate them from other organs and reduce friction during movement. And unlike tendons and ligaments, fascia must move, twist and stretch with your body. A healthy fascia rarely causes problems with flexibility, but lack of physical activity and various injuries can glue it together, making muscle movements less flexible.

Muscle temperature can also have a significant effect on the range of motion. Numerous studies have shown that warmed-up muscles have more mobility than cold ones. This is because warming up increases the temperature of your blood, muscles, ligaments and tendons, giving your limbs more "space" for free movement.

Your training experience can have a significant impact on your flexibility because our bodies are always adapting to how we use them. For example, regular exercises that involve the full range of motion of your joints can easily maintain mobility, while sedentary people are at higher risk of muscle stiffness and loss of elasticity. In terms of your athletic experience, the most important factors of flexibility are how you use the active range of motion of your muscles, your overall physical activity, and the possible injuries you have sustained.

When performing exercises to develop flexibility and strength, it is necessary to adhere to a certain rhythm. First, you need to perform the exercises slowly on the count of "one-two", then you should bring it up to the count of "eight". Gradually, the pace accelerates, the amplitude of movements increases, reaching the final (extreme) positions. It is very useful to fix the end positions in exercises with weights for 3-5-10 seconds. When doing exercises, it is necessary to breathe properly. When bending the trunk, exhale through the mouth; when extending the trunk and lifting the arms up, inhale through the nose [3].

Regular exercise is crucial to maintain and improve your flexibility in sports. So, regardless of whether you are doing strength training or trying to improve your endurance, you should always keep in mind the work of the entire range of muscles in order to prevent their stiffness in the first place. Often, the best flexibility training programs combine both weight training and various stretching techniques to achieve the best results. Even as you age and may feel that your body cannot do what it is used to, instead of limiting yourself, try to maintain or increase your mobility to prevent further loss of function. This will help you stay active and healthy for many years to come.

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