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EFFECT OF JOINT FLUID ON JOINT ACTIVITY IN THE BODY

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Abstract
A joint is a mobile attachment of the bones (sometimes the seams) with a gap (crack) between the jointed surface. In an immobile calm state of the joint, the synovial fluid is produced in small quantities to produce a buzzing sound as it begins to move. In this article highlights of effect of joint fluid on joint activity in the body.

Keywords: Joint, joint activity, joint fluid, water, healthy, movement.

Introduction

The joint is the place of attachment of the bones. The place of attachment of the bones is covered with a toga, which reduces friction between the bones. In addition, a leaking liquid similar to egg white is also hidden in the joint. It is called synovial fluid and its function is to reduce friction, such as oil in the machine. The bones involved in the formation of the joint (one containing the joint head and the other containing the joint pit) are filled with synovial fluid. Joint space and joint bag are distinguished. The ends of the bones that are attached to each other are uneven. Most often, the tubular bones of the foot become creamy in the area of the joint, forming bunches and patches on the surface of the head, and the carapace of the bone. The articular surfaces of the bones are covered by the articular sutures, which reduce the tattoos that occur during movement, allowing the joint to move freely and elastically. The ends of the bones involved in joint formation are made of connective tissue, surrounded by a joint bag and internally by a synovial veil. This curtain produces a fluid that keeps the surface of the seams moist and relieves their movement, otherwise the surfaces of the bones that formed the Joint during movement will rub against each other, causing pain and limiting movement. Most joint sacs are tightly wrapped with ties.

Main part

The most significant in a person are 4 types of joints.

One of them is the spherical joint. This is of great importance to us, the shoulder joint is of this type. Using the shoulder joint, we move our hand. The joint that connects the pelvis and thigh bones is the largest spherical joint. But since this joint is very tight, the amplitude of movement is limited.

The second type of joint is the ellipsoid joint. In such a joint, the ovoid convex ellipsoid will fit into the sunken area. For example, the wrist joint is precisely of this type. It allows for better oval movements than circular movements. Another type of joint is the saddle joint, in which the bones can only move in two directions — back and forth and from one side to the other.

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The third type of joint is the cartilaginous joint. The bones of this joint can move in one direction — back and forth. It looks like a door or a folding knife. The joints between the bones of our fingers are cartilaginous.

The last type of joint is cylindrical. Cylindrical joints allow bones to rotate laterally. With these joints located at the base of our skull, we can rotate our head. And with this type of joint on the elbows, we can, for example, turn the key inside the lock.

Depending on the shape of the joint surfaces, there will be spherical (multi-axis), cartilaginous (one-axis), ovoid (two-axis) and other joints. The spherical skull bone joint (e.g., the shoulder bone joint) is the most productive, the ovoid skull bone joint (e.g., the calf paw joint) has a margin of movement other than Flexion; some bone joint lari (e.g., the wrist bone in the wrist joint) can act circularly. The row joints have auxiliary structures, which are aligned with each other by the joint seams (knee joint, jaw joint), discs, menisci. Some bones are attached without the help of cross-articulation, with the help of connective tissues, joints and spindles (e.g., sutures between the skull, groin pads, pore discs between the vertebrae, etc.). Joint movement ensures that the person is walking upright, bending, working and other positions. The joint is extremely susceptible to colds, diseases, injuries, violation of the metabolism, therefore it should be protected from these vices. With regular physical training, shugulation strengthens the joint and increases their resistance to the effects of the external environment. Of joint diseases, its damage (bone protrusion), arthrosis (congenital or due to the distraction of the metabolism), joint inflammation (arthritis) are more common. There is also an inability to move joints (ankylosis), temporary or complete restriction of movement (contracture)

Articular (synovial) fluid is an important component that ensures the normal functioning of joints in the human body. This thick elastic mass that fills the joint cavity. Three sources are involved in the formation of synovial fluid: blood transudate containing water, proteins and electrolytes; hyaluronic acid and proteolytic enzymes (secretion products of synovial cells in the shell); proteoglycans and glycoproteins that regularly enter during the normal functioning of synovial fluid (formed during the replacement of old synovial cells with new ones).

Joint fluid plays a key role in maintaining healthy joints and ensuring their proper functioning. Its main functions are:

1. Joint Lubrication: Joint fluid lubricates the surfaces of joints, reducing friction between them during movement. This helps to prevent the wear of cartilage tissue and keep them smooth.
2. Nutrition of the joints: It provides the joints with essential nutrients such as glucose and amino acids, which helps maintain their health and functionality.
3. Shock Absorption: Joint fluid improves joint mobility and acts as a shock absorber, absorbing shocks and vibrations during movement, which reduces stress on joints and prevents tissue damage.

Any disorders that occur during synovial fluid synthesis are accompanied by joint damage and can cause synovitis (inflammation):

• arthritis is a type of inflammation that develops as a result of injuries, immune and infectious disorders, regular physical exertion and mental trauma;
• osteoarthritis is an age–related disease that can also begin after injury;
• bursitis is a result of injury and infection.

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Types of inflammation leading to synovitis:

• serous - synovial fluid accumulates in the joint cavity due to damage to the connective tissue of the body.

• purulent - occurs due to the penetration of pathogenic microorganisms into the joint cavity through blood or wound, which causes infection of the joint.

• aseptic - they develop after injury, followed by infection through a wound, but unlike purulent, they are not accompanied by infection.

A deficiency of articular fluid impairs gliding, leads to crunching and creaking when bending the limb, for which the diseased composition is responsible. Problems also arise if the volume of synovial fluid is normal, but the main components (glucosamine and chondroitin) are in short supply. It is important to note that joint fluid is released only when the joints move. When the joint begins to move, synovial cells located in the synovial membrane become activated and begin to produce joint fluid. This explains why regular physical activity is essential to maintain joint health. The pool is an ideal place to stimulate the secretion of joint fluid.

Firstly, in water, the human body is in a state of hydrostatic weightlessness - this greatly unloads the entire musculoskeletal system from the pressure of body weight on it and reduces the risk of joint damage.

Secondly, water creates additional resistance, which stimulates the joints to actively move. This allows the joints to work without excessive stress, but at the same time provides sufficient movement to stimulate the secretion of articular fluid.

There is not a single metabolic process in the body that would take place without the participation of water. Water plays a major role in the chemical reactions taking place in our body, transports nutrients from cell to cell (the intercellular fluid is water), ensuring their normal functioning and vital activity, removes toxins, slags and excess salts, helps lower blood pressure. Lack of water leads to difficulties in transporting nutrients and causes “starvation” of cells, from which they die. The soft tissues in the human body are 85% water. These are cartilages, intervertebral discs, ligaments and tendons. It is water that helps them stay supple and delivers nutrients to them. These tissues, like a sponge, are soaked in water, and when there is a lack of water, the quality of connective tissue function is significantly reduced. The height of the intervertebral discs decreases, and there is a risk of early osteochondrosis. Cartilage tissues go into a state of compression, in which the nutrition of structures is limited. The amount of joint fluid and natural lubrication in the joint cavities decreases. The articular gaps in large joints become narrow, which affects the level of mobility and flexibility, crunching and discomfort appear. In addition, lack of water slows down digestion and causes the accumulation of excess weight. This additional load seriously affects the condition of the joints. Every extra kilogram of body weight, when the feet come into contact with the ground when walking, has a traumatic effect on the large joints of the lower extremities.

In addition, overweight people are much more likely to suffer meniscus injuries and other serious injuries, these injuries are much more severe for them than for people who are not burdened with extra pounds, and very often turn into osteoarthritis of the knee joints. In my work, I often have to deal with the effects of dehydration. With each such patient, I strive to improve his lifestyle. Here are simple recommendations that will help you stay young and get back to your former activity. The modern level of service has led to the fact that water coolers for visitors are in many

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institutions, this is a kind of concern for the health of citizens. You take a glass of water when you are waiting for your turn or to refresh yourself. Carry a bottle of water with you to work, and drink a glass every 2-3 hours. Instead of sugary soda, give preference to clean water. It is useful to drink an invigorating drink with a glass of clean water during a coffee break. In many high-level establishments, water is served with coffee without a guest's request. If you are going for a workout or a walk, be sure to drink water in a couple of hours and take a bottle with you. Purchase a water filter, and you will always have access to a clean source.

The amount of water consumed depends on body weight, lifestyle, and weather. If the average weight of a person is 70 kg, then the norm for him will be 1.5-2 liters of water per day, not counting the consumption of other liquids.: tea, coffee, juices, soups. But this does not mean that you need to force yourself to drink more than a liter of water at once and thus “fulfill the daily norm.” It is best to drink water in small sips for a long time between meals. As soon as you wake up, drink a glass, this will “start” the digestive system, preparing it for eating. It is important that the water is at room temperature, not cold. Warm water immediately enters the stomach, as it does not require digestion. A great way to always have warm water with you is to purchase a thermocup.

Swimming has the following positive effects on joints: it relaxes muscles, eliminates cramps and cramps; strengthens the periarticular muscles; reduces pain by cooling joints; activates lymph outflow due to water massage of periarticular tissues; promotes general relaxation and relaxation. Swimming is one of the safest sports in terms of preventing injuries to the musculoskeletal system. If you want to keep your joints healthy, then swimming is your best ally. Regular workouts will also help you get rid of excess weight, which is extremely dangerous for joint diseases. Speaking of joints and synovial fluid, it is impossible to forget about chondroprotectors and collagen, which are not the drugs of choice for joint repair! Why? For a simple reason, chondroprotectors and collagen are destroyed in the gastrointestinal tract to simple "building blocks" - to amino acids. We synthesize up to the same amino acids that we get with meat, egg or vegetable or marine protein ourselves.

Any pain in the joints should be alerted. If you feel pain when going up and down stairs or during any other physical activity; I am worried about the pain of a migratory nature (my elbow, shoulder, or knee hurts); I feel a decrease in mobility; If the joints have been deformed, you should immediately consult a rheumatologist. The sooner you start fighting this disease, the more effective the treatment will be.

Conclusion

Thus, the effect of questionable supplements and medications is not higher, and more often even lower, than from a simple full meal. There is no talk of any specific effects on joint tissue, cartilage and synovial fluid when using these drugs and supplements. This is especially true when there is inflammation in the joint, calcium deficiency (against the background of vitamin D deficiency, and calcium intake will have no effect here), synovial fluid deficiency (lack of movement), etc. The use of chondroprotectors and collagen against the background of unresolved problems cannot have any positive effect on the condition of the joints.

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