

Articular inflammations, synovitis and posture

Author: prof. Daniele **RAGGI**

Degree in Sport Science, Physiotherapist, Posturologist, Mézières practitioner.

Lecturer in Posturology c/o School of Medicine (Department of Experimental Medicine and Pathology), Università "La Sapienza" in Rome and c/o School of Sport Science, Università Cattolica in Milan. Director of Posturalmed (Posturology studio) in Milan.

This article will analyze the main factors of joint inflammations and synovitis. First of all, we will explain what a synovitis is, starting from the **synovium**, whose inflammation is called synovitis.

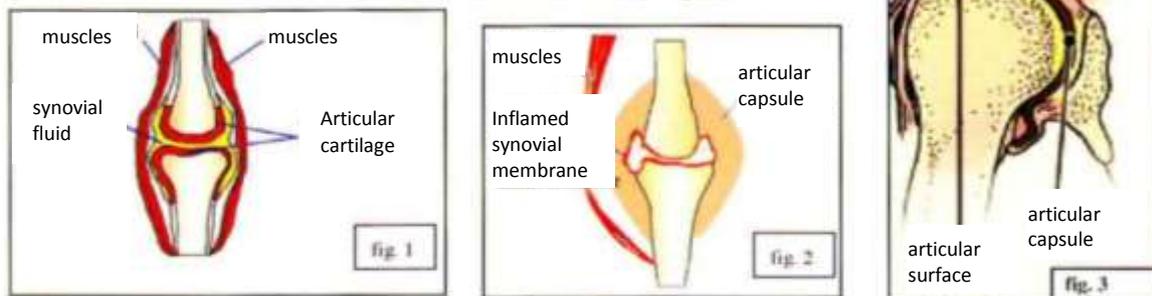
We are able to see bodies in their "dress", i.e. skin, but we rarely think about what there is underneath. It would be very interesting if we could see our muscles and bones from the inside while we move or walk. At first we would be scared, then worried to see these apparently fragile structures resist so strongly against all that solicitations, especially when we are doing a hard work or practicing an intense sport. Yet we can resist well enough!

There are by the way conditions in which, due to chemical agents, virus, bacteria or wrong postures, our organism starts an inflammatory process, i.e. a defense, or sometimes a degeneration process. One of these is synovitis.

The skeleton represents the supporting structure of the organs. It is moved and governed by muscles and tendons. Bones are designed by nature to resist to loads and flexion and extension solicitations coming from the musculo-tendinous system during each muscle contraction and release phase. Between two linked bones there are specialized structures, i.e. the joints.

Although they are so close and connected to the bone they belong to, **joints** have a different structure. They *allow movement between different bones and are thought as a cushion permitting low-friction slipping under high load through the flexible absorption of the structures they are composed of*. As a matter of fact, the term *joint* is defined as *a system of organized tissues* which aims to fulfill the above mentioned task.

Let's now have a closer look to a joint. When two or more bone extremities articulate, the surfaces of contact are enclosed in a fibrous tissue called *articular capsule*, together with a yellow membrane called *synovial fluid* (synovia).



The articular surface is smooth, pearly and flexible and it leans on the so-called subchondral bone. The cells of the joint, i.e. the *chondrocytes*, are immersed in a water-based matrix made of water (80%) and proteins (collagen and proteoglycans).

Cartilage, which has its own blood circulation, is fed from two different sources: to a minimum extent by diffusion from the vessels which bring blood to the subchondral bone, but mostly by the liquid produced during the movement by the synovial membrane. This liquid, which is viscous and rich in nutritive substances, is stretched out like a film on the whole articular surface, where it feeds and oils the cartilage, reducing the friction. Inside the liquid there are also waste products of chondrocytes metabolism. Their presence is regulated by the synovial capsule, which maintains the balance between produced and reabsorbed liquid.

In physiological conditions, the joint is covered by an articular capsule (fig.2, 3) protecting the underlying bone. This capsule is full of synovial fluid (fig.1) oiling and feeding the cartilage itself and the bone.

The term **synovitis** indicates the inflammation of the synovial membrane of an articulation and can have a traumatic, infectious, toxic or allergic origin. This inflammation can then spread to ligaments, cartilages, to the bone substance underneath the cartilage, becoming an arthrosynovitis.

How can we realize we are affected by synovitis?

The symptoms of a synovitis can be pain, fluctuating swelling, limitation or impossibility for the involved joint to do its normal movements. The acute cases are mostly due to infections or traumas. The chronic forms instead are caused by bacteria and altered conditions such as problems in feeding the cartilage or in the material renewal.

Acute synovitis are generally exudative synovitis. The exudate can be serous, serofibrous or purulent, and it passes through the synovial membrane into the articular cavity, where it mixes with synovium. Often it is due to the penetration of foreign bodies into the articular cavity (primary synovitis) or to infectious diseases (secondary synovitis), such as septicaemia, scarlatina, abdominal typhus, erysipela, cerebrospinal meningitis, gonorrhoea, etc.

In exudate and among the infiltrated articular components it is likely to find the pathogenic bacteria responsible for the primary disease.

A particularly important class of chronic synovitis is the one of specific synovitis, i.e. tuberculous and syphilitic synovitis, and arthrosynovitis, determined by the sediment of uric salts in the synovial membrane during a gout attack.

After clarifying what synovitis and joint inflammations are, let's now have a look at our area of competence, i.e. the traumatic and postural aspect.

As we said previously, **muscles**, which are the engines of our skeleton, can become **responsible for pathologies**, too. It can happen when our brain, yet unconsciously, maintains a muscular tensile state higher than usual. Think about it. When you are nervous or angry, your muscles get more tense, too, and you can feel pain you did not feel when you were relaxed. Such an increased muscular tension lead over time to overloads in tendons, their insertions, articular capsules, cartilages and up to synovium.

It is worth saying that these previous nervous and then muscular tensions become irreversible after some time. As a matter of fact, muscles are not able to go back to their original flexible status anymore. Contraction and increase in muscular tone, therefore articular problems, are not only due to emotional and nervous tensions, but also to excessive physical activity, lack of physical activity, wrong sports practice, traumas, accidents and wrong postures.

I would like to tell you **a real episode** from my professional experience. As a posturologist, I have been seeing and interacting with a wide range of patients and problems for decades. I resolve that any patient is unique, a world apart, since even if they suffer from the same pathology, their symptoms and reactions are always personal.

Here is a practical example. One day came to my studio **a young soccer player of an important team of the major league**. He had bad pain and swelling in his knee. It was diagnosed as a "pinched synovium", so the only possible treatment was surgery for synovial plica syndrome.

I investigated on his pain and on when the pain started, forcing him to stay out of the field.

Going back to the origin of the pain, we found out that the knee problems began after being kneed in his left lumbar region, i.e. the opposite side of the knee in question.

By a postural examination it was clear that one of the hemipelvis was slightly interiorized, i.e. one ilium crest was a little bit more anterior than the other. There were no other notable elements, structure was pretty strong and so were his typical soccer player's legs.

I did not have many elements to work on, the only thing I could do was to see if such a specific problem could be caused by a slightly twisted pelvis.

I started with a postural exercise putting in tension all his muscles (posterior muscular chain), which are usually shorter than they should be, especially in soccer players. I put his knees in axis since they were a

little bit curved and worked especially on his pelvis in order to take the joint back to its original axis. (see figure 4).



Figure 4

I was surprised that after 20 minutes of postural exercises using a global approach, the player felt a great difference in bending on his knees.

After a week, during which I told him not to train, we had a second session. He told me that his pain had reduced notably and his knee was no swollen anymore. We repeated the same treatment and his pelvis returned in axis and right and left balanced. He felt no pain anymore.

How could such a thing happen?

People who know anatomy are aware that when a hemipelvis rotates forward, the corresponding leg becomes longer, and if the other side rotates backward, the corresponding leg becomes shorter. It happens because the sacroiliac and hip joints are not aligned. This mechanism causes the impression that one leg is longer than the other and the rising up of a hemipelvis. Consequently, the vertebrae, especially the fifth lumbar and the first sacred one, conflict with their articular facets, triggering a rotation of the pelvis or column. This rotation leads to the rotation of one or both femurs and so to a non-aligned knee joint. Since soccer players solicit their knee articulation a lot, these undergo violent



Figure 5

stresses. Here is how our player could go back to play after three treatments. I used specific techniques based on a double aim: to realign the pelvis and to strengthen legs muscles. It was a real success.

This example allows you to understand that a not-aligned body, i.e. an unbalanced posture, is likely to develop articular problems in any of its parts. It is therefore important for children to practice sport and to move, but only once they get a correct posture.

Here is a useful comparison. Would you make a car compete if it has had an accident and its frame results unbalanced? If you know that the car would be likely to have problems during the race, would you prevent it from racing? The first thing to do is to rebalance all its parts and to install a powerful engine which, together with a good driver, will take it to victory.

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Tel. +39 0239257427 or +39 0239265686

- Fax +39 0239200420

Email: corsi@posturalmed.com

Website: www.posturalmed.com