Muscular chains and articular pain

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Posture, joints, and pain. Let's try to understand which possible relations can take place among these elements. Most of the world population (not less than 80%) suffers from pathologies affecting the skeletal-muscular-articular system. In line with this data, most of the patients who turn to our studio suffer from stiffness and joint pain. The causes can be various, however many of them result connected to postural alterations. A complete concept of postural observation consists of numerous factors, each of them expressing a condition of the body and of the person. The main elements of this great system are the muscles together with the way we live. In this article we will take into consideration only the muscular aspect. But why talking about muscles? Because they are the strings holding the puppet and moved by the nervous system, which in turn undergoes the person's will (voluntary nervous system).

How can muscles from being a crucial element become a disturbing brake?

Muscular retractions are the triggering cause of intra-articular compressions, axial rotations, hyper loosening of the joints, etc.

And how is it possible to explain the phenomenon according to which a muscular problem appeared in a specific area of the body can migrate to others, even very distant one from the other?

It is necessary to introduce the concept of muscular chains. Looking at an anatomy atlas you will notice that muscles seem to have each a specific and unique task, which results limited by its origin and insertion points. But if you look at the muscles in their whole, you will see how their boundaries actually extend also after the end of their tendons. Their range of action is wider thanks to the origin and insertion points of two or more muscles. This mechanism of connected muscles allows a muscular interaction, i.e. the muscular chains. In human body there are many muscular chains. One of these is, for instance, the posterior muscular chain, made of a group of poliarticular muscles and extending from the feet to the occiput. Let's take as an example the knee joint, which relations are defined among femur, tibia, and fibula. Its stability is granted by the ligaments, but also by the muscles surrounding it, even the ones which do not run parallel to the longitudinal axis of the femur fibula joint. For instance, the rectus femoris muscle, which from the anterior inferior iliac spine goes to the anterior tibial tuberosity through the patellar ligament; the tensor fasciae latae, which from the anterior superior iliac spine goes to the lateral tibial condyle; the biceps femoris, which from the ischium and the femur goes to the later tibial condyle and the head of fibula. The same happens with the biarticular muscles, which will interact with those coming from downwards, such as the gastrocnemius, the popliteus, etc.

These muscles, a part from working as “engines”, have also the task of stabilizing the joint. Due to their biarticular nature, their action and influence will be a consequence of the condition of the other articular segment, in the above-mentioned example the pelvis or the foot. For this reason it is enough that an iliac wing results in an anomalous position, because of a pelvic trauma or a contracture of a back muscle, for transmitting to the knee an unbalanced muscular action. Moreover, depending on the position that the pelvis assumes, a rotation of the femur will be favored, together with a counter-rotation of the tibia and of the fibula (depending on the orientation of the acting muscular fibers). It is extremely frequent to observe orientations of patellae that are not in axis and parallel with each other. It is enough that a section of the quadriceps muscle results more contracted than usual – fore due to a trauma or a bad training – to have as a result a patella going out of its ideal working axis. Here is another case in which a postural rebalance results necessary.

It is now clear how a symptom manifesting in a specific area of the body can have its origin somewhere distant in time and space. For this reason, I is fundamental a serious and accurate postural analysis, aiming to restore a global postural balance that, once restored, will automatically favor the regression of the pain coming from altered muscular synergies. Remember that any time joint remains unorganized and out of axis for a long time, the consequences will involve articular capsules and cartilage and can lead to arthrosis.
The global postural evaluation has to take into account every part of the body, since interventions not taking into consideration the real cause of the problem won’t solve the condition of the patient, but will just work as palliative for a short period.

The diaphragm plays an important role in the postural analysis, for it is the main breathing muscle. As a matter of fact, through its insertions and pillars, it interacts with the spine, which in some cases shows another lordosis in addition to the lumbar one. Diaphragm can therefore been observed like any other element participating in posture, both in its static and dynamic aspects. It can in fact deform and block the rib cage, interacting consequently with the shoulders and the cervical area, triggering various forms of pain in those districts.
Postural observation may result a bit complicated, since it requires the knowledge of specific parameters and references, but at the same time the therapeutic action is not easy either, because its first aim is to find the main cause of the various pathologies related to bones and muscles.

It should be evident now how important it is to act in an adequate way, i.e. always having a global wide vision, so not to intervene on the effect but on the triggering cause.
There is a method aiming to work *globally*. It is the global non-compensated muscular stretching. Following this technique, once the patient assumes a “forced” posture, it is possible to make emerge all those compensations that, due to the effect of the muscular chains, the body had hidden in order to

survive. In this way, the brakes that over the time reduce body elasticity and freedom, and that will inevitably cause articular pain, will be removed.

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