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# Selección Vida



**2020:**  
**the year of covid 19**

**Musculoskeletal pathology**

# 2020: THE YEAR OF COVID 19

This year will be remembered as the beginning of one of the most important health crises during the last century.

Despite of the fact that the final economic consequences are difficult to estimate at this very moment, it is worthy to have an overview of the human cost during the last year.

What we have observe in Europe is that each country use its owns methods and metrics to calculate the virus impact in terms of hospitalizations and deaths; however, there is one common tool that can offer a global objective vision after more than 9 months of European (and worldwide) fight, which is the EuroMoMo.

EuroMOMO is a European mortality monitoring activity, aiming to detect and measure excess deaths related to seasonal influenza, pandemics and other public health threats.

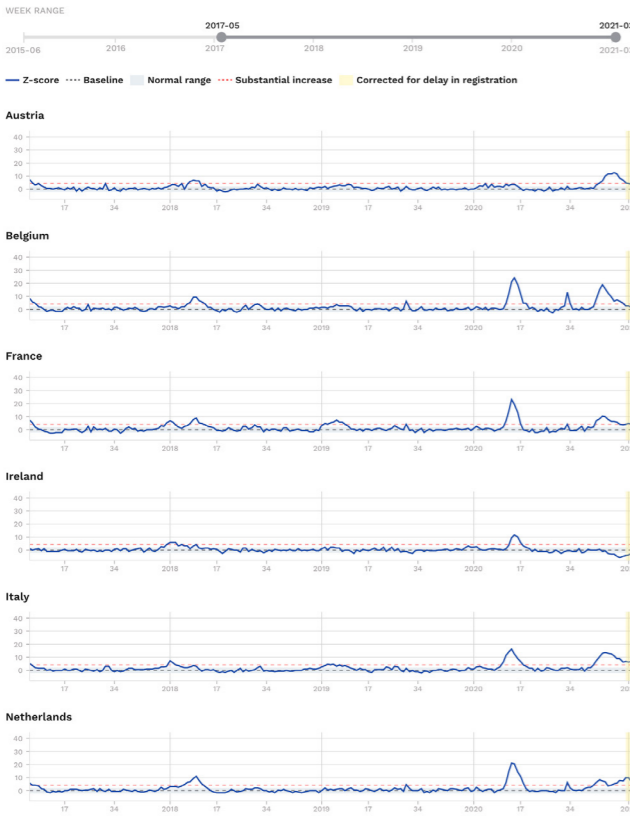
Official national mortality statistics are provided weekly from the 26 European countries in the EuroMOMO collaborative network, supported by the European Centre for Disease Prevention and Control (ECDC) and

the World Health Organization (WHO), and hosted by Statens Serum Institut, Denmark.

The graphs provided by the institution show the weekly excess of mortality, by any cause, and we can compare fluctuation with the precedent years. The variable use is z-score: (number of deaths-mean of the population 2015-19)/Standard deviation

Figures of most affected countries clearly reflect an impact in general population. The most significant can be found in England and Spain, with over 30 z-score points at the peak, followed by other group of countries that reached over 20 of excess (Belgium, France, Netherland and Italy).

On the other hand, we can distinguish, among the highlighted territories, one group mainly affected during the last part of the year, such as Austria, Portugal, Slovenia or Switzerland.

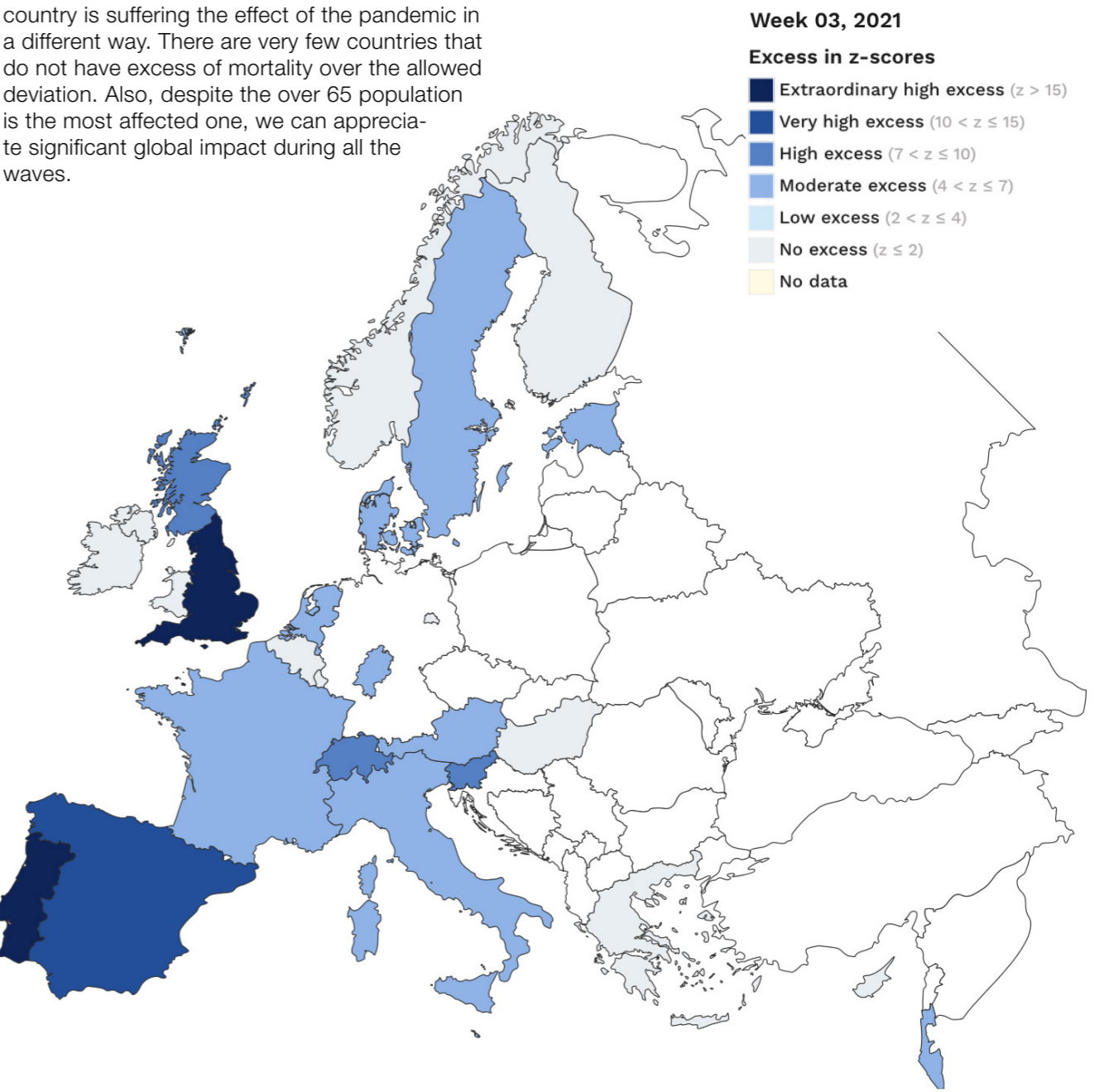
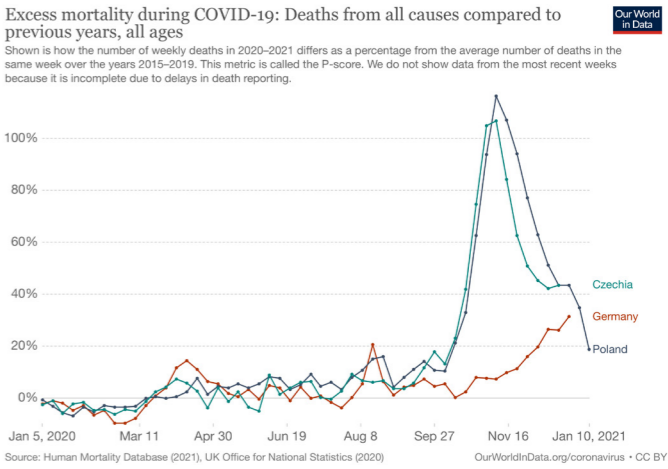


Furthermore, is worth mentioning other countries that do not report data to this entity (or only partially), that have been very damaged by the waves after the summer. This is the case of Germany, Poland and Czech Republic.

Therefore, for that purpose we Will use the P-Score parameter, which simply calculate the excess of deaths comparing with the same period in 2015-19.

We can appreciate in the map the current situation of Europe during the second or third wave (updated to week 3 of 2021)

As conclusion, we can observe that almost each country is suffering the effect of the pandemic in a different way. There are very few countries that do not have excess of mortality over the allowed deviation. Also, despite the over 65 population is the most affected one, we can appreciate significant global impact during all the waves.



# MUSCULOSKELETAL PATHOLOGY

Musculoskeletal pathology encompasses a group of rheumatological and traumatic diseases that affect joints, bones, muscles or ligaments. Sometimes excessive or repeated effort, in other cases trauma or deterioration associated with aging are responsible for these pathologies. Musculoskeletal diseases are a frequent reason for medical consultation.

Before beginning its approach, it is advisable to review, even briefly, some anatomical structures that are part of the joints.

To begin with, joints are areas where two or more bones meet. Most joints are mobile and allow bones to move. A bone is a very rigid connective tissue that forms the skeleton of vertebrates and it is made up of cells and blood vessels.

The adult has 206 bones, a lower figure than the one we present at birth - the three hundred bones are usually separated - because some bones fuse together over the years.

Articular cartilage is a tissue with elastic characteristics, lacking nerves, blood vessels and lymphatics. It is located in the joints, its thickness varies according to the anatomical region and it is found covering the surface of the joint, in the area where two bones meet.

Articular cartilage reduces friction, transfers and distributes mechanical loads, and provides a lubricated joint surface that allows bones to slide and rotate over each other with minimal wear.

The ligament is a band of fibrous connective tissue composed mainly of collagen fibers, which give it enormous resistance. The function of the ligament is to ensure the union of two bones, forming a joint. The ligament does not have the ability to contract, its function is basically to limit excessive movements of the joint, so that it stabilizes it and limits possible injuries.



Sometimes an abnormal and uncontrolled movement of the joint can cause excessive stretching of the ligament, for example, which occurs when a soccer player suddenly changes direction with his foot on the ground. This situation can cause a ligament tear, which can be partial or total.

The tendon, for its part, also has enormous resistance due to the collagen fibers that make it up. This anatomical structure is responsible for connecting a muscle with one or more bones.

The function of the ligament is to transmit the force generated by the muscles to the bones, in order to produce the desired movement. In this way, when a muscle contracts it pulls on the tendon, which in turn pulls on the bone it is attached to, creating movement.

The articular cavities are filled with fluids - the so-called bursae - that are located between the bones, ligaments and other adjacent structures. Joint fluid helps cushion friction in the joint and serve as a lubricant. Synovial fluid is produced by the synovial membrane that lines the joint.

## OSTEOARTHRITIS

Osteoarthritis is a rheumatic disease characterized by a lesion of the articular cartilage. When it is injured, it occurs:

- Pain
- Stiffness
- Functional disability

Osteoarthritis can appear anywhere in our body, but the main affected joints are the cervical and lumbar spine, the shoulder, finger, hip and knee joints.

It is important not to confuse osteoarthritis with arthritis, in this pathology there is inflammation, while in osteoarthritis the main characteristic is wear.

Osteoarthritis is a disease with a high prevalence, it is estimated that it affects ten percent of the general po-

## LOW BACK PAIN

Low back pain is known as pain located in the lower or lower back area and whose origin is related to the musculoskeletal structures of the spine. This pathology affects both young people, adults and the elderly, and

TABLE 1. Risk factors for osteoarthritis

|                           |
|---------------------------|
| Family history            |
| Obesity                   |
| Lack of physical exercise |
| Posture disorders         |
| Overuse of that joint     |

pulation and represents almost a quarter of the total of patients who are seen in rheumatology consultations.

Regarding the origin of osteoarthritis, it should be noted that it is not hereditary but that it does have a genetic risk component. Table 1 shows the main risk factors associated with this disease.

appears both in sedentary jobs and in those that have a strong physical component. Regarding prevalence, it is estimated that 80% of the population has had or will have low back pain at some point in their life.

TENDINITIS

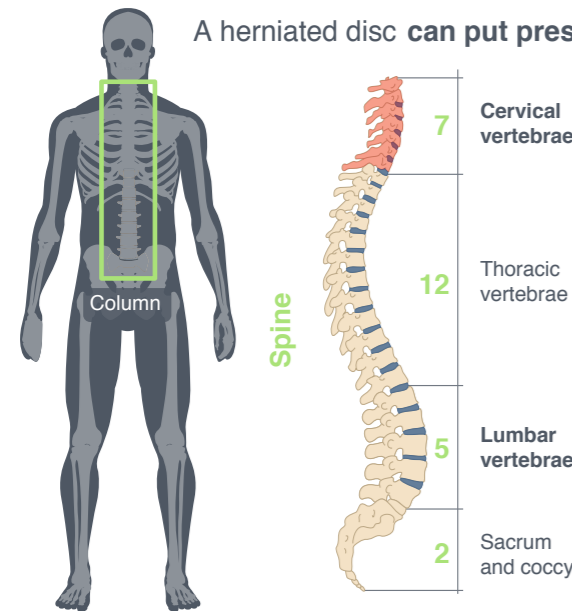
Tendonitis is the inflammation or irritation of a tendon, which, as we have pointed out, are the fibrous cords that join the muscle to the bone. Clinically, it manifests as pain and increased sensitivity just outside the joint.

The most common causes of tendonitis are:

- Injury derived from sports practice
- Muscle overload
- Age
- Certain diseases (diabetes, rheumatoid arthritis)
- Tendon degeneration

It occurs when **all or part of a disc in the spine is forced to pass through a weakened part of the disc.**

A herniated disc can put pressure on nearby nerves or the spinal cord.



**Spine**

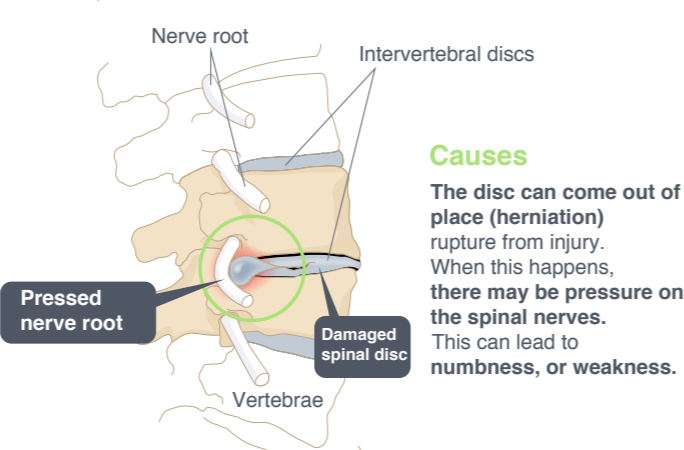
**Cervical vertebrae** 7

**Thoracic vertebrae** 12

**Lumbar vertebrae** 5

**Sacrum and coccyx** 2

**Column**



**Causes**

The disc can come out of place (herniation) rupture from injury. When this happens, there may be pressure on the spinal nerves. This can lead to numbness, or weakness.

**Pressed nerve root**

**Damaged spinal disc**

**Intervertebral discs**

**Nerve root**

**Vertebrae**

The lumbar region is the most commonly affected area. The cervical discs are the second most affected area. The thoracic discs are rarely involved.

**Symptoms**

Pain occurs most often on one side of the body.

**Cervical hernia:**

Pain when moving the neck, deep pain near the shoulder blade, pain radiating to the arm, forearm and fingers of the hand

**Lumbar hernia:**

Shooting pain in the leg, hip, or buttocks and pain or numbness in the calf or sole of the foot.

HERNIATED DISCS

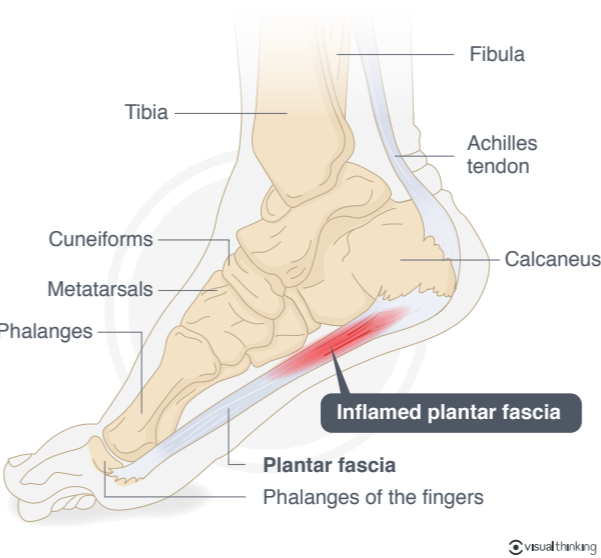
Herniated disc is a degenerative pathology of the spine. This structure is made up of vertebrae –they go from the cervical to the lumbar area- and intervertebral discs, which act as pads. These discs are made up of an annulus fibrosus and a nucleus pulposus.

The fibrous ring forms the outer part of the disc; it is hard, flexible and surrounds the nucleus pulposus preventing it from moving. For its part, the nucleus pulposus is the internal part of the disc; it is responsible for cushioning the weight and is gelatinous.

When the annulus fibrosus ruptures or the content of the nucleus pulposus breaks, it leaves its anatomical situation, this is what is known as herniated disc. Technically, we could say that it is the herniation of the nucleus pulposus.

When the nucleus pulposus leaves its natural place, it invades other structures and can cause damage to the nerve roots or even the spinal cord. Compression of the nerve roots is what produces the typical pain of a herniated disc.

**Inflammation of the plantar fascia**, the thick tissue on the sole of the foot that connects the calcaneus bone with the toes.



PLANTAR FASCIITIS

Plantar fasciitis is one of the most common causes of heel pain. This pathology involves the inflammation of a thick band of tissue that crosses the sole of the foot and that connects the heel with the toes, it is called plantar fascia.

Plantar fasciitis usually causes shooting pain in the sole of the foot near the heel. The pain is usually most severe during the first few steps after waking up and worse after exercise.

Plantar fasciitis is more common in runners, in overweight people, and in those who wear inappropriate footwear. Table 2 lists the most frequent situations that can trigger this pathology.

TABLE 2. Risk factors for plantar fasciitis

|   |
|---|
| Age: it is more common between 40 and 60 years  |
| Exercises that put a lot of pressure on the heel, such as ballet, aerobic dance, or long-distance running |
| Flat feet   |
| Obesity   |
| Occupations that require standing for a long time   |

TABLE 3. Symptoms that usually accompany fractures

|   |
|---|
| Deformation of the anatomical region          |
| Swelling, bruising, or bleeding               |
| Numbness                                      |
| Tingle  |
| Limited or disabling movement                 |
| Fever, in cases of hematoma or superinfection |

FRACTURES

Fracture can be defined as the total or partial breaking of a bone. This situation can occur for different reasons, the most frequent of which is an accident, a fall or a sports injury.

There are different types of fractures and depending on the damage it can be classified into:

- Complete fracture: the bone is fragmented into two parts
- Greenstick fracture: it is typical of children and the bone breaks, but it does not separate into two parts
- Simple fracture: the bone breaks
- Comminuted fracture: the bone breaks in more than one part or splinters
- Open fracture: the bone protrudes through the skin
- Closed fracture: there is a fracture, but the bone does not protrude through the skin

There is one type of fracture that deserves special consideration: the stress fracture. They are those that are produced by repeatedly exerting pressure on the bones.

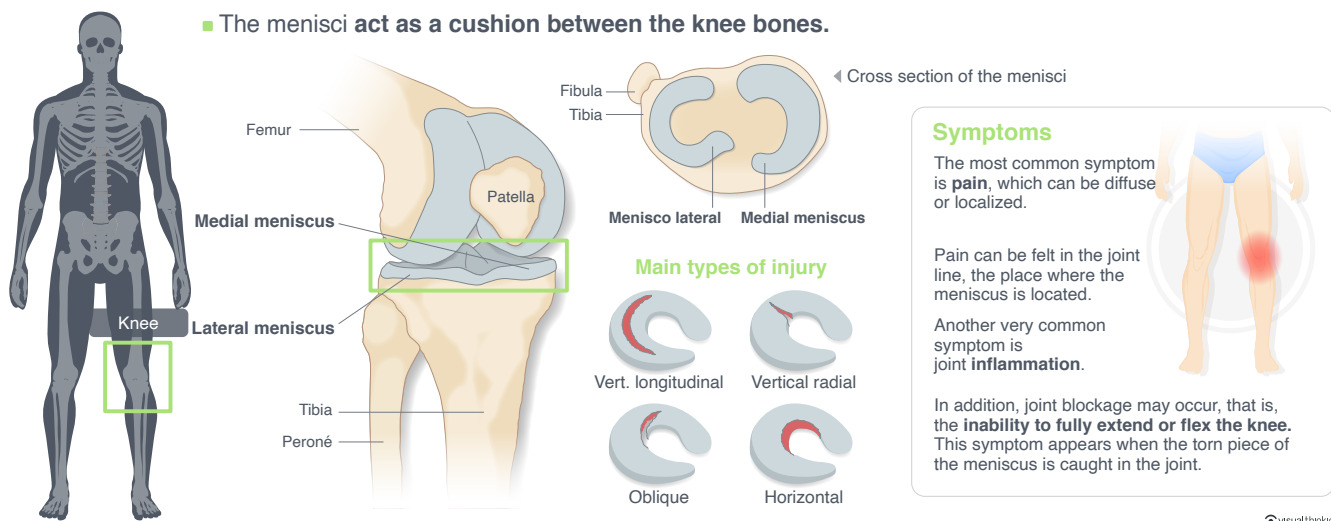
Within this type of fracture, we can differentiate two types:

- Fatigue fractures: caused by repetitive activity
- Weakness fractures: there is a bone weakness that causes a certain fragility -such as, for example, osteoporosis-

Table 3. It shows the main symptoms that usually accompany fractures.

**Tear of one or both menisci of the knee.** The menisci are two cartilages that facilitate the movements of the joint.

- The menisci **act as a cushion between the knee bones.**



## MENISCOPATHIES

The menisci are two semilunar cartilage structures located between the femur and the tibia. The human being has two menisci in each knee, one internal and one external. The internal meniscus is larger than the external one and has a "C"-shaped outline, while the external meniscus has a circular shape - similar to the letter "O" - and although it is smaller, it covers a somewhat larger surface.

The functions of the menisci are:

- Give stability to the knee
- Help sliding, due to its high amount of water
- Distribution of the forces outwards, away from the anchoring areas
- Cushion impacts on the knee

Meniscopathy is any injury that affects the menisci. A torn meniscus is one of the most common knee injuries in both the professional and amateur sports population. It is estimated to be four times more common in men than women. Table 4 lists the main causes of traumatic meniscopathy.

In addition to trauma, we must highlight the so-called degenerative meniscopathy, which is caused by wear and tear due to age, the trigger for a torn meniscus being a trauma or overloading of the joint.

The most frequent symptoms are:

- Diffuse pain at the level of the joint line
- Pain when performing knee twists
- Difficulty or inability to extend or flex

**TABLE 4. Traumatic meniscopathy**

| TYPE OF TRAUMA    | CHARACTERISTICS  |
|-------------------|--|
| Acute trauma      | Young people who exercise frequently and have a healthy meniscus are less likely to have a meniscus fracture. It is produced by a direct blow or a sharp turn on the foot. |
| Repetitive trauma | Due to progressive degeneration. It usually appears in middle-aged people, with more fragile cartilage.  |