

KINETIC APPROACH OF THE LOWER LIMB TRAUMA IN MOUNTAIN RUNNING

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Abstract:

Running has been and is one of the favorite activities of most people's, in that it produces a variety of positive effects on the human body. A runner wishes at one point, to leave the classical trails and diversify with mountain running.

Introduction:

Uneven or slippery ground with various uphill and downhill slopes on country or forest roads, hilly or mountainous areas, on sometimes cobbled roads, sometimes with mud or grass, are aspects that characterize mountain running. Running ground, runner training, sports equipment especially footwear, weather conditions, running time can be factors that will condition the overall activity on the runner's safety and the achievement of the proposed goals. (Figure 1)



Fig.1 uneven road

Purpose and objectives of the study :

The aim of this study is to optimize the system of application of the kinetotherapy specific means in the recovery of lower limb traumas :

Research objectives:

- analysis of the specialized literature on the recovery of the lower limb trauma;
- identification of optimal clinical aspects as well as methods of approaching acute trauma .

Material and method:

General trauma aspects:

To justify the necessity of the study, we will present some aspects of physio-pathology located at the level of the lower limb.

The knee is the largest joint of the body, its position, its role in static and dynamic bio-mechanics, is prone to vulnerability to both direct and indirect trauma.

We will present some of the injuries produced in the knee joint:

- soft lesions (contusions, wounds), tendon, muscles (stretches, ruptures, cuts, dis-insertions), blood vessels, nerves;
- bone injuries: trabecular disturbances, cracks, fractures;
- joint injuries: joint wounds, ligament ruptures, sprains, dislocations, menisci lesions. [4]

We include in this study also the traumatic ankle sequelae, considering the ankle and the foot an anatomical-functional complex meant to support the entire body weight, while ensuring walking and running on any type of ground.

The lesions types of the foot trauma are common: wounds, contusions, sprains, dislocations, fractures that may interest all anatomical structures: skin, ligaments, muscles, tendons, joints, bones, blood vessels and nerves .

We will present the approach in terms of trauma therapy considered to be most common in people who practice running over uneven ground.

By eliminating wounds and contusions from this presentation means they do not require a complex approach.

Muscular trauma: a small rupture is a small lesion that occurs in a muscle with decreased function due to previous lesions, affects a very small number of muscle fibers in a muscle bundle, and no taking into consideration the connective tissue coating of the muscle bundle.

Bundle muscle rupture: involves a variable number of fibers, up to the total number of fibers of a bundle, including the conjunctive coat of the bundle, the hematoma must necessarily appear. It is the most common muscle injury.

The ruptures appear spontaneously due to a strong contraction or due to a normal move performed on an exhausted muscle.



Fig. 2 types of muscle rupture



Fig. 3 hematoma - muscle rupture

Symptoms:

- pain with intensity depending on the number of fibers involved in the injury; (Figure. 2).
- stops the effort and can be preceded by muscular discomfort;
- determines the reflex immobilization of the segment;
- decrease in intensity over a short period of time;
- disappears in ice applications; walking is limping .

Clinical examination: contour anomaly of the respective region; hematoma, described as two tumefied areas separated by a depression (2-3 days after the injury the area becomes a single swelling area (Figure 3).

Functional examination: possible movements, but pain is amplified; the amplitude of the passive range of motion (PROM) is limited; resistance ranges of motions (RRROM) are limited [3].

Knee Sprain: it is a very common medical condition, which involves straining the capsular-ligaments apparatus in physiological directions and may interest the collateral ligaments, cruciate ligaments, capsule and menisci.

Pathological anatomy: the ligaments can stretch, completely break or tear from insertions; menisci may have crush injuries; any capsular-ligaments lesion determines synovial congestion, synovial leakage (haemarthrosis, edema), a rapid atrophy around the joint muscles, especially the quadriceps.

Symptoms:

Pain on palpation in a fix point, the effusion of the synovial liquid and decreased functionality of the joint are the main symptoms.

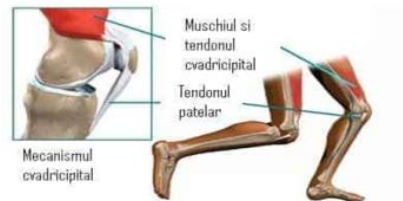


Fig. 4 knee dislocation

The knee instability on the move shows a complete lesion of the meniscus with dislocation or a complex ligaments lesion; blocking the knee in flexion, and eventually returning to the normal position with the feeling of a spring – retraction shows an inter-condylar meniscal lesion of the medial meniscus. [1]

Para-clinic examinations can help diagnose the subject. (X - ray for detecting bone lesions, ultrasound or MRI, can detect soft tissue lesions).

Treatment: Given that until an objective imaging investigation is delayed for at least 2-3 days (if pain fails and there is no functional disability some people give up this type of investigation) we will present a knee trauma approach based on the clinical symptoms presented at the time of the injury.

Knee dislocation: can be a closed or an open dislocation; mechanism of indirect trauma, involves hyperflexion, hyperextension or forced valgus or varus positions; it may be involved and other anatomical structures of the soft tissue . (Figure. 4)

Symptomatology: the morphological modification of the joint is obvious; clinical and para-clinical examination is mandatory. [1, 2]

The reduction of the dislocation is performed through orthopedic or surgical procedures; they are performed under anesthesia.

After this procedure of reduction was performed the next part is the application of cast or orthotics maintained at least 2-3 weeks.

At the place where the injury occurred, taking into consideration the type of the trauma, the segment will be immobilized in a position that does not increase the pain and any other injuries to occur; wait for paramedics and/or doctor to allow transport to the nearest medical center, only in optimal security conditions .

Ankle sprain: the mechanism of the injury is indirect (leg twist, inversion, or eversion) associated with exaggeration of flexion, of varus

or valgum positions. The sprain occurs especially when the foot is in some degree of plantar flexion, position of maximum instability of the foot for forced inversion or eversion (Figure. 5)



Fig. 5 ankle sprain (left: the sprain of lateral ligament through inversion; right: sprain of medial ligament through eversion)

Symptomatology does not help us to distinguish between serious and mild sprains. Pain, edema, and decreased functionality, or the usual sprain signs, can not differentiate the degree of the injury.

Treatment in the acute stage: management of pain, edema, trophicity and joint mobility -it is the same procedure as in the knee sprain approach .

Sprains of the foot: the breaking of ligaments may cause severe sprains, but when the trauma was severe the dislocation can occur and the change in the relationship of the facets joints.

When the fracture of the bones does not occur and we have subluxations, the ratio between the two inter-facets is not completely lost as in the case of total dislocations.

The diagnosis is made after the imaging investigations such as MRI, CT are performed.

The approach to reducing the dislocation is identical to that applied in the knee dislocation.

Fractures.

Symptomatology: clinically a fracture may show the the medical history of the injury (even if it is a old injury) signs, probability signs and signs of certainty. The anamnesis highlights: the moment of trauma; the mechanism of trauma (direct, indirect), the moment of pain appearance, the location of pain and functional disturbances.

Signs of probability: pain at a fixed point aggravated by palpation, swelling and then bruising, deformation of the area of the fracture, angulation of the segment of the limb, perception of bone fragments in movements, shortening of the segment, decreased functionality. [3]

The RX or MRI performed in at least two incidents may pose positive diagnosis. Treatment: the aim is to consolidate the segment as quickly as possible and as close as possible to the normal anatomical situation, the treatment begins at the time of the occurred injury and consists in giving the first aid given by those who are present at injury scene.

First aid must involve the injured segment and any other associated trauma.

Results and discussions :

The management of pain is the first therapeutic element to be taken into consideration: it can be done through, relaxing no-painful postures, cryotherapy, analgezics.

Preservation of function by maintaining trophicity, enhancing the lymphatic and blood circulation, decreasing edema, maintaining the joint mobility and muscle tonus.

These can be achieved by declive / non-declive postures ; PNF techniques mobilizations

In principle, any applied technique should not cause pain or discomfort.

Massage, applications of bandages or other materials are not indicated.

The joint will be immobilized only after performing an imaging examination (RX, MRI) and issuing a positive diagnosis requiring surgical intervention, immobilization or other treatment.

Some Principles of First Aid:

- keeping vital functions by avoiding complications (haemorrhagic, respiratory, nerve);
- inventory of injuries to protect them;
- avoiding on-site reduction maneuvers;
- mobilization of the affected segment;
- managing pain and preventing shock (traumatic, haemorrhagic)

Conclusions:

- Identifying and limiting risk factors to prevent accidents that may occur during mountain running may reduce the likelihood of their occurrence;
- Recognizing signs and symptoms of trauma (sprains, dislocations, fractures) and the mechanisms of trauma can enhance the premise of an appropriate approach to manage the injuries during mountain activities.

- How to approach trauma when it is produced determines the future therapeutic route and its success;
- The training of the organizing staff and of those involved in this type of activity leads to a reduction in accidents.

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ABORDAREA KINETICĂ A TRAUMATISMELOR MEMBRULUI INFERIOR ÎN ALERGAREA MONTANĂ

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Keywords:

Alergare montană; traumatism; kinetoterapie; semiologie.

Abstract:

Alergarea a fost și este una dintre activitățile preferate de cele mai multe persoane, prin faptul că aceasta, produce asupra organismului o multitudine de efecte pozitive. Oricare alergător dorește la un moment dat, să părăsească traseele clasice și să diversifice cu alergarea montană.