

Passive Movements of the Lower Limbs

Passive movement is defined as movement of a joint performed by another person or device with complete relaxation of the muscles. One type separated from classic passive movements is "**joint play**". These are small movements in the joint in directions other than those typical for the given joint. The most common are movements into distraction, anteroposterior displacement, laterolateral displacement, rotation and angulation.

Typical passive movements are performed in directions typical of the joint. It is performed under simultaneous traction and always only until pain is felt. With passive movements, we investigate passive orientation ranges of joint movement, joint pain, joint blockages, muscle imbalances around the joint and damage to soft tissues around the joint. They are also important for maintaining or improving the range of motion in the joint, stretching shortened muscles, and help prevent contractures. When performing passive movements, we must pay attention to the correct holding of the limb - supporting the segment, soft but firm holding, do not hold on to the muscles; pay attention to the correct fixation, so that there are no substitute movements in the joint, it is not fixed through two segments; the movement must be performed slowly; at the end of the movement, it is not recommended to perform "doping" due to the risk of microtraumas. For therapeutic purposes, the movement is performed repeatedly during one exercise in each direction and, if possible, repeatedly during the day.

Physiological ranges of movements of the lower limbs

Hip joint

- Flexion – 90° with extended knee joint, 140° with bent knee joint;
- Extension – 20°;
- Adduction – 30°;
- Abduction – 50°;
- Internal rotation – 40° at right angle flexion in the knee and hip joints;
- External rotation – 50° with right angle flexion in the knee and hip joints.

Knee-joint

- Flexion – 150°;
- Extension – 10°.

Ankle joint

- Dorsal flexion – 30°;
- Plantar flexion – 45°;
- Inversion – 40°;
- Eversion – 25°.

Passive movements of the lower limbs

Position, fixation, holding and movement are given. If, for example, it is not possible to adhere to these principles in bed, we perform an alternative very close to performing the movement according to the given principles.

Hip joint

- Flexion

Lying on the back, we fix one hand on the ridge of the hip bone. We place the patient's lower leg on our forearm, during the flexion movement in the hip joint we can flex the knee joint at the same time to facilitate the movement and our grip.

- Extension

The position lying on the stomach, with the flats hanging outside the mat, is fixed by applying pressure above the sacrum. Place the patient's patella in the palm of the hand and perform the movement. It is possible to exercise the exercised lower limb with a flexed knee joint.

- Abduction

The position lying on the back, we fix by the ridge of the hip bone. We place the lower leg of the exercising limb on the forearm, the hand above the knee joint from the inside.

- Adduction

Position lying on the back, the unexercised lower limb must be placed in abduction, we fix it behind the ridge of the hip bone. When moving, we can stand on the side of the exercised or unexercised lower limb, place the lower leg of the exercised lower limb on the forearm, the hand is above the knee joint.

- External and internal rotation

This movement can be performed in different positions of the limb, I chose the most used position for illustration: Lying on the back, the limb is bent at the hip and knee joints. We fix on the lower end of the femur against bending. We put the heel on the palm and perform the movement.

Knee-joint

- Flexion

The lying position on the stomach, the flats of the feet hang freely outside the mats, fix on the sacrum. We hold the exercised limb above the ankle and perform the movement.

- Extensions

Position lying on the back, fixed at the lower end of the femur. We hold the exercised limb above the ankles, during movement we first perform traction and only then move into extension.

Ankle joint

- Dorsiflexion

Position lying on the back, the lower limbs are stretched or bent at the knee joint, fixed above the ankle. Place the heel in your palm, rest the flat on your forearm and perform the movement.

- Plantar flexion

We fix the position lying on the back, the lower limbs outstretched, above the ankles. We apply the palm from the dorsal side of the leg and push in the direction of movement.

- Inversion and eversion

We fix the position lying on the back with the lower limbs stretched above the ankle. We grasp the foot between the thumb and the other toes from the dorsal and plantar tendons, possibly from the side of the little finger and the big toe, and perform the movement.

References

Related articles

Passive movements

Literature

- KOLÁŘ, Pavel. *Rehabilitace v klinické praxi*. 1. edition. Praha : Galén, 2009. 713 pp. ISBN 978-80-7262-657-1.
- HALADOVÁ, Eva - NECHVÁTALOVÁ, Ludmila. *Vyšetřovací metody hybného systému*. 1. edition. Brno : Institut pro další vzdělávání pracovníků ve zdravotnictví, 1997. ISBN 80-7013-237-X.