

Orthotics

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This article has been translated from WikiSkripta; ready for the **editor's review**.

Orthotics is part of orthopedic prosthetics and deals with the indication, construction and application of orthoses. An orthosis is an externally applied aid used to modify the structural or functional characteristics of the nervous, muscular and skeletal system.

Orthotics takes place across clinical disciplines. For the success of orthotic care, it is necessary to precisely define the functional requirement for the aid in the entire context of treatment in terms of the timing of application, the purpose of use, the mechanism of action and the function of the orthosis itself. In order to meet this requirement, communication between individual members of the therapeutic team is essential, in which an orthotist - a prosthetist perfectly oriented in the current technical possibilities of orthopedic prosthetics - should never be missing. It should be a matter of course that the doctor and the attending physiotherapist or occupational therapist cooperate with the informed patient and check the functionality of the prescribed aid.

Distribution of braces

Orthotics can be divided according to several aspects:

- Production method - mass-produced and individually made
- Material
- Purpose
- Function
- Construction
- Location on the body

According to IST (International Standard terminology), orthoses are named using an acronym describing the given anatomical structure to which the orthosis is applied. Any orthosis can be named using the first letters of the English names of body parts. For example: A = ankle joint (ankle), F = foot (foot), O = orthosis, and therefore an orthosis with the abbreviation AFO is an orthosis relating to the ankle and the foot.

Furthermore, we can also divide 3 types of orthoses according to the SCS classification.

Immobilization – the requirement to store a limb or part of a limb in an anatomical or other position. They are mostly simpler types of orthoses

Mobilization – ensuring movement in joints or stretching of soft structures during contractures.

Restriction - a requirement to limit or block movement in the joints.

Indication

For the functional indication of the orthosis, it is necessary to base it on the evaluation of the patient's disability (through a muscle test, etc.), at the same time we must take into account the patient's possible other difficulties (cardiorespiratory and cognitive functions - due to the patient's ability to cooperate when putting on the device).

Functional requirements should be met when the device is properly deployed. At the same time, the device should ensure the patient's comfort during application and should not cause secondary problems (pain, skin irritation or overloading of neighboring joints).

Contraindications

The contraindication of orthoses is based on a careful clinical examination and taking an anamnesis.

A very important role is played by the evaluation of therapeutic and technical possibilities in the application of orthoses:

- high energy demand of limb orthoses
- cardiopulmonary insufficiency
- insufficiency of the venous system (especially when applying DK orthoses)
- unstable limb circumference (DK edema)
- skin condition
- non-cooperation of the patient and the impossibility of providing follow-up care

Orthotics HK

- **HO (Hand orthosis)**
 - We include rigid, static and dynamic orthoses among hand and finger orthoses. We can also include stabilizing or strengthening thumb orthoses here.
- **WO, WHO (wrist orthosis, wrist hand orthosis)**
 - These include wrist and hand orthoses, elastic wrist braces and rigid fixation
- **EO, EWHO (elbow orthosis, elbow wrist hand orthosis)**
 - Here we list more complex static or dynamic fixed orthoses with free or limited range of motion in the elbow joint and wrist, and orthoses with joint splints.
- **SO, SEO, SEWHO (shoulder orthosis, shoulder elbow orthosis, shoulder elbow wrist hand orthosis)**
 - Shoulder orthoses include abduction splints that ensure the necessary position for healing skeletal or neuromuscular disorders, elastic reinforced fixation aids that strengthen the shoulder joint in case of instability. We also include simple arm slings and clavicle fixation aids in this group of aids.

Orthotics DK

- **FO (foot orthosis)**
 - We apply foot orthoses either when correcting the faulty position of the foot and toes, or as a relieving aid that, for example, relieves a defect in the plantar area.
- **AFO (ankle foot orthosis)**
 - We apply ankle orthoses for the correction of deformities in the leg and ankle area, the need to stabilize the TC joint and ensure limited load-bearing capacity of the limb.
- **KO (knee orthosis)**
 - The simplest knee orthoses include infrapatellar tapes, elastic knee braces and knee braces with joint plates. The more complex ones include orthoses with constant rigid flexion and orthoses with a fixed structure. Varositis or valcositis of the knee joint can be corrected with these KOs.
- **KAFO (knee ankle foot orthosis)**
 - KAFO is an orthosis extending from the thigh area to the patient's leg. This range enables the function of the AFO itself and, at the same time, control of the knee joint both in the sagittal and frontal planes. It is mainly applied to patients who need stabilization and control of the ankle and knee joint.
- **HKAFO (hip knee ankle foot orthosis)**
 - Unlike the previous ones, these orthoses are supplemented with an elastic or fixed lumbar sleeve and hip splints with a limited range of motion. Due to the discomfort of this device, the application of this orthosis is preceded by rigorous examination and evaluation of all aspects. They are an important aid in the verticalization of patients after trauma to the proximal femur or in patients with neuromuscular disability after trauma or DMO.

Torso orthoses

- **CTO (Cervicothoracic Orthosis)**
 - Here we list a soft or reinforced cervical collar used for muscular and degenerative disorders of the cervical spine.
- **TO (thoracic orthosis)**
 - Thoracic orthoses are simple elastic belts and bandages for fixation in the chest area and aids for rigid fixation of the clavicle.
- **TLO (Thoracolumbar Orthosis)**
 - This includes lumbar orthoses made of flexible elastic materials, which are supplemented with reinforcing braces and other supporting elements.
- **TLSO (thoracolumbosacral orthosis)**
 - TLSOs are tall, corrective, derotational trunk orthoses for the treatment of scoliosis or trunk orthoses that are intended for extensive trunk fixation in multilevel metastatic spinal involvement or post-trauma.
- **CTLSO (cervicothoracolumbosacral orthosis)**
 - CTLSO orthoses are intended for situations where it is necessary to apply high derotation torso orthoses in the treatment of scoliosis or in stabilization after trauma and spinal operations.

Links

Related Articles

Orthopedic prosthetics

References

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