

Orthopedic prosthetics

A synonym for orthopedic prosthetics is **technical orthopedics**. We classify it as a separate field with its own superstructure certification. It deals with **functional** or **cosmetic replacements** for anatomical losses of the locomotor system. It is closely related to surgery, neurology, rheumatology and rehabilitation. Significant progress in the development of this field occurred in connection with wars and natural disasters (thalidomide), although the first signs of prostheses appear already in ancient Egypt.

Prosthetics

Prosthetics is characterized by both the replacement of the defect and the function of the affected part of the body itself, even if the function is never completely perfect. Functionality depends on the technical perfection of the replacement, the overall condition of the organism and the condition of the stump.

The prosthesis consists of a stump socket, a part replacing the given body part and an end part (hand, foot).

Upper limb prostheses

Prostheses of the upper limb can be divided into passive (aesthetic) prostheses controlled by their own power and artificial prostheses with an external energy source.

Prostheses passive (aesthetic)

This type of prosthesis is mainly used for amputations distal to the carpometacarpal joint. It serves as a passive part of the gripper.

Indication

Recommended **for children** with a congenital limb defect until the 6th week of age, when **the spatial movement stereotype** begins to be fixed. From the age of 2, these children will receive an active model. In adults, it is a relative indication for unilateral disabilities (a number of disabled people prefer a passive prosthesis).

Self-powered prostheses

These prostheses work on the principle of transferring movement from the preserved part of the limb. It consists of a mechanical hand prosthesis or a work attachment (movement is transmitted by pulling the cable).

Prostheses with an external power source

A prosthesis with an external electrical source is an electromechanical hand working on the basis of sensing potentials from two antagonistic muscle groups. When the muscle contracts, the potential increases and the prosthesis moves.

Indication

This type is especially recommended for **bilateral limb amputation**.

Lower limb prostheses

For lower limb prostheses, the height of the amputation is important. The structure comes from the height. A prosthetic sandal is used in the case of an amputation in the tarsal region, and in the case of an amputation in the ankle, a prosthesis with a leg socket and foot replacement. If an amputation occurred in the area of the lower leg, then the prosthesis includes a stump bed, an ankle replacement, and a foot.

Epithets

Epithetics is a type of prosthetics where there is no replacement of function, but the prosthesis has a purely aesthetic meaning. An anatomical defect is replaced. Among the most commonly used epithets are replacements of the finger, nose, glans, and atrophic muscle groups. Another type of epithesis is, for example, breast replacement. The main function of this type of prosthesis is a significant benefit for the patient's psyche.

Orthotics

Unlike epithetics, *orthotics deals with replacing the lost function of a given body part*. The main representatives are orthoses. The possibilities of orthoses lie mainly in compensating the stabilizing function, fixing or correcting faulty posture.

Types of braces

The types of orthoses are divided according to their location into **torso orthoses** , which have the task of fixing, relieving and correcting the faulty position of the spine, **cervical spine orthoses** (neck braces - Philadelphia type, Schanz collar, ...), **thoracic and lumbar spine orthoses** (Milwaukee-type orthosis, individual corsets) and upper and **lower limb orthoses** .

Orthoses intended for upper limbs mainly have a fixation function, orthoses for lower limbs both **fixation** (they replace a plaster cast) and **stabilization** (they stabilize movement in the joint in case of insufficiency of the fibrous apparatus and prevent subluxation)

More detailed information can be found on the Orthotics page .

Orthopedic shoes

This category includes **shoe inserts** that support the arch of the foot. Furthermore, **medical footwear** intended for the correction of minor foot defects. The last type is **heavy orthopedic footwear** , which finds its application in more serious disabilities, such as limb shortening up to 10 cm or equinus feet . Shoes are made individually according to a plaster cast.



Brace

Adjuvant

Adjuvants are compensatory aids, which include, for example, crutches, canes, wheelchairs, tricycles, beds and others.

Links

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- BENEŠ, Jiří. *Study materials* [online]. ©2012. [feeling. 16.2.]. <http://jirben2.chytrak.cz/materialy/orto,trauma_jb.doc> .

