

Prefabricated components for lower limb orthoses

Country of origin | India

Health problem addressed

Despite polio eradication drives, 0.5% of the those affected by polio or other neuromuscular conditions in India and low-income countries require some kind of orthoses. Among this population, 75% live in rural areas with the majority unable to access an orthoses due to its cost and inappropriateness for the rural environment and lifestyle.

Product description

The prefabricated plastic Knee-Ankle-Foot Orthotic (PF-KAFO) system consists of two plastic thermoformed plastic shells - one for below the knee and one for above the knee - a pair of orthotic knee joints with drop-lock and uprights which connect the below-knee and above-knee shells, and accessories such as straps/fasteners and rivets. The prefabricated plastic shells are available in nine sizes for the left and right leg. Orthotic knee joints are available in two sizes for children and adults.



Product functionality

Lower limb orthoses facilitate mobility and prevent secondary deformities. Components of suitable sizes are selected from the available range, assembled as per measurement of the individual and then fitted to the user. The user attaches the orthosis to the leg by means of straps/fasteners. Locked knee joints facilitates stability during the weight bearing phase and assists in walking despite having weak/paralysed legs. Unlocked knee joints allow the user to bend his or her knee, while sitting.

Developer's claims of products benefits

It is comfortable, cost-effective and very appropriate for low and middle income countries. It requires a minimum of time, tools and machineries for assembly. It is suitable for a rapid fitting in remote locations. It is water proof and has the possibility of using it with or without footwear making the orthosis more culturally appropriate, especially inside the house or temple.

Development stage

The product has been evaluated by the International Society for Prosthetics and Orthotics (ISPO) in 2003-2004. The second ISPO evaluation was done in Ethiopia during trials in 2005. The third ISPO evaluation was completed in 2006 after more of ten months of use in Ethiopia. The findings were presented during ISPO 2007 in Vancouver. Based on the feedback, better shells and new sets of orthotic knee joints have been developed and the new product was launched during the 7th International Conference of the Federation of African Orthopaedic Technologists (FATO), Ivory Coast, 30 September - 5 October 2013.

Future work and challenges

Future work includes development of an ankle joint, introduction of the technology in the Prosthetics and Orthotics Course curriculum, and introduction of the PF-KAFO system under the assistance to disabled persons of India programme, sponsored by the Government of India.

Use and maintenance

User: Self-use

Training: Short training on assembly and use

Maintenance: Daily cleaning and checking for broken straps

Environment of use

Settings: Rural, urban, ambulatory, at home, primary (health post, health center), secondary (general hospital), tertiary (specialized hospital)

Requirements: A facility with tools, stable power supply and gait training materials

Product specifications

Dimensions (mm): Vary by size

Weight (kg): 2-4

Consumables: Velcro fasteners, rubber soles, adhesives, padding foams, stockinette, rivets, screws, nuts

Life time (years): 3-5

Shelf life (years): 10

Retail price (USD): 60 for the PF-KAFO shells and 60 for the knee joints.

List price (USD): 60 for the PF-KAFO shells and 60 for

the knee joints.

Other features: Portable, continuous-use

Year of commercialization: Concept was introduced in 2003, it developed further based on the feedback and evaluations, and development work on the knee joints was finalized in 2013. The whole system was launched on 30 September 2013.

Currently sold in: Bangladesh, Ethiopia, India, Kenya, Nepal, Nigeria, Sri Lanka, Tanzania

Contact details Albina Shankar | Email albina@mobility-india.org | Telephone +91 80 264 92222 | Web <http://bit.ly/HdhqDR>
<http://www.who.int/disabilities/technology>