

Case Study - Developments in Lower Limb Protheses

Patients who have tumours in the limbs, or who have diabetes or plaque inside their artery walls and are at risk of infection that may cause the tissue to die, are at a greater risk of needing an amputation. Traumatic loss of limbs caused by landmines, violence and road traffic accidents contribute to the World Health Organization's estimate of over 30 million people who need a prosthetic device to maintain mobility. Lower limb prostheses are those devices that replace legs, knees, ankles and feet.

Great innovation in recent years has created a wider range of products that enable patients with the correct post-operative care, to walk, balance, coordinate and do other activities, including competing in sporting events.

The design of the prosthesis around articulation of the knee and ankle is particularly critical to support rhythmic movement, like walking. It should allow the artificial leg to mimic the natural braking & damping of the joint, muscle and connective tissue, in order that the swing of the leg adjusts to the activity being undertaken.

Manufacturers today provide products with a range of technical solutions to their knee designs, from a basic mechanical damping system to more complex fluidic and microprocessor-controlled devices.

To help create the optimum descriptions for the different types of prostheses, Dr Luis Carraca at the GMDN Agency brought together the leading manufacturers of prosthetic technology to review the existing GMDN Terms and discuss the options. They collaborated to ensure that a consensus was reached and the definitions of the GMDN Terms accurately represented the different groups of technology.

The working party reviewed the design features of the limb-prosthesis interface, function, alignment, structure and cosmetic components for ankle, knee, hip and total leg replacements. Overall 28 new GMDN Terms were created, 28 Terms were made obsolete and 8 Terms were modified. The GMDN Collective Term structure is shown below.

External prosthetic/orthotic devices

 External prostheses

 External limb prostheses

 External limb prosthesis sockets

 External lower-limb prostheses

 External ankle-foot prostheses

 External knee prostheses

The new collection of GMDN Terms for lower limb prostheses should allow organisations to identify the right device for their specific need and support regulatory activities, healthcare management and clinical studies. This should help everyone to move in the right direction.