

Your definitive prosthesis

There are two primary types of design for a definitive prosthesis:

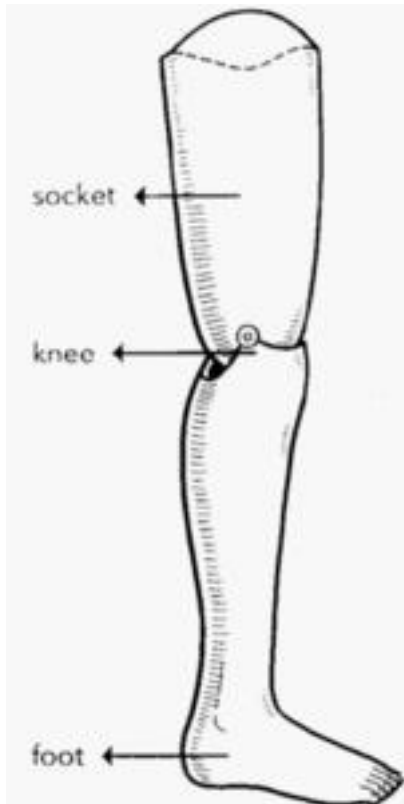
Exoskeletal

Exoskeletal designs include a hard shell often made of acrylic plastic. This shell or "skin" is rigid and durable. This type of prosthesis is not readily adjustable after it has been finished. The primary advantage of an exoskeletal design is durability and its ability to transfer the weight from the socket to the foot. The acrylic lamination often used for the prosthetic shell allows a high impact surface with excellent load bearing capabilities. When an amputee requires great durability in a prosthesis, such as that needed for farming, or other element involving or heavy duty occupations, an exoskeletal design may be a good choice.

Endoskeletal/Modular

Endoskeletal/Modular designs include an anatomically shaped, soft foam cover designed to look and feel like skin. This soft material covers the internal structure of the prosthesis and is removable to allow the prosthetist to make adjustments and changes to the prosthetic system when necessary. Connectors with an aluminum, titanium, or carbon pylon (tube) connect the socket with the foot. The soft covering on an endoskeletal prosthesis is some-what fragile and requires careful attention to prevent damage. The primary advantages of this design are that it is adjustable and lightweight.

Components



There are three main parts to any below knee prosthesis: socket, suspension system, and foot.

Socket

As mentioned earlier, the socket is the part of the prosthesis into which your residual limb fits. It is the interface between the residual limb and the prosthesis. Each socket designed by your prosthetist represents a particular amputee's needs and the prosthetist's efforts to treat those needs.

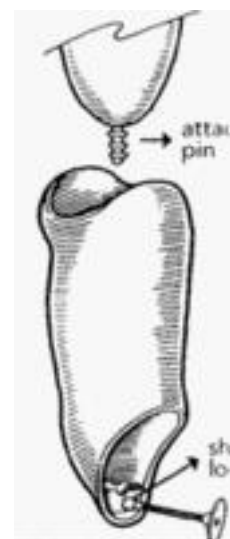
Your prosthetist knows from experience that you will be more likely to wear a prosthesis that fits comfortably and he/she will carefully design the socket with your comfort in mind. Sockets may be hard or soft and can be made from one of many different materials. In addition, the socket may include a liner of foam, leather, silicone, or other materials.

Sockets must fit intimately to be comfortable and your prosthetist may use a check socket made from clear material to evaluate the socket fit before actually producing the socket for your definitive prosthesis.

Suspension System

A suspension system holds the socket on your residual limb and may include a fork strap, suspension sleeve, suction suspension sleeve, locking pin, or even a waist belt attached to the socket. Sometimes a prosthesis will use more than one suspension method. There are certain criteria for the use of specific systems, and patient preference can also play a role.

Each suspension system has advantages and disadvantages that your prosthetist will consider when choosing the right suspension for you.



Foot

The prosthetic foot provides the necessary support to keep the knee stable while you stand on the prosthesis. There are a variety of types of prosthetic feet.

For many years the standard foot was the SACH foot, pronounced "SATCH" which stands for Solid Ankle Cushion Heel. As the name implies, the Sach foot is solid, produces only simulated motion, and is lightweight, durable, relatively inexpensive, and provides nice smooth foot action when walking.



Another option is the single axis foot. This articulated foot allows ankle motion which assists in making the knee stable.



Recently a great deal of research has produced feet with flexible keels, which allow amputees to "spring" on and off the foot as they walk. These feet bend when walking and because of their design, the materials store and release energy like a spring. These feet sometimes referred to as "energy storing" or dynamic response feet. Some of the "energy storing" feet have been shown to actually save energy for the amputee as he/she walks.

Your prosthetist will detail the many foot options and will further explain any special considerations in dealing with your individual situation.