General Description
A Transtibial Prosthesis is a device used for patients who have undergone an amputation of the lower limb between the ankle and the knee. This is sometimes referred to as a Below-Knee (BK) amputation. The type of prosthesis and the components it will be made out of will depend on the shape of the residual limb, your activity level, prognosis, preference and prosthetist’s recommendation.

A socket (the cup the residual limb fits into) design will be determined after thoughtful consideration of the shape of the residual limb, skin condition, activity level and upper extremity strength.

The most common type of socket design is called:

PTB or Patella Tendon Bearing
This device allows the user to bear weight on areas of the limb that can tolerate pressure, such as directly below the kneecap, and keeps the limb from bearing weight on pressure sensitive areas such as the bottom of the limb. Most of these sockets are total surface bearing to increase the surface area to bear the weight. This is a very common and widely used socket design; however, the method of suspension (to keep the prosthesis on the user’s limb) may vary based on the factors listed above.

Some commonly used suspension methods are:

SCSP (Supracondylar-Suprapatellar)
Now mostly used when the user has knee instability or very short residual limb. The socket perches on the knee bone (condyles) to gain suspension. There are various mechanisms used to achieve this kind of suspension.

Suspension Sleeve
Generally made of neoprene or textile, a suspension sleeve is very effective to “suspend” or hold the prosthesis on.

Silicone Liner with Locking Mechanism
The user rolls a silicone liner (sleeve) onto the residual limb, creating a vacuum. The liner contains a pin that locks into the bottom of the prosthetic socket which could be disengaged using a button on the prosthesis. This is a common and easy to use suspension. Good hand dexterity of the user is ideal for this type of suspension.

Vacuum or Suction Suspension
When utilizing vacuum or suction suspension, this reduces the forces on the limb and improves overall suspension with minimal friction. If a vacuum pump is used, this system also controls volume fluctuation of the residual limb. This reduces forces to the limb and improves overall suspension with minimal friction, if a vacuum pump is used system also controls volume fluctuation of the residual limb. With the vacuum or suction suspension, a silicone liner is placed directly against the skin and a suspension sleeve is used to create a seal between the prosthesis and the residual limb. (see Figure 1) Sometimes a vacuum pump (electronic or mechanical) is used to evacuate air from the socket and maintains the volume and pressure inside the socket. Good hand dexterity of the user is must for this type of Suspension.

If you have any questions, please contact Comprehensive Prosthetics & Orthotics.

Your prosthettist is: ________________________________

Your physician is: ________________________________

Location: ________________________________________
Tips and Problem Solving

- Check your skin regularly for signs of pressure points, skin irritation or unusual redness. It could be a sign of a serious problem. Contact your prosthetist as soon as possible to troubleshoot the problem.
- Wash any part of the prosthesis that makes skin contact (liners, socks, inside of the socket, etc.) every day with mild soap and water and allow plenty of time to dry. Follow manufacturers’ instructions for care of liners. Unless specifically instructed, do not use talcum powder and anything containing alcohol or unknown chemicals.
- If your socket is too big or too small, see your prosthetist. He or she can show you how to gauge when your socket fits correctly.
- Make sure your shoe height is correct for your prosthesis. A misalignment can put a strain on your residual limb and surrounding joints.
- Keep a “leg bag” handy with items you might need in an emergency (prosthetic socks, pull socks or bandages, antibiotic ointment, antihistamine ointment, etc.).
- The fit of your prosthesis will fluctuate during the day, you may need to add or remove socks as needed.
- If you are having trouble with the prosthesis or liner, do not make your own adjustments or alter the prosthesis/liner. Call your prosthetist immediately.
- Never sit or sleep with a pillow under your knee, as this will lead to a contracture (inability to straighten the knee).
- Do not sleep with a pillow between your legs, as this lengthens the inner thigh muscle that helps you keep your legs together when you walk, and shortens the outer thigh muscles so that you walk and stand with your feet apart.
- Do stretching exercises daily to make sure that you can straighten your knee and hip; this makes walking, and even lying in bed, more comfortable.