Unlike the socks we wear with our shoes, prosthetic socks serve a specific purpose for the prosthetic limb wearer. My only concern about dress socks when dressing for my daily routine is deciding which ones match the trousers and shoes I’m wearing. When a prosthesis wearer decides which sock to wear, the wrong choice could lead to devastating results.

I once told my wife that I thought lint was really neat! One July 4th, I even made red, white and blue lint (she did not share my enthusiasm, nor was she impressed). The fact is, every time we wear or wash a fabric, whether it is a shirt, towel or a prosthetic sock, the fabric wears. The wear, however, isn’t even. A good example is a pair of dress socks. After a period of use, the sock thins from abrasion at the heel, toe or other area of wear.

Prosthetic socks are available in a variety of sizes and typically come in 1-, 3-, and 5-ply thicknesses. One-ply is typically used for shim or fitting. For example, the wearer can use a 3-ply sock and a 1-ply sock to make a 4-ply sock, making it easier to adjust the thickness by adding or removing 1-ply layers. There are wool and synthetic blend styles, and silicone added or sandwiched between layers of socks gives the wearer additional comfort. There are even sheaths that now incorporate a layer of silicone gel.

The life span of a prosthetic sock
Just how long a prosthetic sock will last depends on several factors, including how often it is worn, how many times it is washed, whether it is washed by machine or by hand, and whether the wearer is sedentary or active. A sedentary prosthetic user yields a longer useful life for his sock by not exerting an inordinate amount of rubbing against the fabric. Conversely, an unusually active or athletic prosthesis wearer would have a sock life span of weeks, not months. Adding silicone gel can help absorb the shear forces exerted between the limb and the socket interface that cause abrasions while wearing a prosthesis.

Achieving the right fit for your prosthesis
Your prosthetist has taken great care in the design of your prosthetic socket. The contact of your limb against the socket interface is imperative for a comfortable and non-abrasive fit. If you do not use enough socks to achieve a snug and total contact fit, the residual limb may “bottom out,” creating pressure on surfaces of the limb that are not pressure tolerant. Because of this pressure, these areas, such as the end of your limb, the patella or other prominent bony
areas, may exhibit redness, blistering, or bruising. If you have on too many ply of socks your daily ambulation will cause a non-total contact situation, resulting in the pooling of fluids and/or blood within these voids. The resultant fluid pooling can cause skin discoloration, an infection, an abscess or a condition known as verrucous hyperplasia or orange peel skin.

The thickness of a 5-ply sock can vary to 3-ply thickness in areas of stretching or wear. If you simply add a sock to compensate for the associated looseness, it could create undue pressure on the top or bottom of the socket and cause one or more of the above-mentioned problems.

The amount of ply that you need for each day of prosthetic wear can vary from day to day and sometimes from morning to afternoon. For example, in the morning, you may require 6-ply of sock, but after sitting through a long meeting, your limb may retain fluid, resulting in a tight, uncomfortable fit since fluid can’t be compressed. If this is the case, remove
1-ply of sock and check for a more comfortable and total contact fit. If you are unsure of the ply that you require from day to day, a helpful technique is to place the anticipated sock ply on your limb, being careful to smooth out all wrinkles. Then, place a marble-size piece of bread in the bottom of the prosthetic socket. Apply your prosthesis in the normal manner and ambulate for several minutes, assuring that the residual limb is firmly seated within the socket. After a short time, remove the prosthesis and inspect the “marble.” The desired effect is to find the marble slightly flattened. If so, the number of socks is appropriate. If the bread marble has remained round, the number of socks is excessive. Remove 1-ply of sock and repeat the process until a slightly flattened marble is achieved. Conversely, if the marble of bread is completely flattened, then an insufficient number of sock ply is being worn. Add a ply of sock and repeat the procedure until you achieve a satisfactory result. A single ply of sock can make the difference between a productive day and a painful, non-productive one, a memorable vacation or a disaster.

Inspecting and adjusting your socks can assure you of comfort and pleasure while wearing your prosthesis during your daily routines. Your prosthetist will be happy to discuss sock options and styles to ensure the comfortable use of your prosthesis.

About the Author:
John F. Schulte, CPO, FAAOP, is a board-certified prosthethist and orthotist, who has been a practicing prosthetist for 29 years. He has written several prosthetic training programs related to prosthetics. He has done considerable research into various prosthetic sockets and interfaces, including socks and their composition. He is a clinical Vice-President for the mid-Atlantic region for Hanger Prosthetics and Orthotics and resides in Annapolis, Maryland.