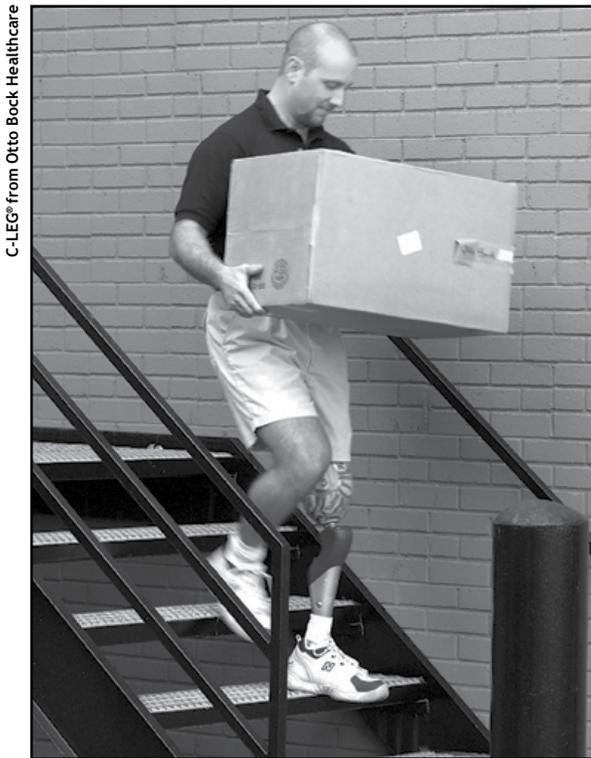


Selecting the Right Computerized Knee



C-LEG® from Otto Bock Healthcare

several models from which transfemoral, or above-knee, amputees may choose, and there are some models still in development. Compared with mechanical knees, you'll find that computerized knees may be more expensive, but they take less energy to operate, which is a necessity for some wearers.

HOW DO MICROPROCESSOR KNEES WORK?

An onboard sensor detects real-time movement and timing, and then adjusts controls accordingly. The microprocessor-controlled knee lowers the amount of effort wearers must use to control their timing, resulting in a more natural gait. Also, knee stability is enhanced.



angle of the knee joint and the loading of the foot and ankle, at a rate of 50 times per second; its onboard microprocessors adapt and

compensate for stairs, slopes and irregular terrain, allowing the wearer to walk naturally and not have to think about compensating for different surfaces. With a few taps of the toe or the push of a button, C-Leg wearers can switch modes that involve a secure walking knee or a locked knee. The C-Leg uses easy-to-charge lithium ion batteries that hold 40 to 45 hours of power.

The **OTTO BOCK COMPACT™** is equipped with a microprocessor that adjusts the knee in real-time, allowing wearers to move more freely in everyday situations



like speeding up and slowing down, responding to uneven terrain, tackling slopes and frequently descending stairs. The Compact is best suited for wearers who are involved in activities that require a high level

of stance stability, walk or have the potential to walk on uneven terrain, and would not benefit from highly variable swing phase adjustments.

Selecting a computerized knee depends largely on an individual's activity level, age, health and lifestyle. Another factor to take into consideration is an individual's walking cycle, which consists of the stance phase, or the point when the leg is on the ground supporting the body, and the swing phase, or the point when the leg is off the ground.

The more active wearer may find that a computerized, or microprocessor, knee is more suitable with his or her activity level, since it offers more assistance with assessing movement.

Although computerized knees are a relatively new development, there are

With all the technological advancements and progress being made in the prosthetic knee arena, researchers can only improve upon the selection that is in the marketplace today, which may eventually include bionic, or neuroprosthetic technology.

The **OTTO BOCK C-LEG®**, introduced in 1997, is still considered a benchmark for computerized knees for athletic and very active amputees. The C-Leg is appropriate for transfemoral amputees, including those with bilateral limb deficiencies or hip disarticulation amputations. The C-Leg's multiple sensors relay data, including the precise

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HELPING OUR PATIENTS REACH THEIR GOALS

Photo courtesy of Ossur Americas, www.ossur.com



The **OSSUR RHEO KNEE®** promises its wearer less fatigue and more confidence, since it has been billed as the first artificially intelligent knee system that has sensors that relay the wearer's knee position and foot and ankle load at 1,000 times per second. This helps determine the wearer's gait and provides the proper amount of swing and stance resistance, resulting in a continually improved and optimized performance. The Ossur Rheo Knee is operational with

a lithium ion battery that lasts up to 48 hours without needing to be recharged; a power switch allows the user to conserve the battery power when it is not in use. Recharging time is two to four hours.

The **ADAPTIVE KNEE** from **ENDOLITE** contains a hydraulic and pneumatic hybrid cylinder that is controlled by microprocessors and swing sensors that detect the gait process at 62.5 times per second, and adjust accordingly.



Developers, who advocate voluntary control, say the Adaptive Knee works "with" the wearer because he or she uses muscles to control it. Also, muscles in the socket are encouraged to work as they would on the sound side, resulting in amputees having a healthier residual limb. The rechargeable batteries that operate the Adaptive Knee last from three to 10 days. An optional shock and torsion pylon also is available to ease much of the shear and stress force. The Adaptive Knee comes with a three-year warranty, and every anniversary of the fitting date Endolite provides an exchange unit updated with any newer software and improvements.

The **SENSOR KNEE** from **ORTHO EUROPE** allows natural gait, walking on uneven surfaces, and negotiating slopes and steps with ease and confidence. Sensor Knee can suit a wearer for advanced mobility required for activities such as golf and gardening. It uses a combination of hydraulic and electronic technology to control and monitor the knee, as well as a simple-to-use software application, which enables the amputee to view the number of steps taken, the activity level attained and the distance traveled to monitor the rehabilitation process.

Consult your practitioner about specific functional characteristics of the different models, and for recommendations for the model that is most appropriate for you, and to teach the proper way to use the prosthetic knees.

The staff at Rehab Tech makes every effort to match our patients' needs with the most appropriate and suitable appliance. We are happy to provide you further information on computerized knee options. Contact our office at (315) 426-9920.