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Biomedical Seminar
C-Leg Knee Joint System

An estimated 3 million people in the United States have lost an extremity. The older you get, the more overwhelming the thought of rehabilitation becomes because of the aging process. Lifestyles can be restored with a suitable prosthetic device. Otto Bock has transformed the "Computerized Leg" project, which originated in the late 80's by a research group at the University of Edmonton, Alberta, Canada, from an idea to a useable device.

The idea has been improved by Otto Bock Healthcare, and introduced the C-Leg microprocessor-controlled knee-shin system in 1999. This quantum step forward in lower limb prosthetic technology presents the closest achievable approximation to natural walking the world has ever seen. The C-Leg is the first and only microprocessor controlled hydraulic knee with dynamic stance and swing phase control. This complex microprocessor means it is no longer required to concentrate on the idea of walking. Unique software algorithms establish the phase gait and instantly adjust the knee functions to balance. Several sensors read this data more than 50 times a second during a standard one-second-gait phase. Based on step length and frequency, the knee angle sensors provide data for dynamic control of swing phase. Force sensors, which are located in the shin, use heel and toe loading data to control stance phase stability. The C-Leg provides security to the wearer no matter what his/her manner of walking is. It allows the user to move more freely and safely at different speeds on flat surfaces. It also allows the user to conquer hills, uneven terrain, and stairs. It helps prevent tripping, falling, and stumbling.
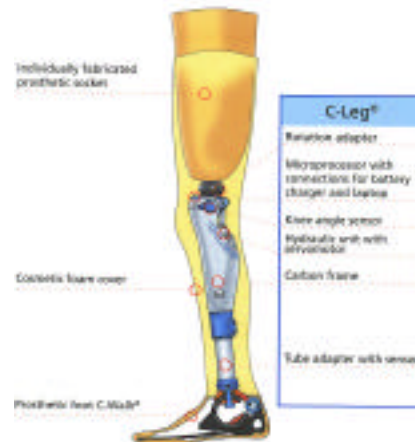
Sources:

- *http://www.healthcare.ottobock.com/technical_orthopedics/beinprothesen/sites/knee.htm#cleg*
- *http://www.healthcare.ottobock.com/info_download/pdf/646A72_GB_C_Leg.pd*
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