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Activity Chart Guide
Comparing a new Microprocessor Knee to Patient's Current Device

May 1, 2017

The purpose of this guide is to strengthen your Activity Chart. First we will go over the features and benefits and identify how the new microprocessor knee (MPK) can help your patient. Then there are some examples of how to complete the Activity Chart using this information.

Falls and Stumbles

Stumble Recovery

If medical records state that there are documented falls, your records will be stronger if you include additional detail about the number of falls and the respective injuries and costs incurred as a result (if available). The insurance payer likely paid for those injuries, but may not take the time to look back when deciding whether to cover the MPK or not.

After compiling a history of falls and injuries, state that "the C-Leg microprocessor always ramps up high stance flexion resistance when the calf swings forward during propulsion, and thus automatically provides the support needed to recover safely from a stumble by allowing the patient to load the prosthesis with full body weight."

Unable to Change Walking Speed
Compensatory Movements
Energy Expenditure Issues

Microprocessor Swing and Stance Phase Control

Discuss activities that require changes in walking speed (e.g. walking in crowds or crossing a busy street). Your patient might also have difficulty with activities that require deceleration or transition to another type of surface. Follow with "the C-Leg's main microprocessor gathers information from the various sensors at a rate of 100 times per second and processes this information to adjust the knee joint´s functionality in real time, allowing the patient to walk more naturally and vary cadence with the knee adapting more accurately and more quickly than without a microprocessor." This would also apply if patient is compensating with the sound side (e.g. hip hike, circumduction, or vault), or requiring excess energy to ambulate.

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Unable to Walk Down Hills, Ramps or Stairs (step-over-step) Requires Support for Sitting Down

Stance Flexion

Describe activities that include hills, ramps or stairs and then state that "C-Leg provides hydraulic resistance against knee flexion (bending), allowing controlled knee flexion mimicking the eccentric action of the quadriceps muscle in early stance phase during weight bearing, thus providing shock absorption and reduced impact. This allows the patient to securely walk down hills and ramps and to descend stairs step over step."

If the patient also requires support when sitting down, follow with "this feature also provides controlled support when sitting down."

Need to Stand Securely on Level Ground or on Slopes

Inertial Motion Unit (IMU)

Describe activities that require secure standing on a level surface or on an incline. Follow with "the patented inertial motion unit (IMU) on the C-Leg allows the patient to intuitively stand on a flexed and stable knee on level, uneven, or inclined surfaces (ramps or hills). With traditional prosthetic knees people with limb loss must use hip extension to stabilize the knee or deliberately bend the trunk forward to ensure that their center of mass stays ahead of their knee axis to prevent unexpected flexing of the prosthetic knee."

Prolonged Standing, locked or flexed knee

My Modes

Describe activities requiring a flexed knee for prolonged standing activities (e.g. cooking, stand on a slope, work at a tall desk or bench), locked knee (e.g. walking down steep hills, ladders, working on a roof, or exercise) or flexed knee (e.g. horseback riding, motorcycle, roller skates and driving a car).

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Need to Take Steps Backward

Inertial Motion Unit (IMU)

If the patient has a need to back-up, step away, or literally take steps backward during an activity, follow up with "the patented inertial motion unit (IMU) on the C-Leg provides stability when taking steps backwards/backing-up. Contrast this to traditional microprocessor knees which do not accommodate backward walking, causing the knee to collapse when stepping backward."

Snap Back or Knee Jerk

Hydraulic Stance Extension Damping

If patient I experiencing snap back or knee jerk state that "C-Leg provides microprocessor-controlled progressive resistance during stance extension resulting in a more natural gait. Without this increased resistance the patient would feel a pronounced "snap back" or "jerk" at the knee, and would also present with an unnatural looking gait pattern.

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Daily Activity Chart Example:

Daily Activities	Distance Traveled	Can patient do this activity with current prosthesis?	How will patient be able to do it better with the new prosthesis?
Prior to the amputation, patient walked his two dogs 2 times daily for ½ mile. On his route there are cracks in the sidewalk and slope up to ten degrees.	Goal: Realistic 3.5 miles per week	Patient currently uses a mechanical knee. It is very difficult to do concurrent activities, such as managing the dogs with a mechanical knee prosthesis. As a result he falls several times per year and recently injured his back, incurring $9500 of related medical expenses. He stumbles frequently and feels unsafe. He cannot carry objects at work, because it puts him off balance and at risk of falling.	He will be able to walk the dogs more safely with the C-Leg as it has been proven to increase multitasking capacities and cognitive burden while walking with the prosthesis The C-Leg microprocessor always ramps up high stance flexion resistance when the calf swings forward during propulsion, and thus automatically provides the support needed to recover safely from a stumble by allowing the patient to load the prosthesis with full body weight, which will help when walking on uneven sidewalks and should increase his overall confidence when walking the dogs.
Prior to the amputation, patient went to the gym 3X per week and walked 2 miles on the tread mill. Realistically, he would like to get back up to 1 mile	Goal: 1 mile @ 3X/wk	He attempted to walk on the treadmill with his current knee. He had to walk at a very slow rate completely supporting himself with the bars. He was afraid of falling and this hurt his shoulders.	The C-Leg will give him the necessary stability to walk on the treadmill using the bars similar to an able-bodied person, without fear of falling.
Prior to the amputation, patient went hiking in the mountains on steep and uneven terrain at least 12 times per year. Generally, these would be 5-10 mile hikes. He would like to start slowly doing this again.	Goal: 1-2 miles per month	He has not attempted any hiking other than on level terrain with his current knee.	The C-leg's stumble recovery feature will allow him to safely navigate uneven terrain and slopes. The microprocessor-controlled progressive flexion and extension resistances will provide smooth deceleration when coming down off the mountain.
Prior to the amputation patient mowed and raked the lawn weekly during the summer.	Goal 12 x per year, 1 hour	Patient's yard has too many uneven spots and some steep areas. He attempted to mow it and fell twice and has since had to hire help.	The C-Leg has been shown to have superior safety and allows for faster walking on uneven terrain and obstacle courses, with and without concurrent activities. C-Leg will allow him to maintain his yard again.
Prior to the amputation patient rode his bicycle 2x per week	Goal 2x/wk	Patient's current knee does not allow him to ride a bicycle.	The C-Leg has a "my mode" feature which allows him to switch to bicycle mode using the remote control.

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Prior to the amputation patient shopped at busy stores and malls and walked in crowds.	Goal 1X per week	Patient's current knee allows him to carefully vary his gait, but not intuitively and he always has to concentrate on every single step.	The C-Leg will allow him to focus on his shopping and not worry about changing speed or moving out of the way. C-Leg's main microprocessor gathers information from the various sensors at a rate of 100 times per second and processes this information to adjust the knee joint´s functionality in real time, allowing the patient to walk more naturally and vary cadence with the knee adapting more accurately and more quickly than without a microprocessor.