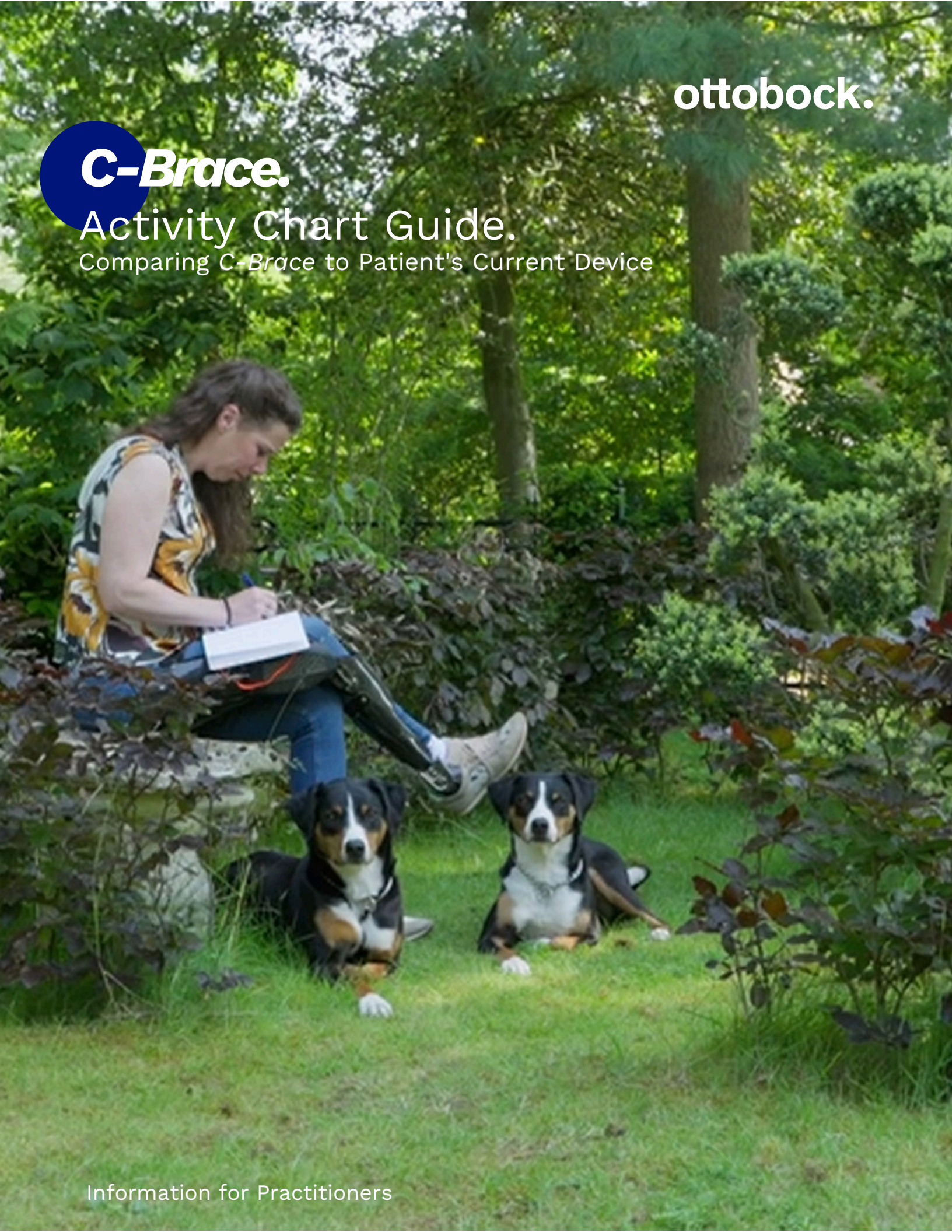

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C-Brace.

Activity Chart Guide.

Comparing C-Brace to Patient's Current Device

Information for Practitioners

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C-Brace Activity Chart Guide.

Comparing *C-Brace* to Patient's Current Device.

The purpose of this guide is to strengthen your *C-Brace* Activity Chart. First, we will go over the features and benefits and identify how the *C-Brace* 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 detail about the number of falls and respective injuries and costs incurred as a result. The insurance payer likely paid for those injuries but may not take the time to look back when deciding whether to cover *C-Brace* or not.

After compiling a history of falls and injuries state the following: "The microprocessor swing control of the *C-Brace* provides a stumble recovery feature that activates high knee flexion resistance as soon as the orthotic shank starts the extension/forward movement after heel rise, allowing the patient to fully load the orthosis with his/her body weight to recover from a possible disruption of the swing phase (stumble)."

Difficulty Walking Backward.

Describe activities that require stepping/walking backwards, such as when opening a door or stepping away from a counter and the difficulties encountered. Follow with "With input from the IMU, the *C-Brace* provides additional safety and stability when the patient is forced to step backwards to clear potential threats or obstacles (e.g., opening door, stepping away from a counter)."

Need to Stand Securely on Level Ground or on Slopes.

Intuitive Stance.

Describe activities that when on a level surface or on an incline your patient might have to stop and rest or stand in a locked position. Follow that with "The Intuitive Stance function provided by the microprocessor based on IMU readings allows the patient to stand in a safe and relaxed manner with a flexed knee without the threat of knee collapse, and automatically switches back in the ambulation mode turning off the blocked knee flexion when the patient moves. This feature allows the patient to unload the sound leg and rest while securely standing on level or non-level surfaces."

Difficulty Transitioning to a Sitting/Standing Position or Relaxing in a Confined Space.

Describe the lack of control observed when your patient transitions to a sitting/standing position. Follow with "The *C-Brace* assists the patient passively when sitting down and standing up from a chair by providing supporting resistance to flexion (bending) or extension. This adds an extra degree of safety and reduces stress to the upper extremities and the sound limb.

The microprocessor automatically detects from the sensor readings when the patient begins to sit down, adjusting the hydraulic resistance so the knee joint provides resistance against bending during the transition to sitting. This allows the patient to complete the sit-down motion in a controlled manner and at a controlled rate."

"Likewise, the *C-Brace* automatically detects when the patient is starting to stand up from a seated position, adjusting the resistance against bending in a way that the patient can transfer his/her body weight to the *C-Brace* and reposition the sound foot for better leverage to complete the stand-up movement.

Unable to Change Walking Speed.
Compensatory Movements.
Energy Expenditure Issues.

Real-Time Gait Analysis.

When discussing activities that require changes in walking speed (e.g., walking in crowds or crossing a busy street), follow with "The *C-Brace* microprocessor receives information from the electronic sensors 100 times per second. Each time, gait is analyzed, and the hydraulic controls are adjusted to prepare for the patient's next movement (in real-time). This allows the patient to walk with less concentration and easily change walking speeds.

Additionally, the patient will walk with less compensation of the sound side (e.g., hip hike, circumduction, or vault) and use less energy to ambulate."

Long Distance Walking Requirement.

For microprocessor-controlled prosthetic knees, most payers require patients have a need to ambulate more than 400 yards per day and many have this same requirement for microprocessor-controlled orthotic components. Establish this need based on what the patient desires to do on a typical day (not current). This should be realistic activities that patient will be able to do using *C-Brace* and based on patient's activity level prior to the injury/illness. Measure the distances using Google Maps.

Unable to navigate Stairs, Slopes, Ramps or Challenging Terrain. Requires Support for Sitting Down.

Stance Flexion Resistance.

Describe activities that include slopes, ramps or stairs and then state that "*C-Brace* provides hydraulic resistance against knee flexion (bending) mimicking the eccentric action of the quadriceps muscle. This controlled knee flexion occurs in early stance phase during weight bearing, and also provides shock absorption and reduced impact, thus allowing the patient to securely walk up and down slopes and ramps, negotiate uneven/ challenging terrain, and to descend stairs step overstep."

"This feature also allows patients to "ride" the knee (the knee supports patients' weight on flexed knee without buckling and lowers them into desired position) such as when sitting into a chair."

Patient with Slow Walking Speed.

Stance Flexion Resistance Plus.

Describe activities that your patient has had difficulty performing due to a slow walking speed, such as transitioning from level ground walking to descending a ramp/stairs, or transitioning to an activity requiring increased knee flexion resistance for level ground walking. Follow with "For patients with slow cadences, the *C-Brace* flexion resistance setting needs to be different when walking on level ground from that needed for descending ramps and stairs or for stand to sit support. Stance Flexion Resistance Plus is a setting that allows the knee joint to provide increased knee flexion resistance during level ground walking, which helps maintain the center of gravity height.

Knee is not in Correct Position at Terminal Swing.

Swing Flexion (Angle) Resistance.

Describe situations where the swing phase knee flexes too much (not damped) and the limb lacks the timing for the knee to be in the proper position at terminal swing. Follow this with: "*C-Brace* adjusts hydraulic resistance of swing knee flexion during swing phase to ensure that the swing phase limb is exhibiting proper swing phase mechanics. Without control of the swing flexion angle, the patient can be in a state of perpetual stumble at initial contact."

Knee Hyperextension Thrust.
Low Back Pain.

Stance Extension Resistance.

Document the patient's hyperextension thrust during stance extension and the resulting low back pain and any medical treatment, associated expenses, etc. Follow with "The *C-Brace* provides microprocessor-controlled real-time hydraulic resistance during stance extension resulting in a more natural gait. This resistance reduces knee hyperextension thrust by controlling the knee extension moment at terminal stance. This feature prevents the patient from over-rotating the pelvis posteriorly and overloading the lower back during ambulation on level ground.

Patient with Fast Walking Speed.
Difficulty with Deceleration.

Swing Extension Resistance.

Describe activities that require fast walking speed. Also describe any difficulties with deceleration. Follow with "The *C-Brace* provides microprocessor-controlled real-time extension hydraulic resistance during terminal swing. This resistance is essential to provide shock absorption against impact with faster walking speeds. Additionally, adjustment is provided for smooth deceleration at all cadences.

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Daily Activity Chart Examples.

Daily Activities	Distance Traveled	Without a mobility aide or orthosis?	With current orthosis and/or mobility aid.	How will patient be able to do it bette with the *C-Brace*?
Prior to the injury, patient was employed as a _____. He would like to return to work, requiring he use public transportation, which entails: • Walking 700 yd./day • Bus access - stairs • Busy street with timed crossing light • Sidewalk slope 10 degrees • Sidewalk cracks - uneven	Goal: 700 yds. /day (5 days/wk.) Approx. 2 miles per week	Without a mobility aid, his knee collapses when he puts weight on it.	He currently uses a locked KAFO and Lofstrand crutches, which is very tedious. He can only walk 100 yards without resting. He would not be able to get on the bus, due to the locked knee. He cannot get across a busy street before the light changes and is at risk of falling on slopes and uneven terrain. While using his locked KAFO, he has fallen 8 times in the past year, broke his wrist, injured his back, and incurred $9500 of related medical expenses. Recently he started using crutches with the KAFO, and still stumbles frequently and feels unsafe. While using his crutches, he cannot carry objects nor do other activities using his hands. They also cause stress and pain in his wrists and shoulders, which in turn requires pain medication. Already, he has had PT for wrist and shoulder pain.	He trialed the *C-Brace* for several hou and was able to ambulate on a slope and uneven terrain, walk downstairs step-over-step. He used one crutch during the trial but should be able to discontinue use within a month. *C-Brace* provides hydraulic resistance against knee flexion (bending) mimicki the eccentric action of the quadriceps muscle. This controlled knee flexion occurs in early stance phase during weight bearing, and provides shock absorption and reduced impact, which will allow him to securely walk up and down slopes and, negotiate uneven/ challenging terrain and should increase his overall confidence. Hydraulic resistance against knee flexi (bending) will also allow him to safely navigate bus stairs. The *C-Brace* analyzes and adjusts the hydraulics in real-time, which will help him to walk faster when crossing the street, and microprocessor-controlled progressive extension resistance durin terminal swing will provide shock absorption against impact with faster walking speeds.
Prior to the injury, patient went to the gym 3X per week and walked 2 miles on the treadmill. 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 locked KAFO. 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-Brace* will give him the necessa stability to walk on the treadmill using the bars similar to an able-bodied person, without fear of falling.
Prior to the injury, 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 with his locked KAFO.	The *C-Brace*'s stumble recovery featur hydraulic resistance against knee flexi will allow him to safely navigate uneve terrain and slopes. The microprocesso controlled progressive extension resistance during terminal swing will provide smooth deceleration when coming down off the mountain. No oth orthosis has these features.