



Ekso Rounds



In the last issue of Ekso Rounds, we introduced PreGait as a part of the new SmartAssist™ Software.

Now, we would like to expand on ideas of how to apply these features. The concept behind PreGait is to provide EksoGT support not only for gait training, but also during exercises that therapists are typically using to prepare their patients for overground gait training.

PreGait features include:

- Weight shift
- Step in place
- Squats (45°, 65°, 90°)
- Evaluation mode is located in the PreGait menu, but will not be described as it isn't a new feature

For **Squats** and **Step in Place** both legs will go free to allow for freedom of motion. Keep in mind that Ekso assistance should only be reduced if a thorough assessment of a patient's current strength has been performed, and it has been determined that the patient has sufficient strength to aid in maintaining their upright position against gravity, with the additional EksoGT stance support.

WEIGHT SHIFT - This feature can be used for patients with or without lower extremity strength. When therapists start their first EksoGT sessions with a patient, the major goal is for the patient to learn how to maintain their balance, and perform sufficient symmetrical weight shifts. After a stroke or spinal cord injury (SCI), patients may have challenges finding their midline and standing equally balanced on both legs. This can lead to challenges in maintaining lateral and forward shifts and their center point of gravity during gait training.

In **weight shift mode**, a scale will show up on the user interface, which represents the amount of pressure on the left and right foot sensors. A small dot tracks live and dynamic visual feedback of the center point of gravity to show if the body weight is balanced evenly, or if the patient tends to stand to one side.

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▼4.Weight Shift
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The therapist can set a target for the amount of weight shift they would like for the patient to shift to the left and right. In addition to the visual feedback, you can also turn on an audio cue that coincides with the visual feedback. You can decide to set all audio targets on, or to individually work on single targets. You can set the center target by pressing the up arrow, and the lateral targets by pressing the right and left arrows. The weight shift can be programmed to be symmetrical or asymmetrical if the therapist would like to focus on a greater shift to one side.

STEP IN PLACE - Entering the **Step in Place** mode, again a warning will immediately show up on the user interface, informing the therapist that both legs will go "free" (trajectory free mode).

In step in place, the EksoGT legs will be free for the swing phase, while EksoGT provides a level of stance support determined by the therapist. In this set up, the patient (supported by the therapist) is able to perform exercises where the stance phase on one leg and the swing phase on the other leg can be trained individually, while supported by the assistance of EksoGT.

The therapist decides how much stance support will be provided to the legs. The options are **Very high, High, Medium and Low**. If you use the **Weight Shift** mode and determine targets for the lateral shift, those individual targets will be carried over into **Step in Place**. In this setting, there are a variety of creative ways you can challenge your patient. Some ideas include:

- Using a small step as a target for the patient to place their foot onto while maintaining balance on their stance leg. Encourage the patient to lift their leg as high as possible to recruit more muscle control.
- Alternating marching
- Stepping forward or backwards
- Part to whole practice of various components of the gait cycle

Be creative in the different ways you can challenge your patients. If you are working with a high level ambulatory patient you could also decide to practice **back steps** or **side steps**. For side steps, the therapist has to unlock free hip abduction. Be aware that your patient must have sufficient hip stabilizing muscles and well-trained hip abductors.

A patient can be further challenged and progressed by completing any of these tasks with the audio cues turned off.

SQUATS - Entering the **Squats** mode, again a warning will immediately show up on the user interface, informing the therapist that both legs will go "free" (trajectory free mode).

This is a good opportunity for muscle strengthening, coordination of knee and hip extension, and a functional sit-to-stance transition.

You can choose between 45°- 65°- 90° squats which represents the degree where the squat limit stops. EksoGT will prompt you to increase the base of support, set the ankle towards a more dorsiflexed position and decrease the ankle stiffness to encourage the best mechanics. During squatting, the degrees of knee and hip flexion will be shown on the user interface, so the therapist can evaluate the performance.

POSITIONING OF THE THERAPISTS - We recommend a chair behind the patient and a second person assisting during the squatting of the patient to help maintain balance.

There are different ways to assist such as a therapist sits behind the patient – and an assistant in front, to observe and cue the knees of the patient, to make sure the patient can balance well during the squats. You could also have two people on either side stabilizing the walker and assisting the patient with trunk flexion. The walker should be used to assist in balance.

In the case that the patient fatigues, and is no longer able to return to standing, you can use the yellow Ekso stop button. EksoGT will immediately change into a bilateral max support and lift the patient back into a safe, fully-supported standing position.

We hope this new suite of features further strengthens your EksoGT use as a clinical tool to meet you and your patient's goals.

Have any questions?

Please reply to EksoRounds@eksobionics.com to communicate with an Ekso Bionics clinical team member.



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