



Ekso Rounds



Ekso Clinical progressions

Earlier in the summer, we presented some ideas and suggestions for progressing your patients with hemiparesis in their Ekso-based training sessions. We would like to focus on patients with hemiparesis once more, and the related challenges that can occur during Ekso sessions. We all know that you cannot compare each patient with a stroke, especially since there are many symptom syndromes such as Neglect or Pusher Syndrome. This month, we will have a special eye on how to facilitate a patient with hemiplegia or hemiparesis with Pusher Syndrome and usage of the cane for clinical progression. As with any PT intervention, as the challenge to the patient is increased, there may be a need to increase the assistance from the therapist to maintain safety.

Facilitation for Pusher Syndrome:

- **Transfer the patient into Ekso by weight bearing on the non-affected leg if possible.** This can often reduce the hyperactive syndrome. Therefore, the patient should participate as much as possible.
- **Quickly donning the Ekso.** This can help to bring the patient into a proper alignment. We all know how important a good alignment is for a successful Ekso session and “quickly” does not mean imprecise. The challenge is, the patient might start to push to their hemiplegic side while sitting, which can cause a total loss of joint alignment. Increased time to don the Ekso may lead to increased risk of suboptimal alignment (refer to September Ekso Rounds “Donning the Ekso”). These patients need proper input and stability. It may be helpful to start donning the non-affected side first.
- **Sit to stand:**
 - Patients with pusher syndrome may often have challenges leaning forward during a sit to stand. A few repetitions of a practice forward lean in the Ekso before a sit to stand transition may be helpful. It can also be helpful to use your foot to block the patient’s strong side, and keep it in optimal alignment for standing, instead of extending and pushing. There can be various reasons to choose one stand program over another.
 - **Crutch mode:** As mentioned before, this type of syndrome requires clear input, especially during sit to stand. If the patient is not leaning forward enough, making the transition unsafe, or challenging to manage, crutch stand can provide the forward flexion needed for a balanced sit to stand.
 - **Walker mode:** using walker mode, in which the patient is actively leaning the trunk forward, requires a much better compliance from the patient in terms of timing, alignment, and coordination during sit to stand. Walker mode is used more when the patient is experienced in Ekso usage, or if the syndrome does not affect the forward lean. **Additionally if the patient has a lot of anxiety, or cognitive deficits, then the walker mode will simplify the transfer and allow the patient to move at a more normative pace.**
- **Stand time:** adjusting the stand time can be fundamental to support the patient. Remember that the more the patient can actively participate, the less pushing results. Patients suffering from Pusher Syndrome show a loss of postural balance, sensory integration and perception. Increasing the stand time could allow the patient more time to engage in the transition
- **Using the cane:** Patients with hemiplegia are often unable to use the walker or crutches as a standing and walking aid due to upper extremity impairment. In this case, using the cane can be more effective. A second PT can assist the hemiplegic side (refer to page 33 of your training guide).
 - It is important to make sure that the affected hand is protected, and will not be pressed into knee motors during sit to stand transition. You can also use the sling to secure the arm/hand
- **Weight shifting:** Weight shifting as a pre-gait exercise is essential before any Ekso session. When working with patients with Pusher Syndrome, it is even more critical to successful use. It is especially helpful to spend time weight shifting on the non-affected side with a mirror for visual feedback.
- **First Step:** Using this mode may allow more opportunity to teach the patient where he needs to engage his weight. This is often an under-utilized walking mode. Since the patient’s major challenge will be shifting onto the non-affected leg during walking, using First Step, the patient can focus on weight shifting, while the PT helps facilitate the timing and amount of shift up on to the stance leg.
- **Lateral training mode on:** Patients who need a lot of assistance for the lateral shift, will benefit from lateral training tones (chirps). If the patient can attend to the tone, this can provide a level of biofeedback for the patient to learn a proper lateral shift. **Remember, the PT must first appropriately tune any target before teaching the patient to use it as input.**
- **Keep free hip abduction locked:** Opening the abduction is one of the biggest challenges for a patient that is pushing to his paretic side, because it will give him the chance to push even more.

At the end of the session, save some time to integrate all of the skills learned in Ekso, into over ground ambulation outside of the device. This is a key step in having the patient learn a new movement pattern.

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