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Ways to Help Improve Stability of Your Residual Limb

Translated into plain language by Helen Osborne of Health Literacy Consulting
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Amputees with lower extremity prostheses need stability in their residual limbs. Two ways to help are by staying a healthy weight and doing exercises. Here are some facts to know.

Staying a healthy weight

It is important to stay a healthy weight. Here are some reasons why:

- There are more prosthetic choices for people who weigh 220 pounds, or less.
- Lean (not fatty) muscles provide the most amount of support and stability. This helps amputees when they stand or initiate (start) and terminate (end) movements such as walking.
- When people are overweight, there is an increased risk for skin problems. Skin problems can affect comfort, satisfaction, and how well prostheses work.
- Losing a lot of weight too quickly can also be a problem. This is because it affects the match in volume between your prosthesis and body.

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Let your prosthetist know if you are planning to lose weight so he or she can measure your starting body weight, limb volume, and limb girth (size). You may later need these numbers to prove to your insurance company that a new socket is truly a medical necessity.

Here are some ways to stay a healthy weight:

- Eat a proper, balanced diet. To lose weight and keep it off, you may need to change your food habits. This is much better than going on a fad or "crash" diet.
- Talk with your doctor or other healthcare provider about the types and amount of exercise you should do.
- Ask your doctor if you should meet with a registered dietitian or diabetes counselor (if you have diabetes). This can be helpful to learn how to stay a healthy weight.

Doing exercises to improve stability

"Mediolateral" stability helps keep knees from moving side-to-side and being bowed or knock-kneed. To improve stability, a prosthetist may suggest wearing a

joint and corset prosthesis, raising the socket's trim lines above the knee bones, or using a brace or other orthotic device.

For some people, certain exercises and stretches may increase strength and maintain flexibility. In some instances, this can help:

- Prevent contractures (shortened muscles or tendons) and other problems
- Reduce the chances of falling
- Improve gait (walking with a prosthesis)
- Increase movement, motion and strength
- Increase satisfaction with the prosthesis.

Figure 1

Figure 2

These photos show problems that can happen when a person does not have mediolateral stability. Ligaments can be damaged if the knee moves like this when walking.

Types of exercises and stretches

Here are some photos of exercises and stretches. Make sure to talk with your doctor, physical therapist, or prosthetist about which ones are right for you.

Figure 3

Straight leg raise into hip flexion to strengthen the hip flexors.

Figure 4

Resistive-band exercise to strengthen the hip flexors.

Figure 5

Resistive-band exercise to strengthen the internal rotators of the hip. Make sure to ask a physical therapist how to do this exercise so it does not cause other problems.

Figure 6

Straight leg-raise into hip abduction to strengthen the hip abductors.

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Figure 7

Resistive-band exercise to strengthen the hip abductors.

Figure 8

Straight leg raise into hip extension to strengthen the hip extensors. Ask your therapist how often you should do this exercise.

Figure 9

Resistive-band exercise to strengthen the hip extensors.

Figure 10

Lower resistance knee extension for quad strengthening. The farther the band is from the knee center, the greater the resistance. Start with the band close to the socket. As you gain strength, move it

toward the ankle (as shown here). Sometimes, the band slips during exercise. Talk with your physical therapist about how to prevent this problem.

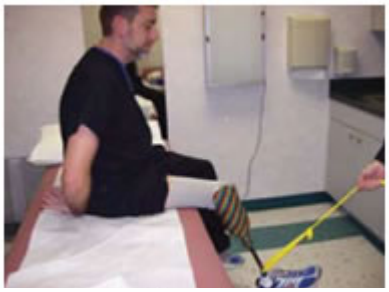

Figure 11

Higher resistance for knee flexion to strengthen the hamstrings.

Figure 12

Lateral (outward) rotation of the tibia/knee with the knee flexed. This exercise can be hard to do. Talk with your physical therapist about whether this is right for you.

Figure 13

Straight leg raise into hip adduction to strengthen the hip adductors. You should do this by lying on your side, not rolling toward your back. Lift your leg or thigh straight toward the ceiling.

Figure 14

Resistive-band exercise to strengthen the hip adductors.

Figure 15

Step-up exercise to strengthen the hip and knee extensors and the hip and trunk stabilizers. Start on a very low step and hold on to a rail, walker or spotter the first few times you do this exercise. Increase to a larger step (such as 6") as you gain strength and balance. Talk with your physical therapist before you try this.

Figure 16

Step-down exercise to strengthen the hip and knee extensors and the hip and trunk stabilizers. Do this exercise only after you master the step-up (Figure 15). Start on a very low step and hold on to a rail, walker or spotter the first few times. Then increase to a larger step (such as a 6") as you gain strength and balance. As always, talk with your physical therapist before doing this exercise.

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Ways to learn more about stability of residual limbs

- What Amputees Need to Know About Prostheses, Prosthoses, Crutches and Wheelchairs, May/June 2006 issue of *inMotion*, http://www.amputee-coalition.org/easyread/inmotion/may_jun_06/mobility_pt1-ez.html
- How Physical Therapy Can Help in Your Recovery After Amputation, by Scott Waite, MPT, September/October 2006 issue of *inMotion*, http://www.amputee-coalition.org/easyread/inmotion/sep_oct_06/physical_therapy.html.

About the Authors

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Translated from

When a Prosthesis or Mobility Device Isn't Enough, Part II: Proactive Methods to Enhance Stability in the Prosthesis

http://www.amputee-coalition.org/inmotion/jan_feb_07/devices_not_enough_pt2.html

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