

# Keep Moving: *Exercises for People With Lower-Extremity Amputations*

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**G**etting back to your previous activities may be your objective following amputation. Even if you decide not to use a prosthesis (or are unable to use one), the following exercises are designed to help you reach your goals. Many of these activities can be done with or without a prosthesis while lying on a firm surface, sitting in a straight back chair or on the edge of your bed, or standing at a counter. Very little equipment is needed to keep you and your residual limb in good working order. Exercises are an essential part of maintaining your health and function, and getting back to your hobbies and activities is possible in the near future, if you keep moving!

As always, please be sure to check with your physician or physical therapist before beginning any exercises. Your fitness level, your general health, and the condition of your residual limb will all play a role in how rigorously you can exercise. A qualified health professional can teach you how to stay within your target heart range.

## ***Range of motion***

Following your amputation, you will need to decrease the amount of time your leg is bent. Because you will initially spend more time sitting, the remaining joints of your leg, and even your back, will spend more time bent or flexed. Too much of this can cause problems for your muscles and joints because they get used to being in a shortened position and you may develop a contracture. A contracture is when your joints cannot go through the full range of motion. This can cause problems whether you are ready for a prosthesis or not. Often a contracture can be avoided by simply paying attention to the following simple exercises.

- Perform flexibility/range of motion slowly, holding each position for 30 seconds.

- Do not bounce.
- Count aloud slowly (try counting in another language) or use a timer.
- Stretching is a mild sensation of tension - not painful agony. Use your good judgment to find the right amount of stretch.
- Be sure to stretch your knee and hip many times every day.
- Do not hold your breath.

## **Knee flexibility exercises and positions**

To keep the motion in your knee, let your



*Picture 1*

knee rest on a cushioned board or on the leg rest of your wheelchair in its fully extended position. If you don't have a wheelchair leg rest, position your leg on a couch or chair. See if you can devise other ways throughout the day to avoid sitting in the same position. Perhaps you have a cane or stick handy and can do the rotation stretch shown in Picture 2. Lying on your stomach is a great way to stretch out many joints. See Picture 1.



*Picture 2*

## **Hip and back flexibility exercises and positions**

By resting flat on your stomach or on your elbows, as shown in the picture, you can maintain or improve the flexibility (extension) of your knees, hips and lower back. It is recommended that

you lie on your stomach twice a day for 10-20 minutes. If your breathing is impeded or it's uncomfortable for you, use pillows under your chest for support or ask the advice of a physical therapist.

### Strength

Now that you are on the way to being more flexible, let's look at some ways to make you stronger. You will need to rely on your nonamputated limb heavily now. Therefore, strengthening exercises will involve both your amputated limb and your nonamputated limb. The exercises shown below can be performed with either leg.

- If you are adding weights as shown in Picture 3, the nonamputated leg may be able to manage heavier weights.
- You can begin with no weights on your limb and try to move it in all directions as many times as possible. As you add weights, keep the repetitions to a maximum 25 and then move on to a heavier weight or a more challenging exercise (Picture 4).
- Don't forget your stomach muscles and your arms as you will need a lot of help from them to get moving (Picture 5 and Picture 6).
- Try playing "tug of war" with an elastic band tied to a sturdy object or held by your foot or a friend (Picture 7). Pull the band in all directions. Begin in a sitting position, and then try it kneeling and standing.



Picture 3

you can work on balance and agility skills.

### Balance

Whether you are sitting up, lying down, standing or walking, your balance will be different following



Picture 4

Strengthening does not need to be done every day. It is best if you do it every other day and alternate it with a different activity. On your days off from strengthening,

your amputation. You will need to re-train your brain, and that takes practice. Many people with amputations have risen in the night, tried to take a step



Picture 5

and found themselves on the floor. Their brain forgot to remind them that the limb was no longer there, and the balance center did not figure it out soon enough.

- Help your brain by practicing very simple activities such as sitting and reaching for objects (Picture 8), kneeling (Picture 9) and standing on one leg.
- Stand up and turn from side to side, with or without a prosthesis. Hold on to a counter and reach forward, sideways, and back to exercise the balance center in your brain. (Picture 10, Picture 11)



Picture 6

If you are going to use a prosthesis, you will need to work on basic balance activities before you become an accomplished walker. Being able to balance on your prosthetic leg with full weight is necessary for a smooth walk. With every step, there is a moment



Picture 7

when you have only one leg on the ground. That leg, whether prosthetic or natural, will have to be able to hold all your weight. Practice accepting weight on your prosthesis by leaning over the prosthetic leg (Picture 12). Then



Picture 8



Picture 9

kick a ball to someone using your non-prosthetic leg to do the kicking (Picture 13). Hold



Picture 10

### Agility

In addition to good balance, you will want to practice your agility. Agility is what lets you move confidently from place to place and gets you out of the way of a fast-moving object.

on to a rail and lift your non-prosthetic leg up to the step and then bring it back to the floor (Pictures 14 & 15). If both of your legs have been amputated, step up with either leg.



Picture 11



Picture 12



Picture 13

- Sit or stand and play catch (Picture 16). Begin by having your partner throw the ball directly to you, then make this more challenging by having the ball tossed out to the side. This should be done in a place where you cannot fall into anything that can injure you.
- Sit in a chair and throw or kick a ball against a wall.
- Dancing with or without a partner is a great way to work on your balance and agility. Even if you just stand in one spot and rock back and forth, you are working on your strength, balance, agility and togetherness! (Picture 17)



Picture 14

Picture 15

### Conclusion

Range of motion, strength, balance and agility all play a part in your plans to get back to what you like to do. By following these exercises or those prescribed by your health professional, you will reap the rewards when you are ready to get moving! ❖



Picture 16

*A special "thank you" to the members of the Winchester Amputee Support group for being models and reviewers of this article.*



Picture 17