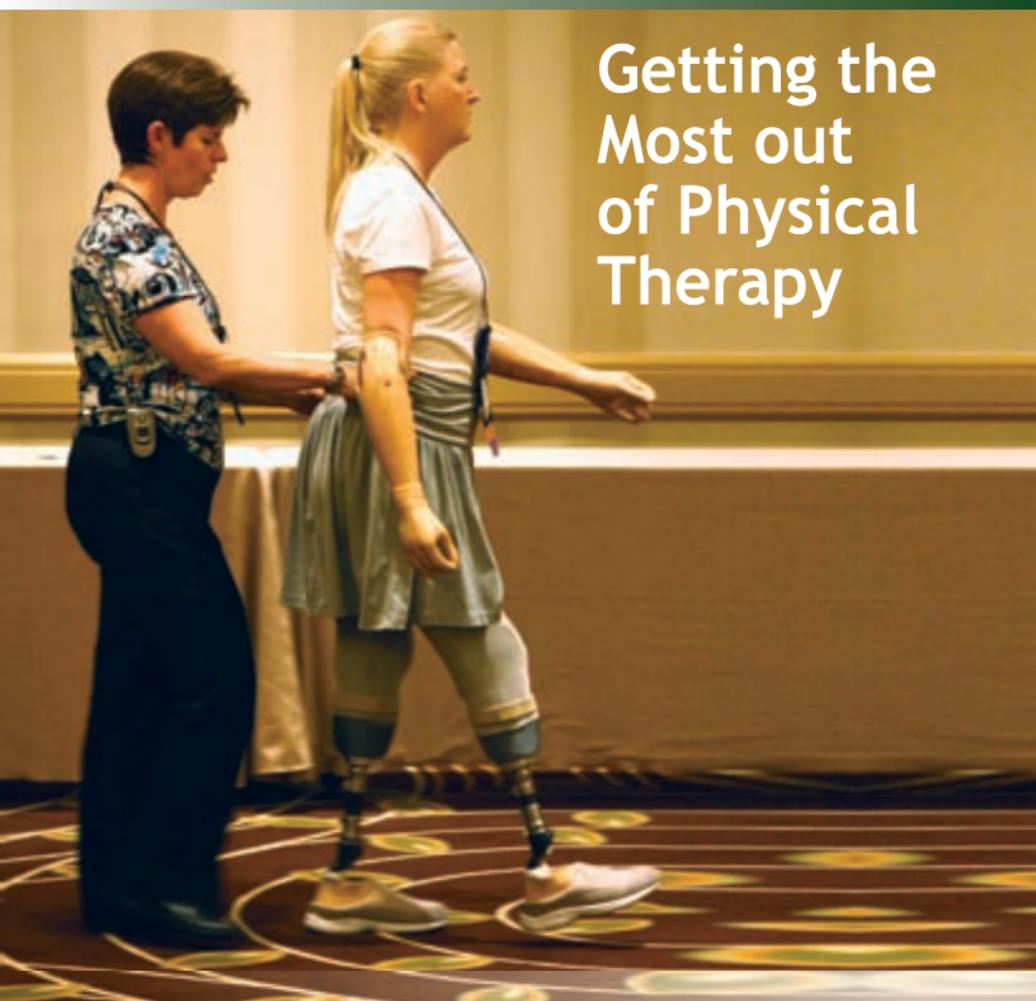




amputee
coalition™

Getting the Most out of Physical Therapy



About the Amputee Coalition

The Amputee Coalition is a donor-supported, voluntary health organization serving the nearly two million people with limb loss and more than 28 million people at risk for amputation in the United States.

This brochure has been adapted from an article appearing in Amputee Coalition's *First Step: A Guide for Adapting to Limb Loss*, Volume 5, published in 2009. The full guide is available by contacting the Amputee Coalition at 888/267-5669 or by visiting amputee-coalition.org.

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Physical therapy is highly individualized. Choosing a treatment strategy depends on several factors, such as your previous or current functional level, strength, endurance, and health and rehabilitation status. Above all, it depends on your goals – the things that you would like to do.

Because physical therapy is a service, it's important to note that you will not generally receive a tangible product. The terms “training” and “exercise” mean that you will likely meet with your physical therapist (PT) a couple of times per week during the process. But the PT can only demonstrate and teach what must be done to attain your goals; the work is up to you.

The Rehabilitation Process

The process of physical rehabilitation with a prosthesis or limb loss is often described as having several phases. While certain phases include standardized milestones, not everyone has the same milestones or goes through the same phases. For example, individuals who lose a limb due to an accident usually do not have a pre-operative phase of physical rehabilitation because the limb is often sacrificed to save the person's life.

Phases of the Rehabilitation Process

1. Pre-operative phase
2. Post-operative phase
3. Pre-prosthetic phase
4. Preparatory prosthetic training phase
5. Definitive prosthetic training phase
6. Reintegration phase
7. Maintenance as needed

Several different physical therapists may be encountered during these phases. For example, the post-operative phase often occurs in the hospital, or sub-acute, setting. The pre-prosthetic and preparatory prosthetic phases will vary depending on the individual and situation. Some will go through these phases while in the hospital, others will visit an outpatient clinic, and some will have a combination. After the definitive prosthetic phase, services are commonly on an outpatient basis, but some cases may require an individual to be admitted for efficient coordination of services.



What Happens in Each Stage of Rehabilitation?

Each individual's experience is unique and variable. We encourage certified peer visitors and others to discuss this fact with new amputees. Entire textbooks have been written on this topic, but the following provides a brief glimpse of each stage.

- 1. Pre-operative phase:** In this stage, a person has often struggled with foot or leg problems for a long time (foot ulcers, fractures, infections, etc.) while providers try to prevent amputation. Often, ongoing therapy assists in coping with the existing level of function, but the goals of therapy change the day the decision is made to remove the limb. Therapists may encourage contracture prevention in residual joints, sound limb walking and balance activities, transfers and preservation strategies. This may be an ideal time to meet with a peer visitor, a support group and a prosthetist. This phase usually occurs in the outpatient setting.

- 2. Post-operative phase:** The emphasis here is balancing recovery from the surgical amputation by protecting and beginning to shape the residual limb while encouraging mobility as soon as possible. There are no “easy” stages, but this is a particularly challenging time for all involved. The PT is interested in encouraging mobility, but new amputees routinely have difficulty (psychologically and physically) accepting their present state of mobility. But mobility skills acquired in this phase are critical. In terms of limb protection and shaping, the foundations set here can support the success of future prosthetic options, fitting and function. This phase commonly occurs in the hospital setting.
- 3. Pre-prosthetic phase:** By now, mobility without a prosthesis hopefully is progressing well. This phase focuses largely on strengthening, flexibility and final shaping of the residual limb for eventual fitting of the preparatory prosthesis. This phase, and the remaining phases, occur in different settings, ranging from sub-acute, skilled-nursing, home health, outpatient and potentially others.
- 4. Preparatory prosthetic training phase:** Many “firsts” are associated with the first prosthesis. Many basic prosthetic skills must be learned before and during early weight-bearing activities in the prosthesis. These include donning/doffing the various parts of the prosthesis, changing footwear, volume management techniques, getting dressed, maintaining the prosthesis, and, most importantly, inspecting and managing your skin/residual limb. Early weight-bearing accommodation, balance and sensory reintegration, and muscle reeducation often precede and accompany gait activities. Finally, gait training on the prosthesis begins. It is crucial to understand that experienced prosthesis users “make it look easy.” Ask and they will tell you that it often takes months or even years to get to this point. This is another example of why spending time with a peer is so important. Providers can tell the new amputee, but it means so much more coming from



someone who has “been there.” Being overly aggressive in this phase can reopen or create wounds, resulting in major setbacks.

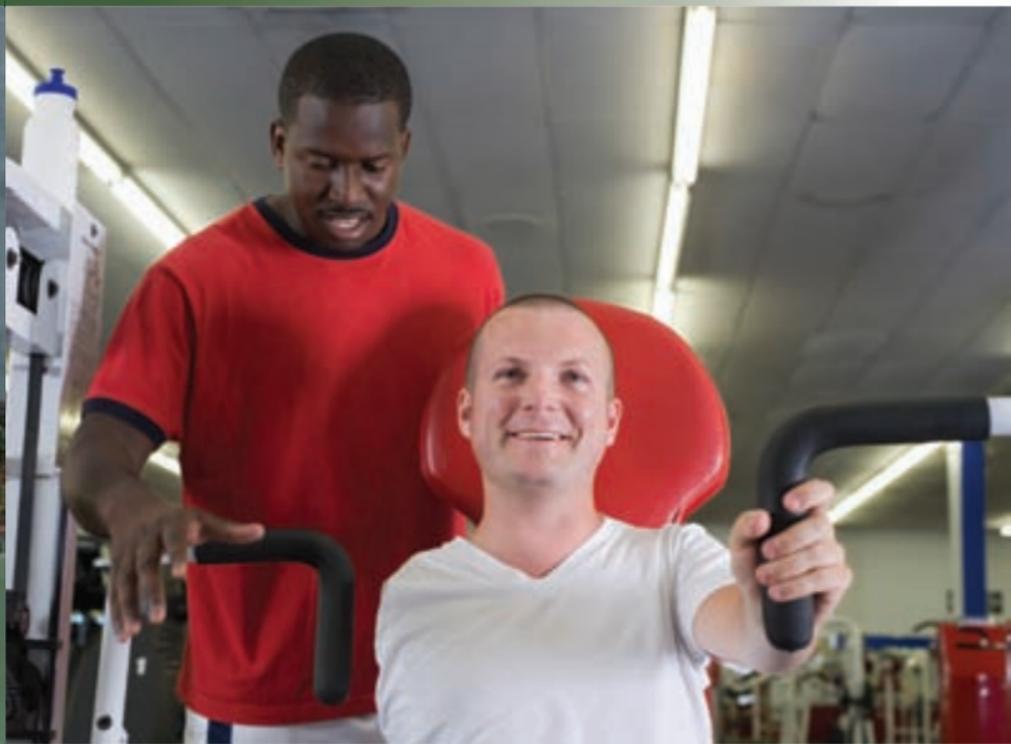
- 5. Definitive prosthetic training phase:** By now, the person no longer uses the preparatory prosthesis. Commonly, components have been changed to accommodate the walking style that the amputee will most likely adopt long-term. This does not mean that future changes are impossible, only that the healthcare team had to make an educated guess on how the amputee would progress when selecting preparatory components. Now, they have selected components based on those earlier experiences. If the person had major component changes, specific training may be needed. For example, if a flexible keel foot was previously used but now an energy-storing foot is used, the person should be taught to maximize the stride length and spend more time on the toe of the prosthesis. As the individual progresses into these later phases, the therapy becomes more individually tailored given individual circumstances, components and, above all, goals.



6. Reintegration phase: In this phase, the individual is preparing to return to specific activities such as work or recreation or may need help in training for new activities.

7. Maintenance as needed: This phase may occur if components, activities or goals are changed.

Again, describing the entire rehabilitation process as having phases is helpful, but everyone's experience is as individual as the person. This information serves the purpose of providing common terminology for a discussion with your therapist, a peer, a loved one, or others so that you can all know what to expect. The single piece of "take-home" advice that we offer is to create a set of goals for yourself and share them with not only your PT, but your prosthetist and physician as well. The PT will help make your goals measurable and establish timelines for accomplishing them. As with other goals, when you say you are going to do something by a certain time, your odds of doing it improve.



The following tips provide selected examples of activities a person may perform within a given phase of rehabilitation.

Pre-operative Phase

- 1. Strengthening the sound limb.** For example, the quadriceps and hip extensors of this leg are crucial in the early phases of post-operative rehabilitation.
- 2. Stretching the muscles closest to the amputation site.** For example, if a transtibial amputation is being considered, a knee flexion contracture is possible in that leg after amputation if the person won't straighten and move the knee. Extension activities before amputation will add mobility to these at-risk muscles and prepare patients for what they will need to do while healing.
- 3. Single-limb transfers, balance and walking.** This is usually done on the sound limb to prepare for "getting around" in the period between the amputation and receiving the first prosthesis.

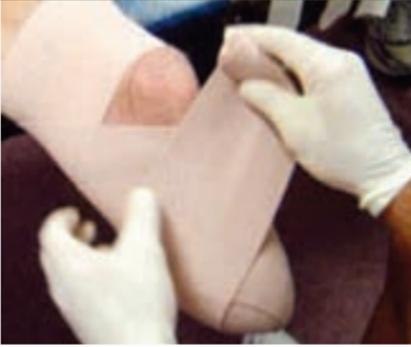


FIGURE 1
Wrapping a person's transtibial residual limb.



FIGURE 2
Various shrinkers for transtibial residual limbs.

Post-operative Phase

1. Closely monitor the newly amputated limb for signs of infection and other complications.
2. Prevent painful and deforming swelling with compressive dressing, ranging from elastic bandages and shrinkers to modified casts and sockets (Figure 1).
3. Education about volume management, observation for complications.
4. Early assisted mobility: standing, sitting, lying, turning in bed, and walking, all with the sound limb. Little to no weight is to be applied to the residual limb.
5. Gentle stretching and strengthening activities begin. At first, these may simply include static positions for stretching and then progress as tolerated.



FIGURE 3
Person practicing putting on a gel liner, sock and prosthesis.



FIGURE 4
Gait training with contact guarding by a PT.

Pre-prosthetic Phase

1. More advanced mobility situations are practiced without the prosthesis (using only the sound limb) as balance continues to improve.
2. Therapeutic exercise likely will progress in complexity and intensity as individually tolerated.
3. Shrinkers likely will replace elastic bandages (varies based on what is used by the practitioners in the given region) with the idea of moving to independent volume management and limb shaping (Figure 2).

Preparatory Prosthetic Training Phase

1. Education regarding donning and doffing, sock management and prosthesis maintenance as well as monitoring and caring for the skin (Figure 3).
2. Wearing/using the prosthesis on a schedule to increase tolerance for the new sensations and pressures in it.
3. Weight shifting, stepping and balance activities as precursors to early gait training.
4. Gait training on flat ground while closely supervised for brief times and distances progressing to less supervision for longer times and distances (Figure 4).

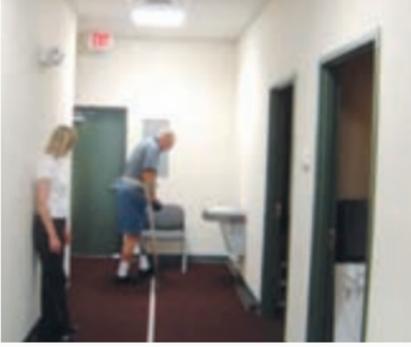


FIGURE 5
Physical therapist providing stand-by assistance and cueing during a turning maneuver.



FIGURE 6
PT facilitating practice descending stairs using a step-over-step pattern.

5. Gait training in increasingly complex environments as tolerated: stairs with/without rails, slopes, varying surfaces (grass, sand, tree roots, etc.) and obstacles (Figures 5 & 6).

Each individual's experience is unique and variable. We encourage certified peer visitors and others to discuss this fact with new amputees.

Definitive Prosthetic Training Phase

1. More aggressive therapeutic exercises and activities as tolerated and individually appropriate (Figures 7 & 8).
2. Tailoring activities to specific componentry to ensure patients are confident and knowledgeable of their individual abilities with a prosthesis, but also with the abilities of the prosthesis.



FIGURE 7
Transfemoral amputee performing a bridge exercise to strengthen the hip extensors.

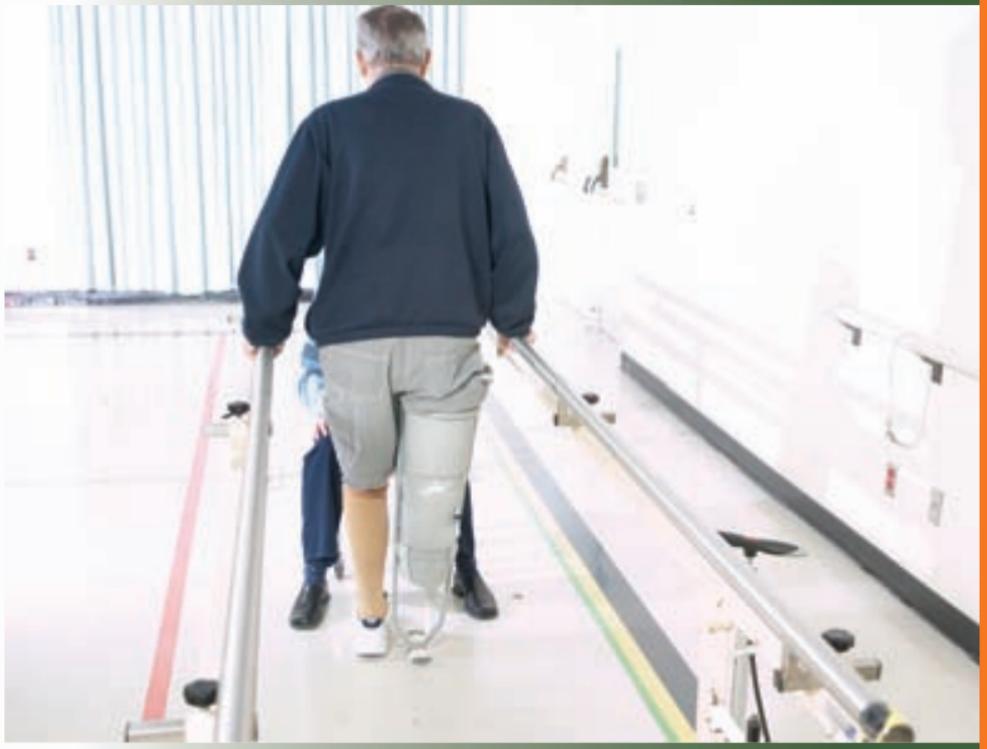


FIGURE 8
Physical therapist manually stretching the hip flexors of a person with a transfemoral amputation.

Reintegration Phase

Consider a few examples, then consider your own situation and needs:

1. A mail carrier who wishes to return to a route that has a significant amount of walking could potentially benefit from advanced treadmill work under complex conditions along with general cardiovascular and leg muscle conditioning.
2. A baggage handler who performs prolonged standing with repetitive lifting may benefit from balance activities under dynamic conditions along with a progressive core strengthening program to prepare for returning to work and to help prevent future injuries.
3. Consider the unique needs of the following examples:
 - High school wrestler, football player
 - Police officer, firefighter
 - Stucco worker, painter, mechanic, electrician
 - Babysitter, parent
4. What are your specific needs? Goals?



Maintenance

This phase is most common if something has changed and presents a challenge to an amputee. Commonly, a person gets a new component or has had a change in health. These are not the only times to see a physical therapist. If you think that you could benefit from PT services, talk to your prosthetist, physician or a PT about what you are experiencing. Any of these practitioners can help you decide; you don't know unless you ask.





For more information, please call
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