

G A M E  R E A D Y[®]

IMPROVING AMPUTEE SURGERY RECOVERY AND QUALITY OF LIFE

How Amputees Are Getting Back to Daily Life Faster

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Improving Amputee Surgery Recovery and Quality of Life: How Amputees Are Getting Back to Daily Life Faster



Traumatic amputation is a life-changing event. Patients require a range of healthcare professionals, resources, and support from family and friends to help navigate the path to physical and emotional recovery. Fortunately, advances in medical procedures and technology have helped improve the quality of life for those who have suffered the loss of a limb. Surgical techniques have become more sophisticated; physical therapy helps patients return to a fuller life more quickly; and prosthetic limbs have become more comfortable and functional. With these and other developments, the recovery process for amputees continues to improve.

Though each patient experiences a different path to recovery, every amputee faces some common challenges. This e-book provides valuable information for amputees who have recently undergone surgery and for those already living with prosthetic limbs.

The Physical Challenges of Amputation Recovery

Whether it is the result of trauma, illness, or a military injury, the loss of a limb is emotionally and physically challenging immediately after surgery and for years afterward. Amputees often must relearn essential life skills, manage pain and discomfort, and cope with grief over the lost limb. Although the ongoing emotional effects of an amputation vary, the immediate and lifetime physical challenges are similar for most patients.

Post-Surgery Challenges

The healing process begins immediately following surgery. Patients must deal with challenges such as:

- Regularly changing dressings
- Managing pain
- Avoiding infection
- Controlling swelling

Compression bandages are typically used to help reduce swelling and speed the healing process. Although it varies for each individual, healing at the surgical site typically takes between four and eight weeks.

Most patients begin gentle physical therapy within several days of surgery to help increase circulation and prevent secondary injuries caused by tightening of the ligaments, tendons, or muscles. As the healing process continues, exercises are recommended to improve muscle strength and control. Depending on how quickly the healing process takes, practice with an artificial limb can start within two weeks of surgery, depending largely on swelling and pain at the amputation site.

Lifetime Challenges

For amputees with prosthetic limbs, the most common physical challenges include:

- Swelling around the surgical site
- Skin infections
- Residual limb pain
- Overuse of the intact limb
- Decreased mobility
- Fatigue

Utilizing Game Ready following orthopedic procedures, we've seen a dramatic decrease in post-operative pain, a decrease in hospital stays and quicker return to work or athletic participation. Game Ready is an essential part of accelerated post-operative recovery.

Sanford Kunkel, MD Orthopedic Surgeon
OrthoIndy, Indianapolis



Prosthetic limbs are customized for every patient to ensure optimal function and comfort. However, because the residual limb changes in size and shape over time, primarily due to swelling or muscle atrophy, artificial limbs often must be resized or adjusted. Swelling can also impact the prosthesis itself. Because the socket is designed to fit closely to the residual limb, an increase in limb size due to swelling can cause the socket of the prosthetic limb to change shape or become damaged.

Phantom limb pain is believed to be a result of ongoing activity in the sensory pathways between the sensory centers of the brain and the nerve stump. Treatments include heat or cold therapy, medication, counseling, and surgery to reposition the nerve endings.

Patients with artificial limbs often experience fatigue, which can also negatively impact stress and pain levels. Fatigue can result from a lack of muscle strength and control, poorly fitting prostheses, and changes in the way the patient's body moves. Fatigue is particularly a problem for lower-limb amputees.

Several factors play a role in the speed of recovery immediately following surgery and after the initial healing process:

- Age of the patient
- Physical condition prior to the surgery
- The complexity of the wound
- Other medical problems that may impact healing
- Doing the right amount and type of physical therapy
- Measures taken to control pain and swelling

US National Team, Fulham Soccer Club, English Premier League I am currently competing as a contestant on the fourth season of NBC's weight-loss reality show The Biggest Loser and honestly, I don't think that I could have had the success that I've had on the show in the absence of the Game Ready device, considering how often I needed to use it.

**William G. Germanakos,
NBC's The Biggest Loser Contestant**

Although some of these factors cannot be controlled, patients can exert influence on some of the other factors. For example, working closely with a physiotherapist, staying active, and proactively controlling pain and swelling without the use of medication all contribute to a faster recovery process.

Options for Addressing the Challenges of Amputation Recovery

Several methods are used to address the pain and swelling commonly encountered by most amputee patients. Depending on the stage of the healing process and the severity of the problem, healthcare professionals might recommend any combination of ice, compression bandages, medication, or active compression and cold therapy.

Cold Therapy

Cold therapy is used both immediately following surgery and on an ongoing basis to reduce swelling and pain. Though this method is proven to work, it does come with some drawbacks, including:

- Most ice packs do not conform to the amputation site, thus limiting the amount of coverage that is possible.
- Ice packs decrease in temperature as they absorb heat from the body, thus reducing their therapeutic value.
- Tissue damage can occur when cold therapy is incorrectly applied.

Fortunately, improvements in cold therapy have made it possible to overcome these limitations.



Compression Bandages Compression dressings, which can be rigid or elastic, are used post-surgery to reduce swelling and influence the shape of the residual limb. A rigid compression dressing is essentially a cast that must be changed periodically as swelling is reduced and the size of the residual limb changes. After the initial swelling has subsided, rigid compression dressings are typically replaced with elastic dressings. Elastic compression bandages must be changed more frequently, often several times a day, in order to maintain proper pressure on the area.

Compression is essential for faster healing, and though both rigid and flexible bandages are effective, they are static by nature. This means that they must be actively supplemented with massage, stretching, or other physical therapy to promote circulation and drainage.

Medication

In addition to the antibiotics that are prescribed to prevent infection after surgery, doctors may also recommend medication for managing pain. Though a certain amount of pain treatment is expected immediately after surgery, ideally, the use of medication tapers off and the patient is able to continue with minimal or no drug therapy. However, because up to 80 percent of amputees feel pain well after surgery, a viable pain management solution with minimal side effects is important.

Active Compression and Cold Therapy

Ice and compression are often used in combination to reduce swelling and pain. New technologies have made it possible for this process to be more active with simultaneous pneumatic (air) compression and adjustable, constant cold therapy. Enhancing the delivery of cold therapy with active compression helps speed the healing process and provides a longer-lasting effect. Active compression also optimizes drainage, increases blood flow, and more quickly reduces swelling.

Post-Surgery Checklist for Faster Recovery

The weeks following an amputation are filled with activity to help speed the healing process. Patients should always follow the advice of healthcare professionals but can help promote faster recovery with the following checklist.

1. Wound care – In most cases, healthcare professionals will change dressings for the first several days after surgery. When possible, patients will be trained to change the bandages on their own. Sutures and/or adhesive strips should be kept clean as the wound heals, and steps should always be taken to avoid infection.

2. Pain management – The type of medication prescribed will depend on the intensity of the pain. Physicians may treat pain with NSAIDs, opioids, or other types of medication. Other methods used to manage pain include active compression and cold therapy, heat therapy, therapeutic touch, and other non-drug therapies. Patients should always communicate with doctors about any pain they are experiencing.

Game Ready takes the guesswork out of ice and compression and gives me peace of mind that I am doing the best I can do to get back into action following an injury and stay healthy throughout the season.

Brian McBride, Forward/Striker

3. Swelling reduction – One of the fastest ways to speed the healing process is to quickly reduce swelling. Immediately after surgery, a rigid compression bandage may be used to prevent excessive swelling and help shape the residual limb for a prosthetic. After the rigid bandage is removed, elastic bandages can be used to manage swelling; however, active compression and cold therapy are clinically proven to encourage acceleration of the healing process.

4. Physical therapy – Gentle stretches early in the recovery process will help encourage circulation, which brings more oxygen to the tissue that is healing. When ready, the patient can begin exercises that will help improve muscle strength and control.

5. Limb desensitization – Desensitizing the residual limb is important for prosthetic preparation. Techniques include massage, tapping, scar mobilization, and using soft material to desensitize the skin at the surgical site.

6. Prosthetic fitting and training – For amputees who choose to use a prosthetic limb, proper sizing and training are essential elements for success. Fitting is done after the surgical site has healed and swelling has been significantly reduced. However, because swelling can happen any time after an amputation, it should be managed on an ongoing basis, ideally with active compression and cold therapy. Controlling swelling and keeping the residual limb the same size and shape allows a patient to achieve the highest level of comfort and function.

Many amputees are able to leave the hospital within a week, but the rehabilitation process continues at home. After leaving the hospital, patients and their caregivers must maintain the activities that will ensure the fastest possible recovery.



Managing Fatigue: A Daily Living Checklist

After the initial healing process has been completed, amputees with prosthetic limbs face a new lifestyle that comes with some challenges. One of the biggest challenges is fatigue, which can significantly impact quality of life if not managed properly.

Fatigue is most common in lower-limb amputees, although many upper-arm and forearm amputees also experience it. One of the reasons fatigue is so prevalent is that walking takes significantly more effort after a lower-limb amputation. Other factors that contribute to fatigue include a poorly fitting artificial limb, swelling, and lack of strength.

Using this daily living checklist can help amputees more quickly recover from fatigue:

- 1. Physical therapy** – Daily exercises for improving muscle strength and control will help prevent fatigue. They can also help improve other factors such as flexibility, balance, and range of motion.
- 2. Diet and lifestyle** – Staying healthy and fit is important for amputees. Eating nutritious food and regularly exercising to control weight will help keep prosthetic limbs comfortable. Eliminating excess weight also helps reduce fatigue and improves stability for lower-limb amputees.
- 3. Residual limb inspection and care** – Proper hygiene is important for ongoing comfort, particularly if an artificial limb is used. The area that comes in contact with the prosthetic socket should be washed with warm water and mild soap. Many patients also use talcum powder to keep the area dry. The residual limb should also be regularly inspected for dryness, skin discoloration, or other anomalies.

*I've seen a two-fold increase
in recovery rates. Guys
are back in half the time.*

Stan Conte, PT ATC, Head Athletic Trainer,
SF Giants, 2000-2006

4. Artificial limb care – Any socks or sleeves should be changed daily, and the socket should be cleaned as directed by the prosthetist. Because most prosthetic devices are not waterproof, they should be immediately dried if they become wet.

5. Pain management – Ideally, pain is negligible after healing from surgery. However, nerve damage, bone formations at the amputation site, or frequent swelling can cause ongoing pain. Managing pain on a daily basis might include medication, massage, or active compression and cold therapy.

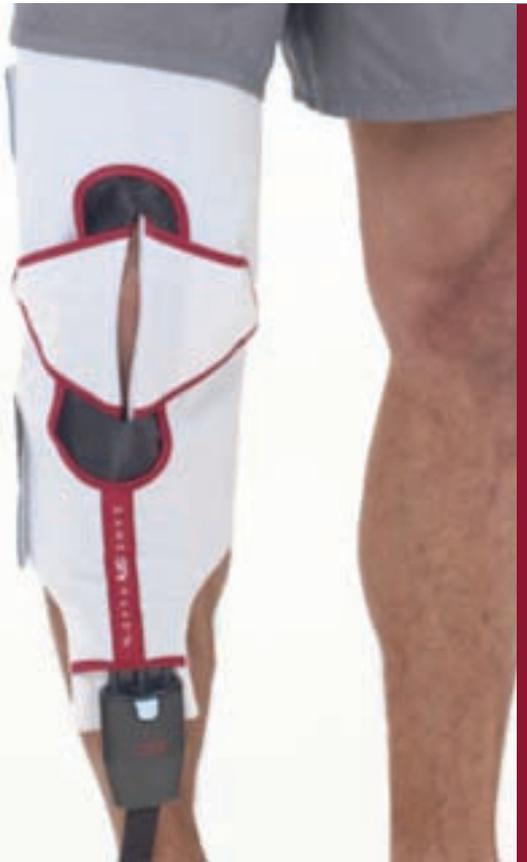
6. Active compression and cold therapy – Swelling is one of the biggest contributors to discomfort with prosthetic limbs. Active compression and cold therapy are proven to increase the effects of cryotherapy and to encourage acceleration of the healing process. The faster swelling can be reduced, the faster quality of life will improve.

Avoiding fatigue is a much better solution than trying to recover from it. In addition to making smart lifestyle choices, active compression and cold therapy can help amputees with prosthetic limbs stay healthier, more comfortable, and more active.

Use Game Ready for Faster Surgery and Fatigue Recovery

Active compression and cold therapy require technology that provides consistent “squeeze and release” compression while simultaneously removing heat and cooling the affected area. Game Ready has developed a system that does just this.

Game Ready Traumatic Amputee Wraps feature patented ACCEL™ Technology (Active Compression and Cold Exchange Loop) to help accelerate recovery and maintain quality of life for traumatic amputees. This innovative solution uses active pneumatic (air) compression to help the body pump away swelling and stimulate the flow of oxygen-rich blood to



encourage the healing process. For controlled cooling, the patented, dual-action ATX™ (Active Temperature Exchange) design enables the simultaneous circulation of ice water and air, integrating proven compression and cold therapies. Like all Game Ready wraps, the Amputee Line is comprised of an inner, two-chamber “heat exchanger” and a removable, machine-washable, and replaceable outer sleeve.

With the introduction of Traumatic Amputee Wraps, Game Ready aims to set a new standard of care in amputee recovery to help traumatic-injury patients reduce pain, accelerate healing, and return to life faster.

How Does Game Ready Work?

Compression therapy and cold therapy each work well on their own, but when used in combination, the results are dramatically better. Swelling is reduced much more quickly, and healing occurs faster.

When the body undergoes trauma, such as amputation surgery, the surrounding tissue becomes inflamed as part of a natural defense mechanism. The more this inflammatory response is controlled, the faster the healing process will be.

Unlike traditional compression and ice therapies, Game Ready’s active compression and cold therapy proactively:

- Aid lymphatic function
- Encourage the supply of oxygen to cells
- Stimulate tissue repair

No other system commercially available provides both compression and cold therapy as effectively as Game Ready. In addition, it has a built-in safety measure to guard against thermal or pressure injury and therefore makes it ideal for home- or self-treatment.

**Arthur Ting, MD,
Orthopedic Surgeon**

Consistent compression that creates a “pumping” effect actively removes edema, while continuously cooled water maintains a constant and controllable temperature throughout the therapy session. Each wrap is designed to conform to the body to ensure that the entire residual limb site gets the same amount of compression and deeper, longer-lasting cold.

What Are the Benefits of Game Ready?

This revolutionary new active compression and cold therapy system for traumatic amputees provides many benefits for patients:

- Helps speed post-surgery healing
- Helps reduce pain without narcotic medications
- Decreases critical time to prosthetic fitting
- Aids in the reduction of prosthetic fittings
- Relieves residual limb pain due to continual use of prosthetic devices
- Helps improve overall quality of life

Lower-limb amputees, who generally suffer the most discomfort and swelling with an artificial limb, are encouraged to use the below-the-knee wrap. Features of this Game Ready Traumatic Amputee Wrap include:

- Ergonomic design for best lower-limb fit
- Low-profile, circumferential coverage for better surface contact and more effective treatment
- Easily adjustable for enhanced comfort
- Compatible with prosthetic shrinkers (sleeves/stockings)



Thousands of physicians, physical therapists, and teams in virtually every professional sport already choose Game Ready because it provides:

- Clinically proven results
- A better care experience for patients
- Reduced pain and swelling without medications
- Comfort and safety with no risk of tissue damage
- Ease of operation

Now doctors and patients can get all of the same valuable benefits of Game Ready for traumatic amputations.

At this point my Game Ready unit is just about my most prized possession. I use it daily once or twice and it has really helped improve my condition and has kept me on the road. I take it with me everywhere. It is simple to use, very effective, no mess, no fuss...I love it...I was so tired of getting doctor's orders to stop running and take various pain medications to help my Achilles problem. Game Ready provides an effective, DRUG FREE way to speed recovery and has kept me running and improving at the same time. Keep up the good work!

W.B. Allen, Patient

To learn how Game Ready can accelerate surgery recovery and help return to daily life faster, visit www.gameready.com or call 1 (888) GAMEReadY.

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