

25th Annual Prosthetics Course

Pre and Post-Prosthetic Rehab from a Therapist's Perspective

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Objectives

- To review the primary goals related to treatment of a patient with a new lower extremity amputation prior to receiving their prosthesis
- Preparation of the residual limb for prosthetic use
- To review treatment basic treatment after the patient receives their initial prosthetic

Goals of Pre-Prosthetic Phase Management

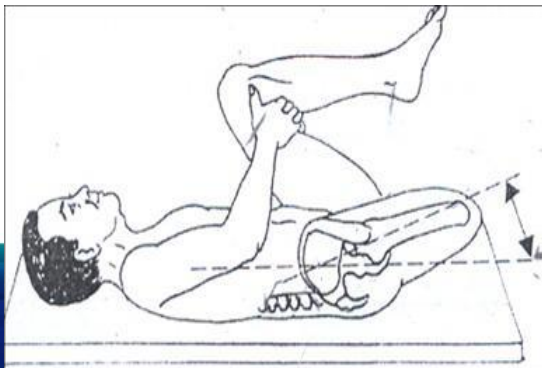
- Contracture Prevention
- Edema Management
- Skin/Wound Care
- Pain Management
- Strengthening/Flexibility
- Mobility Training with appropriate device
- Coping/Adjustment to Limb Loss and Changes to Body Image

Contracture Prevention

- Most common contractures:
 - Trans tibial amputation
 - Knee flexion
 - Trans femoral
 - hip flexion
 - hip abduction
 - hip external rotation



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<http://mas-nur.blogspot.com/2009/03/assessment-for-tf-amputee.html>

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Contracture Prevention

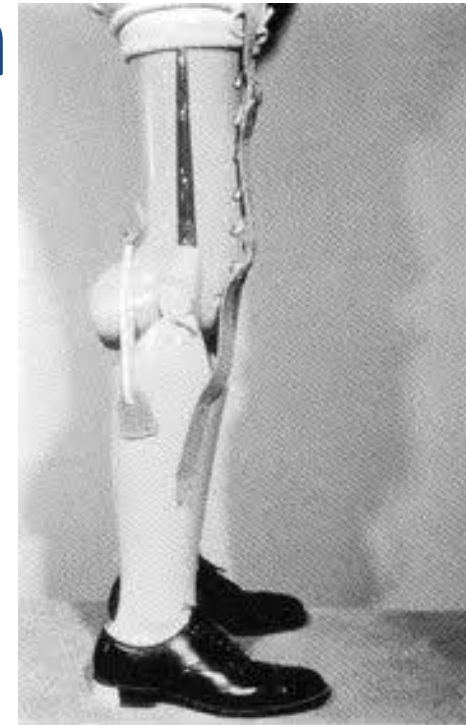
- Treatment:
 - Education
 - Positioning
 - Exercise/Stretching
 - Mobilization
 - Serial Casting



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Contracture Prevention

- Education
 - Why is this important?
 - Emphasize preparation for prosthesis



Bent Knee Prosthetic

<http://www.oandplibrary.org/popup.asp?frmItemId=C3C636A9-90AA-43F4-A92C-5AB2F26EDCF2&frmType=image&frmId=12>

The entire team is responsible

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Methods of Volume Containment

- Ace wrapping
- Stump shrinker
- Tubigrip
- Semi-rigid
- Rigid removable
- Rigid non-removable-IPORD
- Immediate post-op pylon-IPOP



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Ace Wrap Technique-TTA

- All wraps on a diagonal
- No circumferential wraps
- Avoid wrinkles
- Avoid open areas
- Most will require 2 ace wraps



Ace Wrapping Technique:

- Must be re-applied every 2-4 hours
- Wrap to above the knee
- Be careful applying pressure over tibial crest.





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TFA Wrapping



Cover the staples or sutures with appropriate dressing (dry gauze)



Begin Diagonal Wrapping:
Start medially and move to lateral direction at a downward angle attempting to catch the most lateral aspect of the limb

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Wrap around the back of the residual limb attempting to “catch the opposite corner”(medial aspect) if possible coming up at an upward angle completing the Figure of “8”

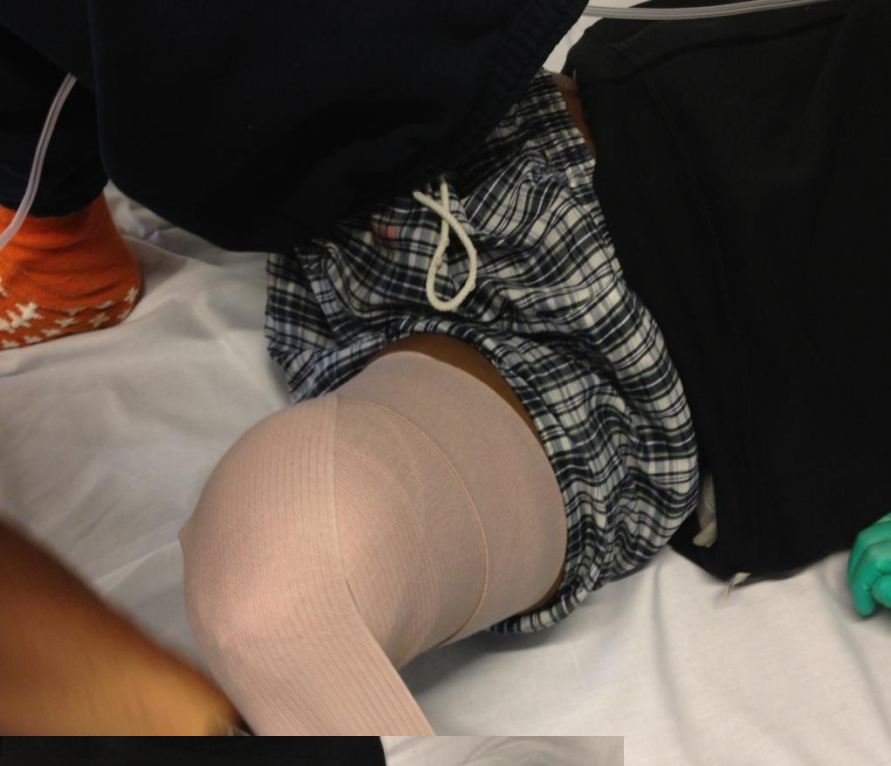


Continue the figure of “8” pattern working distal to proximal making sure to avoid wrinkles in the wrap and applying more pressure distally than proximally creating the appropriate pressure gradient

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Make sure that there are no open areas distally. This will create window edema at that area.



Wrap clear into the groin and contain all tissue to prevent the formation of an adductor roll. Wrap medial to lateral so that you can finish with a hip spica.

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The hip spica wraps around the pt's hips /waist and attach in the front if possible. This helps hold the wrap in place.

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Skin Care

- Wound Care
- Daily Skin inspection
- Protect
- Hydration
- Hygiene
- Skin/Scar mobilization



Skin Inspection

- Systematic approach
- Bony Prominences
- Problem areas
 - Toe nails
 - Calluses/Cracks
 - Corns
 - Bunions
- Odor
- Drainage
- Can the patient see their foot?
 - Inspection Mirror
 - Magnifying glass
 - Family member



When?

- Before **AND** after volume containment
- Before **AND** after prosthetic use
- Before and after shoe wear
 - More often with new shoes
 - Wearing schedule to allow for a break in period



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Hydration

- Lotion
 - Non-scented
 - Alcohol free
 - Perfume free
 - Petroleum jelly or Crisco
- Helps reduce friction
- Maintains elasticity of the tissue, decreases breakdown
- No lotion between the toes



Hygiene

- Daily (minimum)
- Mild Soap
 - Non scented soap and lotion
 - Alcohol free
 - Perfume free
- No hot water
- No soaking either foot/residual limb
- Dry skin especially between the toes



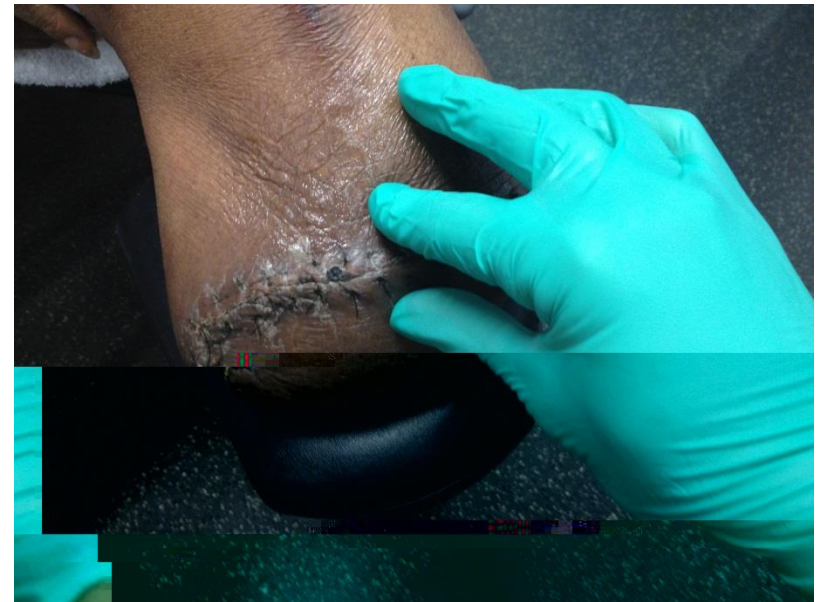
Foot Care

- **No home remedies or home surgeries**
- Manage moisture
 - Dry white cotton or wool socks
 - Carry extra if living in a moist environment
 - Incontinence
 - Wound drainage
- Minimize friction
- No Extreme Temperatures-heating pads, hot water bottles, soaks or any kind
- Tape
- No OTC products for corns, calluses or nails
- Proper shoe wear-(CMS)



Scar Mobilization

- Scar massage can begin immediately-POD#1
 - Approximate the incision and move the skin up and down
 - Transverse friction massage when incision healed
 - Myofascial release later if adhesions present
 - Adhesions can lead to breakdown when prosthetic training begins



Pain Management

- Not the physician's responsibility alone
 - Medication
 - Edema management
 - Desensitization
 - Mirror therapy
 - Relaxation therapy
 - Modalities
 - Alternative Therapy
- The treatment depends on they type of pain
 - Surgical/Residual limb
 - Phantom limb
 - Other



<http://endthepainproject.org/>

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Functional Mobility



- What does the patient **want** and **need** to do to go home *SAFELY*?
- *Specialized transfers?*



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- Bed mobility
- Transfers
- Balance
- Ambulation
 - **Household distance ambulation**
- Wheel chair mobility
- Stairs –what technique?
- Community mobility
- **Fall training**



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Coping/Adjustment to Limb Loss

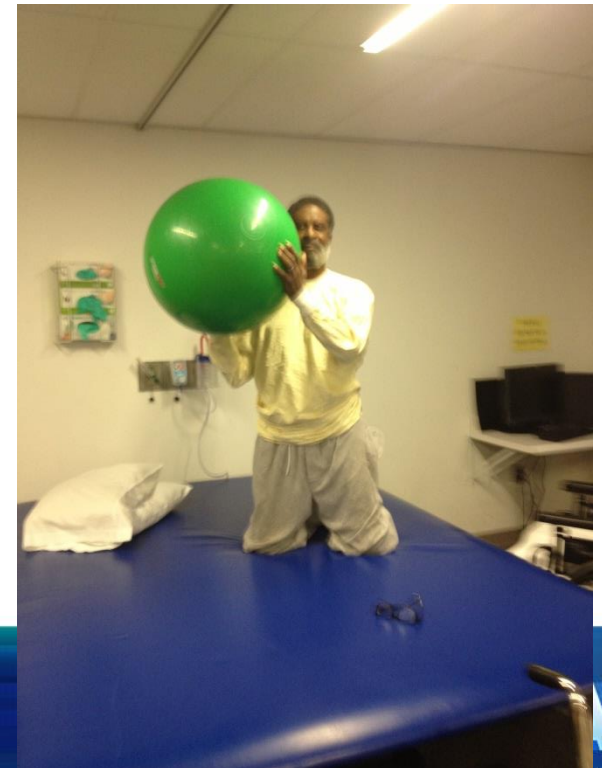
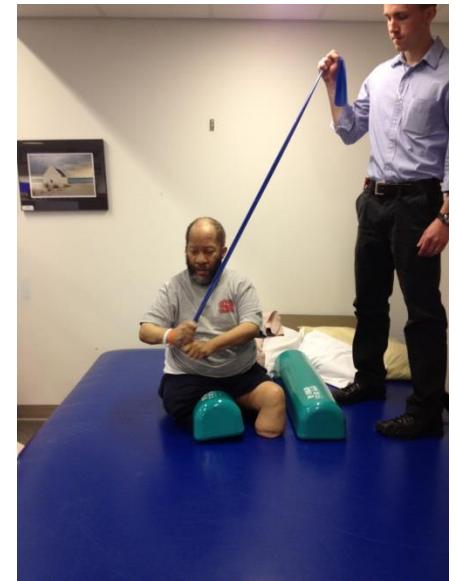
- Stages of Grief
- Psychology/Psychiatry
- How to approach the topic with each patient
- Life long management/follow up
- Educate the patient about:
 - Amputee clinics
 - Prosthetists
 - Therapists
- This is the *patient's* choice not ours

What is Ther. Ex?

- ROM
 - Not only the amputated side
 - Specifically Ankle DF, hip and knee extension on the intact limb
- Strength Training
 - Focus on anti-gravity muscle groups
 - Both limbs
 - Muscle groups that aid in gait
 - Assist with transfers prior to receiving the prosthesis
 - Core strengthening
- Endurance training



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| √ ALL THAT APPLY | PRE-PROSTHETIC PHASE "DAILY CHECKLIST" | WHEN | | | | | | | | | | | | |
|---------------------|--|---------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|
| | Wash and dry your residual limb. | 1x/day. | | | | | | | | | | | | |
| | Wash and dry your intact limb and do skin checks: behind the heel, between the toes, etc. | 1x/day. | | | | | | | | | | | | |
| | Skin Care Lotion to residual limb and intact limb (not between toes) | 2x/day. | | | | | | | | | | | | |
| | Check your skin. Look for signs of redness, irritation, bruising, or drainage from your incision. | 2x/day. | | | | | | | | | | | | |
| | Wear your Stump Shrinker to control your swelling. Apply a clean shrinker sock every day. | 24Hr/day | | | | | | | | | | | | |
| | Wear your Ace Wrap to control swelling. Change bandage if there is any drainage or blood. | Re-Apply ever 2-3 hr wear 24Hr/day | | | | | | | | | | | | |
| | Wear your Flowtech Device/ Knee Immobilizer /Cast as directed by your therapy team to ensure your knee stays straight. | 24 Hr/day | | | | | | | | | | | | |
| | Do your exercises as directed by you therapy team. | 2x/day. | | | | | | | | | | | | |
| | Stretch on your stomach. | 20minutes 2x/day. | | | | | | | | | | | | |
| | Perform Limb Massage. -Avoid your incision area. | 5 minutes, 2-3x/day. | | | | | | | | | | | | |
| | Perform Desensitization. Follow instructions provided. | 2-3 minutes, 2-3x/day. | | | | | | | | | | | | |
| | Perform Scar Massage. Follow instructions provided. | 1x/day. | | | | | | | | | | | | |
| | Wash your shrinker and allow to dry completely. (should have 2) | 1x/day. | | | | | | | | | | | | |
| Updated 12/14/12 CG | | | | | | | | | | | | | | |

Prosthetic Phase

- Goals
 - Don and doff Independently
 - Progress wear time daily
 - Manage Prosthetic fit
 - Prosthetic socks
 - Skin care and hygiene
 - Troubleshoot problems
 - Weight bearing tolerance
 - Normalize gait



Donning/Doffing

- What is the proper donning sequence for the prosthesis that they have been given?



3S Donning

- Fully deflect liner
- Distal cup contacts the end of the residual limb
- Pt rolls the liner up the leg



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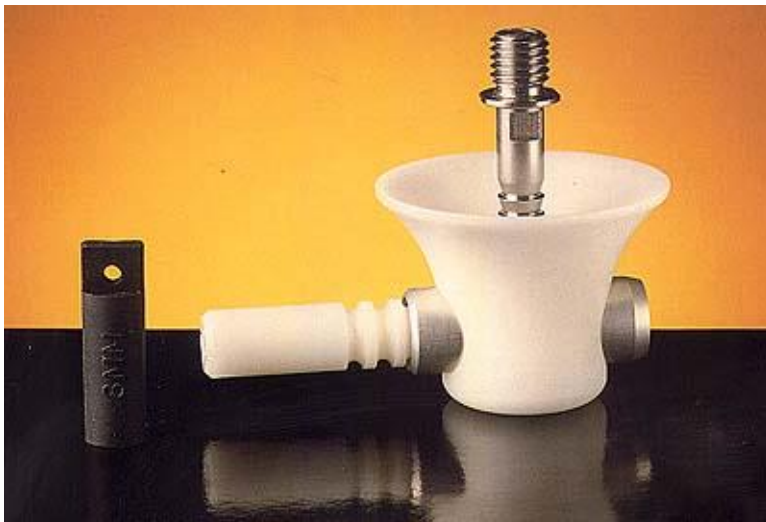


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- The end of the liner will have a pin or lanyard the will need to be attached
- Instruct the patient to make sure the pin is straight in order to properly engage the shuttle mechanism



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Prosthetic Sock Management

- ▣ Discuss in terms of thickness-
ply **NOT** the number of socks
- ▣ Ply = thickness of the sock
- ▣ They can come in any
number of thickness
depending on manufacturer
- ▣ Typically use 1, 3, and 5 ply
- ▣ Distinguished by the color of
the stripe across the top
- ▣ Patients will need a lot of
assistance and reinforcement
to learn this skill



knitrite.com

White/no color=1 ply

Yellow=3

Green=5

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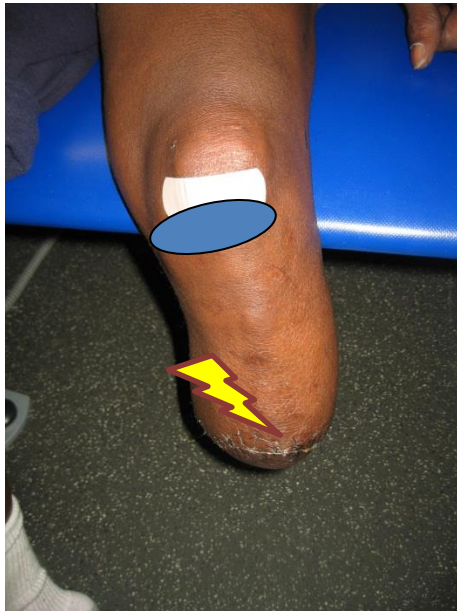
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Correct Sock Ply

- How do you know if you have the correct sock ply?
 - Pt description of pain
 - Pistoning
 - Lateral movement with ambulation



TTA Fit

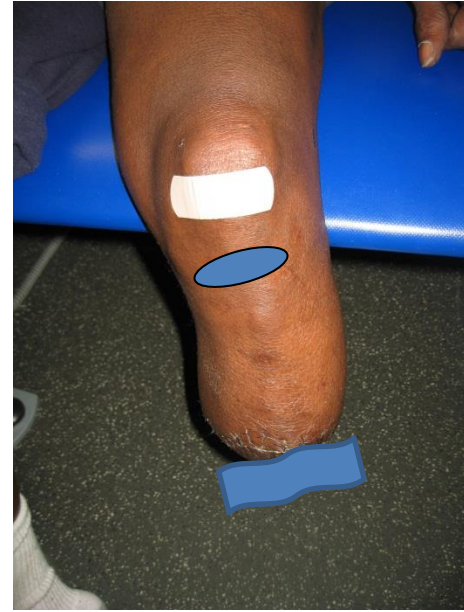


Not Enough

Look at Patella tendon



Just Right

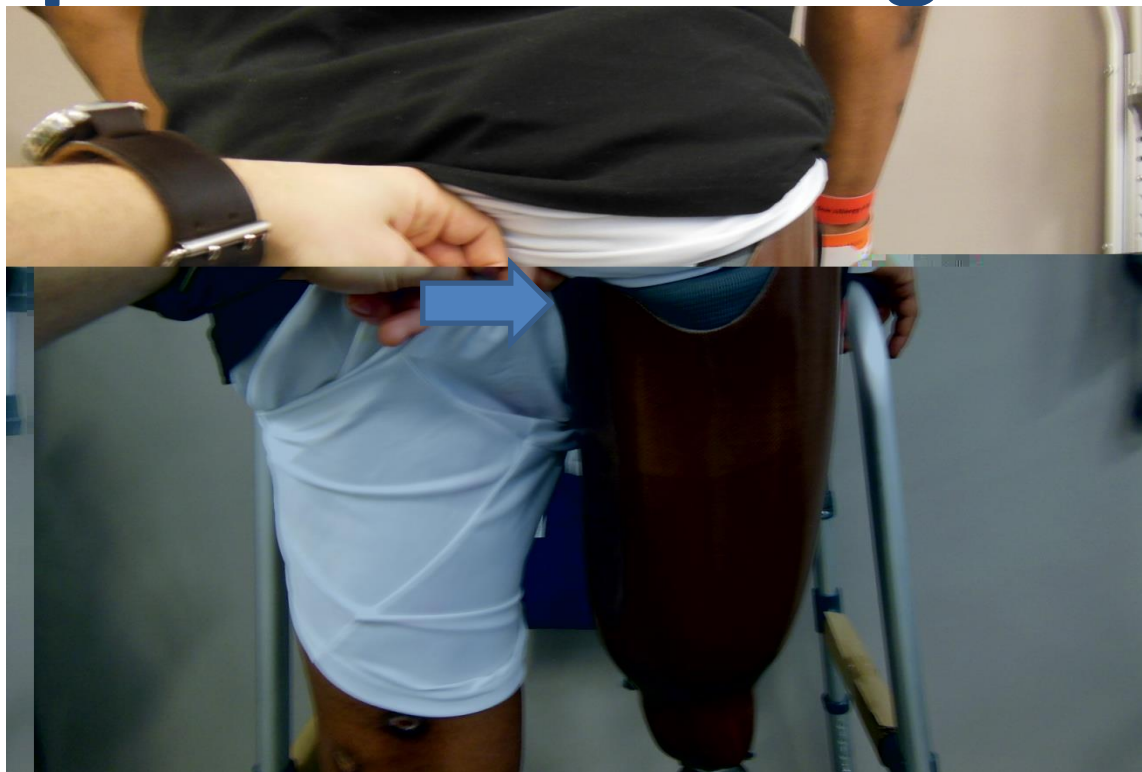


Too Many

Too few socks PTB mark may be on the patella, and the pt. may have pain on the distal tibia when WB on limb, abnormal thrusting, or pistoning during swing

Too many socks PTB will push on the proximal tibia, no distal end contact, may see redness on the tibial Tubercle or tibial crest

Proper TFA socket alignment



- Your Ischial tuberoisty “Butt bone” should be contained within the this are of the socket.
- If you feel pressure on the bottom of the stump add 1 sock ply
- If you feel pressure in your groin first check to make sure that the socket is not twisted i.e. the knee pointed in or out.
- If you do not feel pressure on the butt bone or the pin is not engaged then you have too many socks on-remove one sock ply

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Wear Schedule for

| Date | Sock Ply | Wear Time | Staff Initial |
|------|----------|-----------|---------------|
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Increase 30 min per day

Unless there is a new injury or change in skin problem.

| √ ALL THAT APPLY | PROSTHETIC PHASE "DAILY CHECKLIST" | WHEN / HOW OFTEN | | | | | | | | |
|------------------|--|---------------------------------------|--|--|--|--|--|--|--|--|
| | Check your skin. Look for signs of redness, irritation, bruising, blisters, or drainage. Use your mirror or ask for assistance to get a "good look". | Every time you remove your prosthesis | | | | | | | | |
| | Do skin checks of intact limb: behind the heel, between the toes, etc. | 1x/day. | | | | | | | | |
| | Wash and dry your residual limb. | 1x/day. | | | | | | | | |
| | Wash and dry your intact limb | 1x/day. | | | | | | | | |
| | Wear your stump Shrinker when ou are not wearing your prosthesis | | | | | | | | | |
| | Continue to stretch on your stomach. | 20 minutes, 2x/day. | | | | | | | | |
| | Perform Limb Massage, Desensitization, and Scar Massage | 5 minutes, 3x/day. | | | | | | | | |
| | Wash and dry Stump Shrinker & change daily | 1x/day. | | | | | | | | |
| | Wash your prosthetic liner or "suspension sleeve" every evening with mild soap or approved cleaner. Turn right-side-out and allow to dry. | 1x/day | | | | | | | | |
| | Wash your prosthetic sock(s) and allow to dry completely. | 1x/day (if they contact you skin) | | | | | | | | |
| | Wipe out the inside of your socket with mild soap and water. Dry completely. | Whenever soiled, or 1x/week. | | | | | | | | |
| | Apply anti-persperant (not deodorant). Always allow ample drying time before applying your liner. | 1x/night | | | | | | | | |
| | Check your wear Schedule and progress as instructed by your therapy team | | | | | | | | | |

Skin care & Hygiene

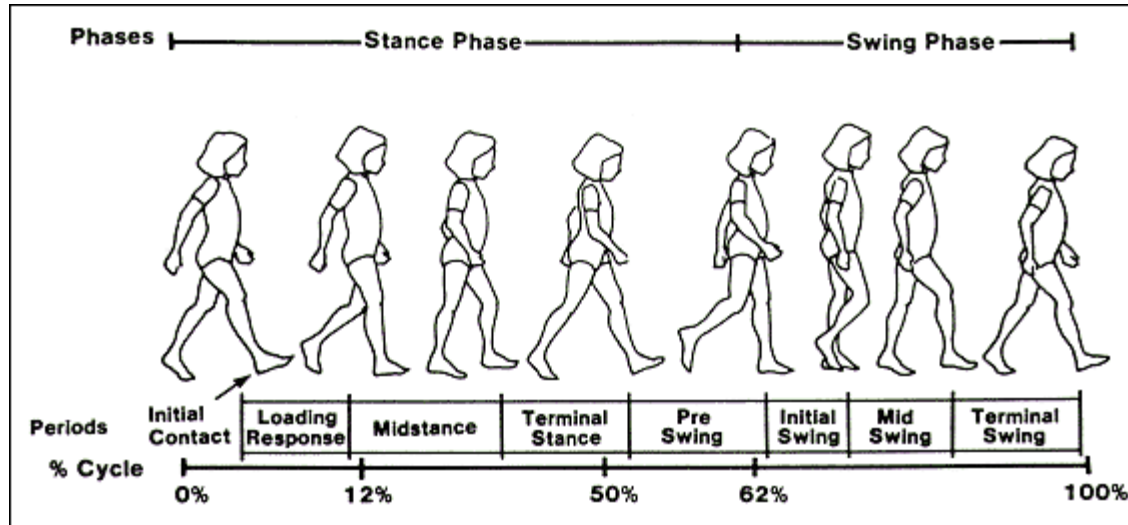
- Warm moist area with increased activity
- Clean the skin as well as everything touching the skin
 - Sheaths, socks, liners, socket, suspension sleeves

Problem List

- Pistoing
- Gait deviations
- Point tenderness or localized pressure
- Perspiration issues
- Ect.

What is the cause?

Normal Gait Pattern Progress



<http://www.clinicalgaitanalysis.com/history/2107f2.gif>

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Prosthetic weight bearing



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Questions?

Please feel free to contact me with any further questions or comments

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