

Prosthetic Limb Basics for Sliding Instructors

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with credit to The NDVWSC Seating & Prosthetics Team

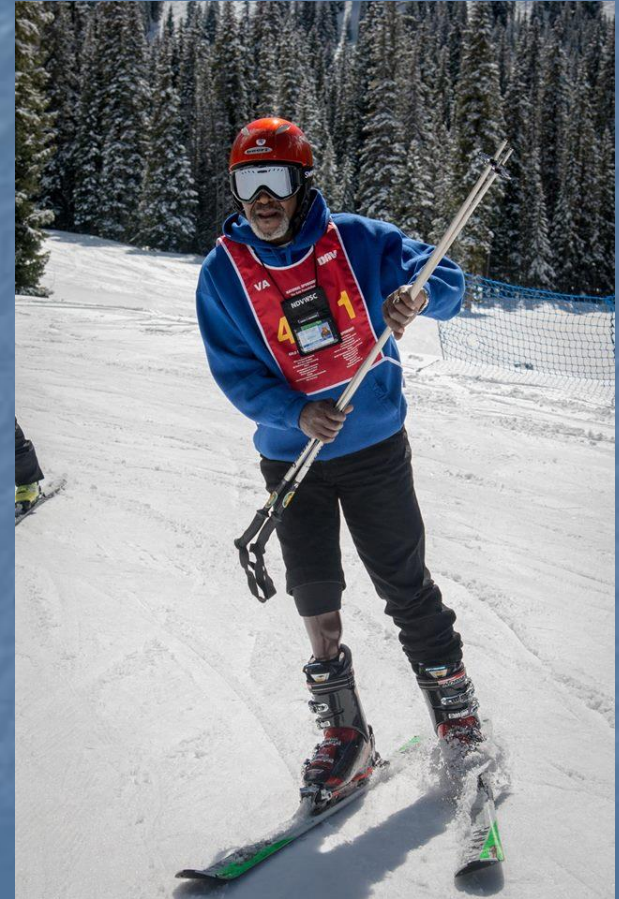


WSC Seating & Prosthetics Team



Objectives

1. Identify and describe basics of prosthetic componentry used for daily wear and sport specific prosthetics.
2. Describe potential modifications to a client's daily prosthesis to allow effective sliding and control.
3. Identify potential safety recommendations/precautions for clients utilizing prosthetic limbs for sliding activities.

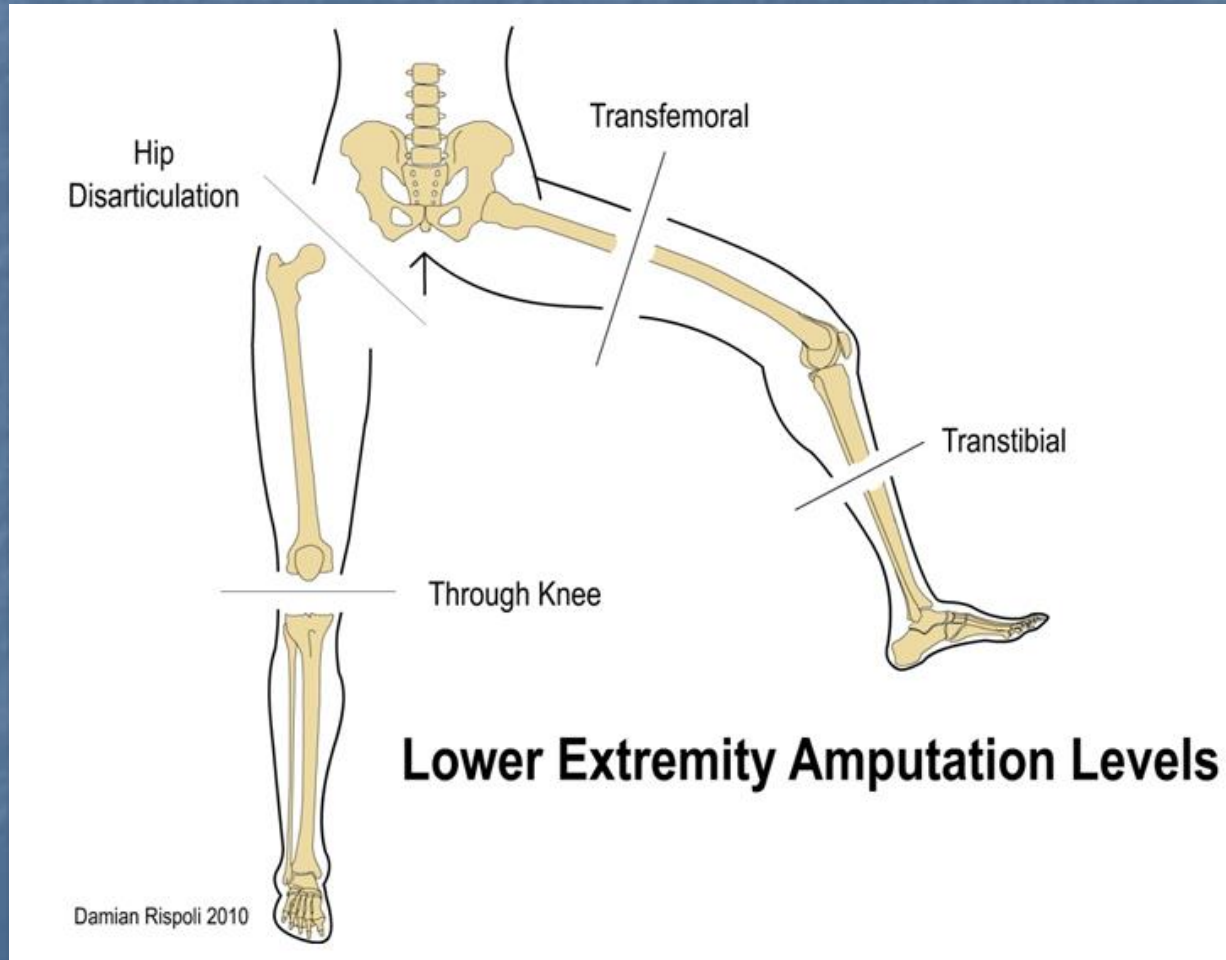


Who makes the Team?

- ATHLETE
- ADAPTIVE COACHES/INSTRUCTORS
- O&P
- PT/OT
- REC THERAPY
- PCP/SPECIALTY PROVIDER
- SEATING/WHEELCHAIR TEAM
- SERVICE ORGANIZATIONS
- MENTAL HEALTH
- INDUSTRY EXPERTS



What level is the amputation?



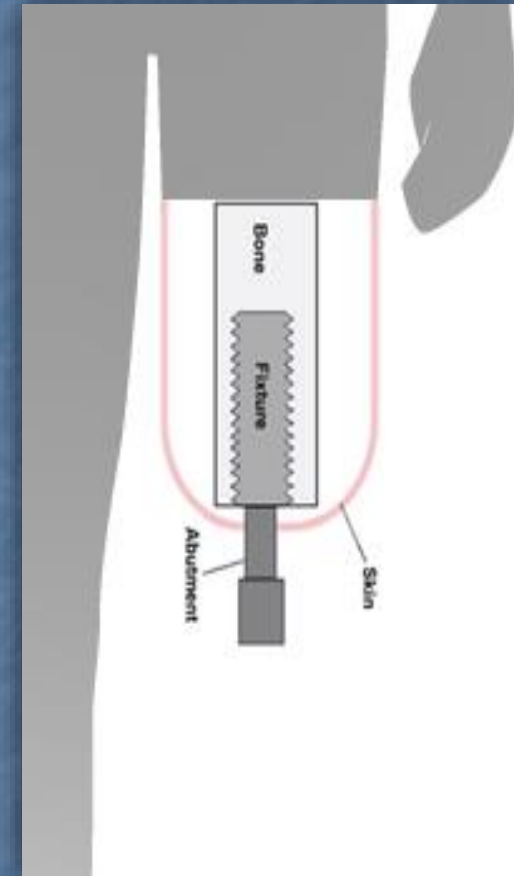
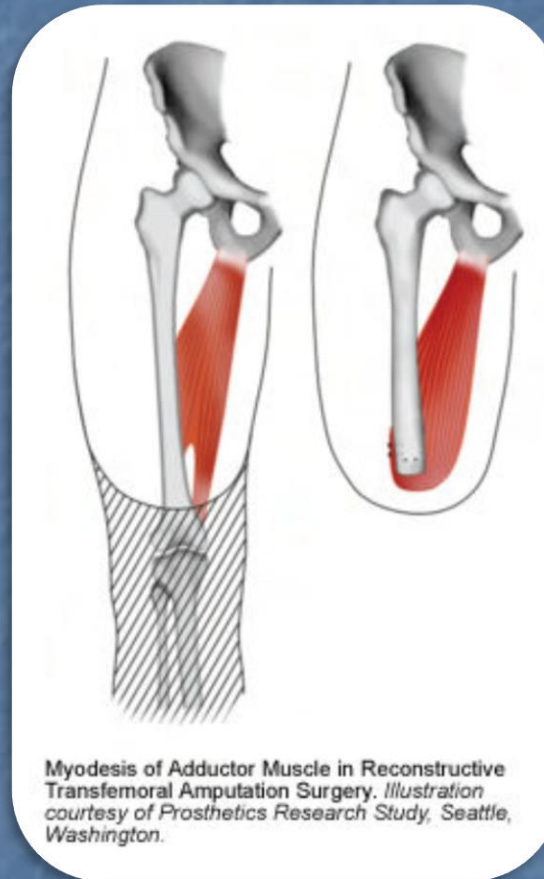
Hip Disarticulation

1. Amputation at the pelvic level
2. No femur remaining
3. Clients will most commonly be three tracking or using Mono or Biski.



Transfemoral Level

- Transection of the femur bone.
AK or AKA
- Residual limb or limb preferred
over "stump"
- Preservation of length
 1. Decreased muscular
attachment and control with
shorter limbs.
- Surgical types
 1. Myodesis is common
attachment of muscle to
other muscles and bone.
 2. Osseointegration
contraindicated for stand-up
sliding activities



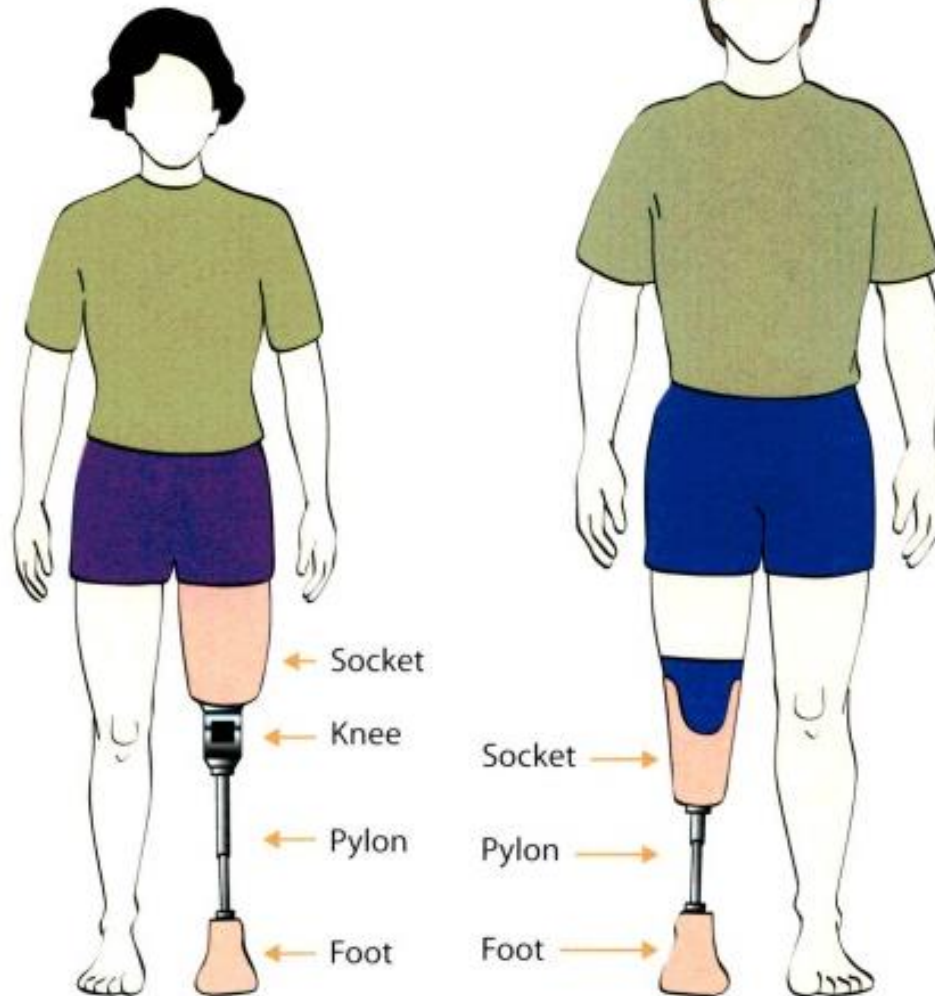
Transtibial Level

1. Transection of the tibia and fibula bones. BK or BKA
2. Preservation of length improves surface area to spread forces.
3. Ertl surgery vs standard procedure



TF Prosthesis vs. TT Prosthesis

A prosthesis has several parts:



Prosthetic Suspension Components

- Liners, sleeves and Tes Belt
- Suction vs suspension lock
- Holds limb in place
- Liner protects skin



Volume Management

- Prosthesis should be snug in standing position
- Loose socket puts too much pressure on bony prominences
- Add prosthetic socks to tighten a loose socket
- Dehydration at altitude can cause loss of volume of the limb

Preparation for the skiing/snowboarding

- **Participant should see a Prosthetist at least 1 month ahead of sport activity**
 - **Ensure client has a good fitting socket**
- **Hydrate before and during the event**
- **Pack and bring supplies**
 - **Extra suspension sleeves if transtibial**
 - **Tes or Waist belt if transfemoral**
 - **Extra socks & pads**
 - **Spare parts for your limb for repairs and adjustments (ex., gel liners)**

To use or not to use the prosthesis?





Upper Extremity



Do clients need a sport specific prosthesis to participate in sliding activities?

- Most daily wear prosthetics can be modified for use for sliding sports.
 - Be aware!!
 - Torsion pylon decreases rotation control in skiing
 - Torsion pylon is nice for snowboarding



Skiing Modifications

- Perform brief dryland assessment if possible
- Achieve athletic position
 - Do not recommend adjusting alignment
 - Heel wedge provides appropriate forward lean adjustment
 - Tape **to bottom of prosthetic foot**
- Boot calf filler
 - Dense foam around pylon
 - Allow for better control of the boot and ski
- Plastic bag
 - Makes putting the prosthetic foot in the ski boot much easier



Easy Modifications for improved sliding control





Snow Boarding Modifications

- Perform brief dryland assessment if possible
- Achieve athletic position
 - Heel wedge provides appropriate forward lean adjustment
 - Tape **to the board** at the binding
- Boot calf filler
 - Dense foam around pylon
 - Allow for better control of the boot and board
- Junior binding trick
- Plastic bag
 - Makes putting the prosthesis in boot much easier



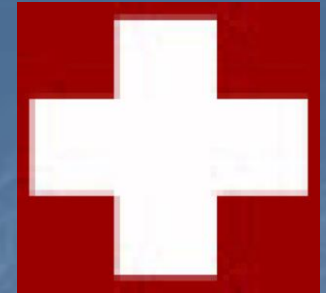
Easy Modifications for improved sliding control





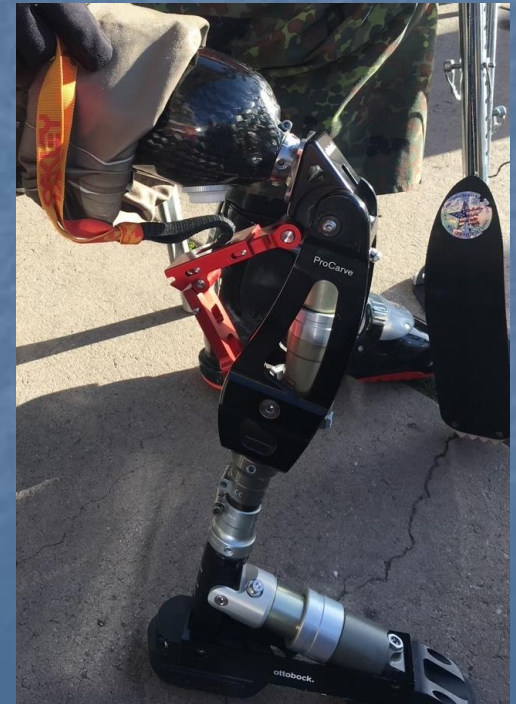


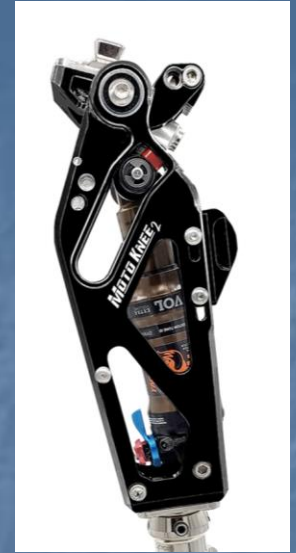
Safety Necessities



- Client should check their skin before and after sports participation
- Auxiliary Suspension
 - Suspension sleeve or Tes belt.
- If pin lock system, protect button from accidental release
 - Use a small piece of pvc over the button to prevent accidental release.

Sport Specific Prosthetics





Challenges-Prosthetics & Sports



Heterotopic
Ossification

- HO
- TBI Traumatic Brain Injury
- Other orthopedic conditions
- Skin health and tolerance to activities.



References



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***THANK
YOU!***

Chad Kincaid



- Endolite DR2 or Multiflex foot and ankle
- Ankle turned backward for increased dorsiflexion

