

Gait Training and Progression:  
Parallel Bar Activities, Functional Gait  
Assessment, Assistive Devices for  
Ambulation

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Rehab 537 – Week 5  
July 21, 2008

Mat/bed mobility for non-ambulatory  
patients

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- ❑ Rolling without LE assistance
- ❑ Supine → prone
- ❑ Prone on elbows
- ❑ Supine → long sitting
- ❑ Long sitting with and without UE support
- ❑ Long sitting push-ups and scooting
- ❑ Short sitting (edge of mat or EOB)

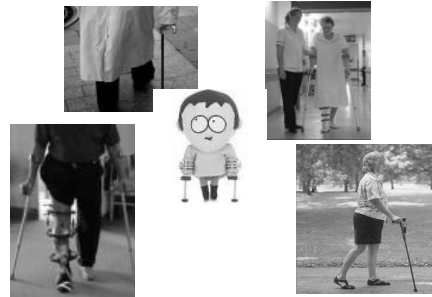
When last we met...

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- ❑ Pre-ambulation mat program/progression
- ❑ Took a quiz and performed a skill check
- ❑ Any questions about the w/c reflection paper or quiz?
- ❑ Time to move on to....

Gait Training

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Objectives

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- ❑ Be able to identify the goals of gait training

Goals: Gait training

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- ❑ Increase endurance
- ❑ Increase postural stability
- ❑ Increase control during transitional movements
- ❑ Increase dynamic balance

### Parallel Bar Activities

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- ❑ Sit ↔ stand
- ❑ Static standing balance
- ❑ Weight shifting activities – limits of stability
- ❑ Hip hiking
- ❑ Standing push-ups
- ❑ One leg forward/backward step (prep for swing phase)

### Parallel Bar Activities (cont.)

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- ❑ Practice patient's gait pattern
- ❑ Turning
- ❑ Sidestepping
- ❑ Backward walking
- ❑ Resisted walking
- ❑ Braiding

### Goals: Indoor Progression with Assistive Device

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- ❑ Optimal fit of appropriate assistive device
- ❑ Increase distance able to walk
- ❑ Increase balance, ↓ LOB
- ❑ I and safe ambulation on indoor surfaces
  
- ❑ Review of guarding techniques  
**ALWAYS** use a safety belt!!!!!!

### Indoor activities

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- ❑ Ambulation on level surfaces
  - hard surfaces (wood, linoleum)
  - carpet (different piles), rugs
  - transitions between surfaces
- ❑ Progression of distance
- ❑ Elevation activities
  - Stairs
  - Ramps
  - Curbs

### Indoor activities (cont.)

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- ❑ Opening doors
- ❑ Over thresholds
- ❑ Elevators
- ❑ Walking in a busy environment
- ❑ Falling techniques
- ❑ What to do in case of a fall
- ❑ How to get up from a fall

### Goals: Outdoor Progression with Assistive Devices

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- ❑ Increase distance able to walk
- ❑ Increase balance, ↓ LOB
- ❑ Independent and safe ambulation on outdoor surfaces
- ❑ Achieve functional speed for crossing streets
- ❑ Independent car transfers and/or public transportation (Metro/Access vans)

## Outdoor Activities

- ❑ Opening doors and passing through thresholds to the outdoors
- ❑ Ambulation on uneven terrain
- ❑ Elevation activities: stairs, ramps, curbs, curb cuts
- ❑ Crossing the street within time allocated by a traffic light
- ❑ Walking in a busy or crowded environment
- ❑ Car transfer and/or public transportation

## Weight Bearing Status

- ❑ Describes the amount of weight a person is allowed to place on their involved limb
- ❑ It is a precaution designated by the MD after a LE injury/medical condition and/or surgery
- ❑ Become very familiar with these terms and abbreviations!!!

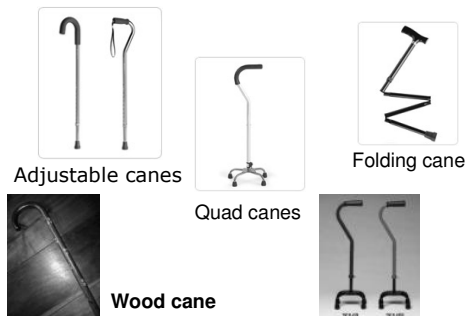
## Examples of Weight Bearing Status

- ❑ **Non-weight bearing (NWB)**
- ❑ **Partial weight bearing (PWB)**
- ❑ **Toe touch weight bearing (TTWB)**  
-the cracker test
- ❑ 50% weight bearing
- ❑ Weight of leg weight bearing (WOLWB)
- ❑ **Weight bearing as tolerated (WBAT)**
- ❑ **Full weight bearing (FWB)**

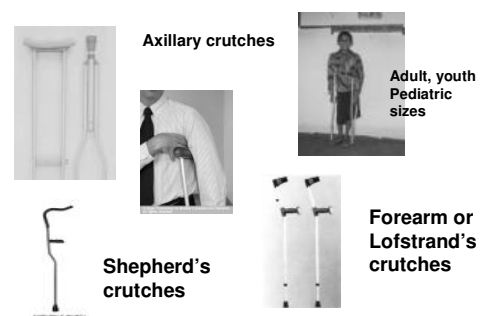
## Gait Patterns

- ❑ 2-point gait
- ❑ 3-point gait
- ❑ 4-point gait
- ❑ Swing-to gait
- ❑ Swing-through gait
- ❑ Full weight bearing gait
- ❑ Partial weight bearing gait
- ❑ Non-weight bearing gait

## Assistive devices: Canes



## Crutches



### Remember...

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- ❑ The cane is held in the hand opposite the affected extremity. There are exceptions...
- ❑ The function of the cane is to broaden the BOS
- ❑ A cane should not be used for PWB or NWB status

### Crutches and measuring crutch height

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- ❑ Please turn to page 22 in your course syllabus

### Walkers

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Pick up walker



Four-wheeled walker (with seat and basket)



Front wheeled walker (FWW)

### Roll-abouts (knee scooters, leg caddy, leg up)

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### Measuring walker height and gait patterns

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- ❑ Please turn to page 24 of your syllabus



## Functional Gait Assessment

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- Terminology is key

## Types of Gait Analyses

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- **Kinematic**  
used to describe the movement patterns without describing the forces involved
- **Kinetic**  
Used to determine the forces involved in gait

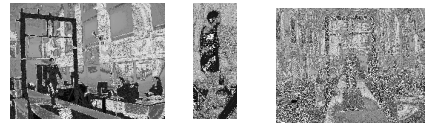
## Observational Gait Analysis (OGA)

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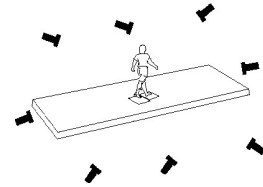
- Is the most commonly used clinical method of performing a **kinematic** qualitative analysis. Doesn't take much equipment
- Takes practice
- Videography is helpful
- Let's take a look at some examples of gait...

## Quantitative Gait Analysis

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Gait and Motion Analysis Laboratory  
UVA Physical Medicine and Rehab  
<http://www.healthsystem.virginia.edu/internet/pmr/GaitLab.cfm>



## Case studies

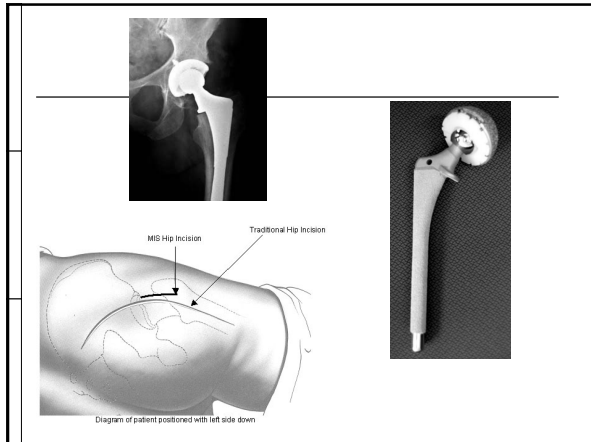
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- THR/TKA
- BKA (Below Knee Amputation)

## Total Hip Replacements (THR)

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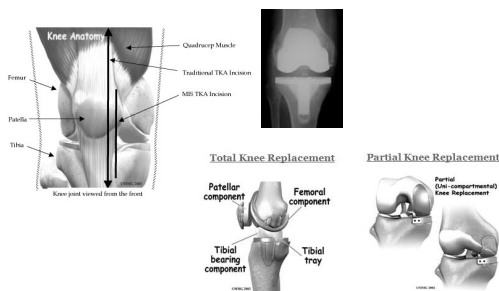
- Traditional hip replacement
- Minimally invasive hip surgery (MIHS)
- Most common reason for surgery?
- Hip precautions
  - Flexion greater than 90 deg
  - Hip adduction
  - Internal rotation
  - No twisting



## Exercises

- Isometrics and ankle movements
- Bridging
- Hip abduction
- TKEs
- Hip/knee flexion (heel slides)
- Ambulation goal 60-70 m on level surface, 1 flight of stairs

## Total Knee Replacements (TKR)



- Most common reason for surgery?
- Also have minimally invasive knee surgery
- Goal: 85 to 90 degrees of knee flexion
  - Isometrics and ankle exercises
  - Hip/knee flexion
  - SLR (with assist)
  - TKEs
  - Seated knee ext/flexion

## Other considerations


- Home set up
- Pre-op training?
- Ambulation goal: 60-70m with SBA using assistive device, up/down 1 flight of stairs

## Below knee amputation (BKA)

- Isometrics
- UE/LE strengthening
- Pronelying (2x/day)
- Gait progression

Next week:

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- ▣ Skill Check #2, on gait training.
- ▣ No quiz as you have your take-home finals!
- ▣ Don't forget, finals are due on Friday, August 1st at 5 pm! 
- ▣ Wrap-up and evaluation second half of class!

Have a great week!

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