

# Midterm Review

IPRO 309



**H**uman  
**O**rthotics and  
**P**rosthesis  
**E**ducation

# Orthosis vs. Prosthesis

What is an Orthosis?

*A device or support, especially for the foot, used to relieve or correct an orthopedic problem.*



What is a Prosthesis?

*A device, either external or implanted, that substitutes for or supplements a missing or defective part of the body.*



# Problem Statement

- ❖ 2.5 million people in Latin America are in need of orthotic and/or prosthetic care.
- ❖ In Colombia alone, over 250,000 people are waiting for treatment.
- ❖ Only 50 certified (10 in Colombia) and 1500 uncertified practitioners exist.
- ❖ Some patients are in need of orthotic and/or prosthetic care in lieu of painful, expensive, & permanent surgery.

# Mission

- ❖ Our goal is to provide educational information to support the Orthotic and Prosthetic (O&P) Technician Training Program at Centro don Bosco in Bogotá.
- ❖ Throughout this semester we will test the effectiveness of our educational modules by using them to fabricate an actual orthotic device.

# Team Roles

Name	Title	Subgroup
Claude Anthony	Work Schedule Specialist	UL
Mrigrank Bhatia	Web master	S
Manuel Castro	Translation Manager	S
Stephanie Fischer	Vocabulary Manager	UL
Caleb Hallgren	Public Relations	LL
Raymond Harris	IPRO Day Coordinator	UL
Cristine Kovacs	Ethical Compliance Coordinator	LL
Danielle Madere	Project Manager	S
Alexander "Vegas" Rial	Secretary	LL
Chris Salgado	Field Trip/Snack Coordinator	LL

**LL = Lower Limb**

**S = Spine**

**UL= Upper Limb**

# Objectives

## Group

- ❖ Development and production of several handouts and brochures for the purposes of orthotic education.
- ❖ Translation of these materials into Spanish.

# Objectives

## Subgroup

- ❖ To gain a cohesive understanding of different pathologies related to each created subgroup: Upper Limb (UL), Lower Limb (LL), and Spine (S).
- ❖ To create an orthosis/prosthesis for each subgroup using educational modules.
- ❖ To develop a PowerPoint presentation detailing an understanding of our mission.

# Lower Limb

## Blount's Disease

- ❖ Causes unknown
- ❖ Development of bone deformity in the lower body
  - Leads to bow legs
  - Worsens over time
- ❖ Treatment:
  - ❖ Knee-ankle-foot orthosis (KAFO)



**AFO**

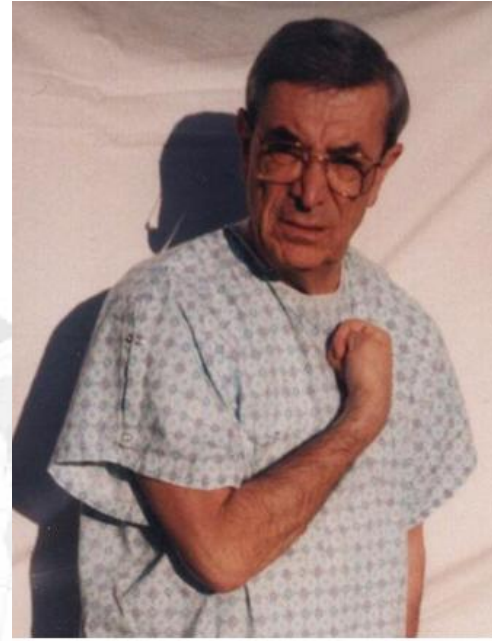




# Upper Limb

## Stroke

- ❖ Ischemic
  - Accounts for 85% of strokes
  - Caused by blocked arteries
- ❖ Hemorrhagic
  - Accounts for 15% of strokes and 30% of stroke deaths
  - Caused by popped blood vessels in the brain



# Treatment

❖ Orthotic devices are used to protect numb regions of body, stabilize the patient, and increase patient mobility.



**AFO**



**KAFO**

# Upper Limb

## Brachial Plexus Palsy

- ❖ Caused by damage to the brachial plexus
  - Birth injury to head and/or shoulders
  - Can lead to shoulder, elbow, wrist, and/or finger paralysis
- ❖ Treatment:
  - Surgery and/or a prosthetic or orthotic device, depending on the situation





**SEWHO**

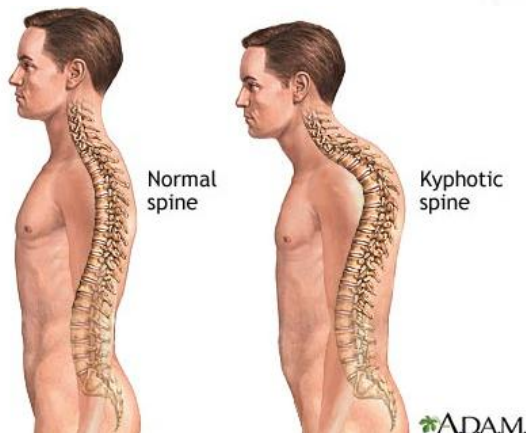


**EWO**

# Spine

## Vertebrae Compression Fracture

- ❖ Caused by loss of bone mass density (Osteoporosis)
  - Leads to Kyphosis
- ❖ Treatment:
  - Surgery and/or an orthosis to help reduce pain and strengthen back muscles





# Progress

- ❖ Achievement of 25% on PowerPoint Progress.
- ❖ The majority of planning, research, and conceptualizing is finished as of the current date.
- ❖ Groups have a detailed understanding of pathologies and terminology related to their subgroups as of the current date.
- ❖ A rough draft of the group logo and Team Charter finished as of 9/6.

# Progress

## ❖ Field Trips:

- \* 9/20/08: Alex & Danielle traveled to BioConcepts and fabricated an Ankle-Foot Orthosis (AFO).
- \* 10/4/08: Chris, Ray, & Cristina made a separate trip to BioConcepts for an individual and extended understanding of the orthosis process.
- \* 10/8/08: Professor Meade, Chris, Caleb, Ray, Mrigank, & Claude traveled to the Rehabilitation Institute of Chicago (RIC) for an in-depth tour of one of the nation's most decorated and qualified rehabilitation clinics that consults patients and fabricates orthoses and prosthetics.

# Challenges

## ❖ Attendance

- ❖ Approximately a 17% absence rate.
- ❖ Call someone if you are going to be late/absent.
- ❖ If a teammate does not show up, they must give a 5-10 minute presentation.
- ❖ If they do not do that, points will be deducted from their final grade.

## ❖ Time Management

- ❖ Have someone in charge of deadlines.
- ❖ Sticking to a schedule.
- ❖ Team accountability and keeping on top of upcoming deadlines.
- ❖ Keeping up with the work.

## ❖ Teamwork

- ❖ Communication in class.
- ❖ More team meetings.
- ❖ Do activities as a group instead of individually.

## ❖ Scheduling Field Trips

- ❖ Arrange multiple trips.





# Anticipated Obstacles

## ❖ Translation

- Have translators and allow for adequate time to translate.

## ❖ Schedule

- Meet deadlines!

## ❖ Funding

- Orthosis are expensive to replicate.



# Resources

- [Orthoinfo.aaos.org/topic.cfm?topic=a00230](http://Orthoinfo.aaos.org/topic.cfm?topic=a00230)
- [www.nlm.nih.gov/medlineplus/energy/imagepages/9212.htm](http://www.nlm.nih.gov/medlineplus/energy/imagepages/9212.htm)
- [www.jbppni.com/content/1/1/3figure/f1?highres=y](http://www.jbppni.com/content/1/1/3figure/f1?highres=y)
- [Orthoinfo.aaos.org/topic.cfm?topic=a00077](http://Orthoinfo.aaos.org/topic.cfm?topic=a00077)
- [www.nlm.nih.gov/medlineplus/energy/imagepages/9499.htm](http://www.nlm.nih.gov/medlineplus/energy/imagepages/9499.htm)
- [Ortho-frcy.tripod.com/id2.html](http://Ortho-frcy.tripod.com/id2.html)
- [www.ottobucles.com/prodects/shelf.orthotics/lower\\_extremity](http://www.ottobucles.com/prodects/shelf.orthotics/lower_extremity)
- [www.neuromuscular-orthotics.com.au](http://www.neuromuscular-orthotics.com.au)

## Questions?

