

Norell Prosthetics Orthotics

ENGR 110/220
PERSPECTIVES IN ASSISTIVE
TECHNOLOGY

STUDENT PROJECT SUGGESTIONS
BY: MIKE NORELL

ABOUT MYSELF:

- ✘ Military medical background
- ✘ California educated
- ✘ Medical missions overseas
- ✘ President of Norell Prosthetics Orthotics

ABOUT PROJECT IDEAS

- ✘ **S**implicity–easily used
- ✘ **I**nexpensive– low cost
- ✘ **M**arketability– is it worth it?
- ✘ **P**ractical– would it be used?
- ✘ **L**iability– safety first
- ✘ **E**ngineering– to further improve or advance project

SHOWERING AID FOR AMPUTEES

- ✘ **Problem:** Amputees have difficulty transferring from the bathroom to the shower or bathtub.
- ✘ **Need:** A hands-free waterproof device that can be easily taken in and out of the shower/bathtub and provides the patient with support and stability.



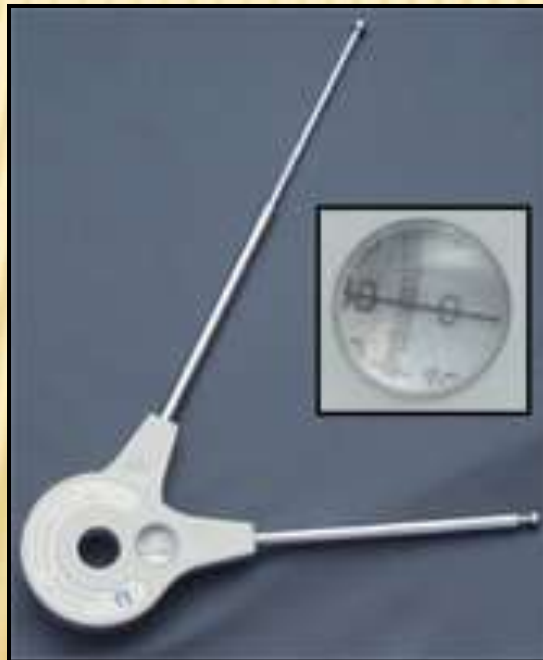
AID FOR DONNING COMPRESSION STOCKINGS

- ✘ **Problem:** Patients have trouble putting on compression stockings.
- ✘ **Need:** An aid that will help disabled patients roll on a stocking.



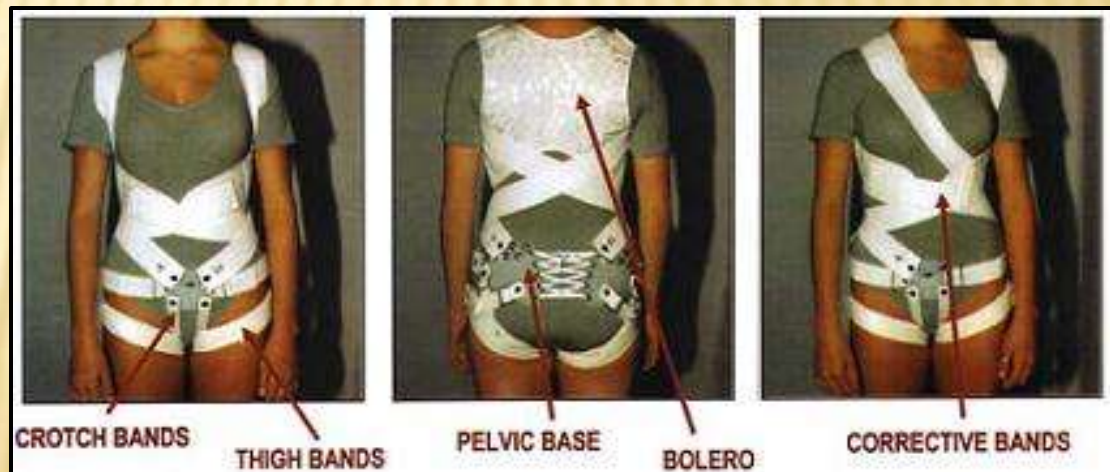
IMPROVED GONIOMETER

- ✘ **Problem:** Current goniometers are not precise enough.
- ✘ **Need:** A digital goniometer that can measure angles on a patient and ranges of motion.



IMPROVED THREE-POINT PRESSURE BRACE

- ✘ **Problem:** Three-point pressure bracing in orthotics is bulky and cumbersome.
- ✘ **Need:** An simple knee brace or ankle-foot brace that incorporates adjustability medially and laterally.



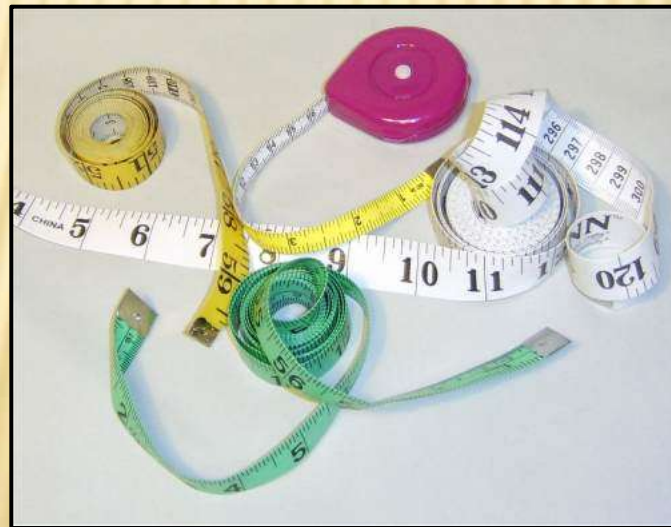
IMPROVED PROSTHETIC PYRAMID SYSTEM

- ✘ **Problem:** Current adapters are too long for prosthetic patient needs.
- ✘ **Need:** Design shorter adapters between the foot and the prosthetic socket to get a longer foot onto the prosthetic patient.



RECORDING TAPE MEASURE

- ✘ **Problem:** Current flexible tape measurements are not very accurate when doing multiple measurements.
- ✘ **Need:** Design a flexible, digital or voice activated tape measure with a built in memory that can convert from cm to inches.



WEIGHT DISTRIBUTION MONITOR

- ✘ **Problem:** Not knowing when equal weight is being transferred from one leg to another.
- ✘ **Need:** Design a balance with scale properties to enable therapists and rehab professionals to be able to evaluate equal weight distribution in patients gait more accurately.



SHOCK ABSORBING BRACE

- ✘ **Problem:** Polio patients need braces that go into their groin because of the lever that is needed.
- ✘ **Need:** A mechanism (spring or dampener) that will decelerate return pressure after contact with the floor to minimize pressure.



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