PROSTHETIC KNEE FOR BURKINA FASO

School of Science, Engineering and Health Symposium

Kaleb Burch, Vaughn Chambers, Ashley Hah, Marissa Kuhns, Joey Twaddell

Introduction & Problem Statement

- There are many amputees in Burkina Faso because of disease, malnutrition, natural disasters, and war
- Amputees cannot provide for themselves
- Terminated supply of donated prosthetic knees created a need for a locally manufacturable prosthetic knee
- Challenges
  - Lack of materials
  - Not enough highly-trained prosthetists
  - Need to tailor prosthetics to cultural factors
- As a result from our recent site team trip to Burkina Faso, we learned that our client wants a locking mechanism to be able to switch between a static (non-bending) and dynamic (bending) knee.

Approach

- Prototyping: 3D printed Solidworks model and manufactured steel prototype.
- Feedback: Communication with partners and clients in Burkina as well as discussions with Dr. Shoemaker.

Conclusion

Currently, we are fine tuning our first prototype design. We are going to make modifications to our current design based off the feedback that Vaughn gets from his trip to Mahadaga in May. Looking forward, our future goals are:

- Further our relationship with the Handicapped Center
- Implement knee design in Mahadaga
- Work with staff at the Handicapped Center to encourage use of prosthetics with positive effects on health
- Work with technicians to install knee properly

Testing

- Methodology:
  - Subject placed knee in socket
  - Pipe clamps and ace bandages used to secure the socket to the knee
  - Used tables for support instead of parallel bars

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