Current methods of taking impressions for orthotic devices include plaster bandage, fiberglass, and laser-optical scanner. This poster presents an alternative impression and fabrication technique for foot orthoses, ankle-foot orthoses, knee-ankle-foot orthoses, and thoracolumbar-sacral orthoses that utilizes the dilatancy principle (vacuum packing) initially investigated in the 1940’s by WJ Mead.

To date, the foot orthosis and the ankle-foot orthosis systems have been tested on both able-bodied subjects and subjects with impairment. The knee-ankle-foot orthosis and the thoracolumbar-sacral orthosis systems are under development.

### Objective
To create a potentially better, cheaper, faster, and greener approach for cost-effective services in both developing and developed countries.

### Methods
This development project consists of 3 stages:
- Pre-clinical tests using a plaster model
- Test a minimum of 3 able-bodied subjects
- Test a minimum of 3 subjects with impairment

Each stage follows these steps:
- Take impression (negative mold)
- Convert impression to positive sand model
- Measure positive sand model to confirm accuracy

On subjects, additional steps are:
- Apply reliefs to positive sand model
- Fabricate orthosis
- Fit device to subject
- Ask subject to rate comfort of
  - The impression process
  - The fabricated orthosis

Researchers evaluate and modify system based on observations and subject feedback.

### References

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