Evaluation of Simulated Limb in Teaching Transtibial Prosthetics
THE SIM LIMBS

15 were built with a replica internal plastic skeletal structure.

- Femoral Condyles
- Tibia,
- Fibula Head
- Fibula Shaft
- Patella.
- Pseudo Patella Ligaments
- Pseudo Hamstrings
- Knee Flexion/Extension

Has tough, waterproof silicone foam soft tissues and a replaceable silicone outer skin
THE SIM LIMBS

Used in the Transtibial teaching program:-

- To teach palpation of skeletal and soft tissue structures
- To teach hand plaster casting techniques
- To teach ICECAST Anatomy plaster casting techniques
THE SIM LIMBS

Preliminary Results
To evaluate SIM LIMB use, 33 Student’s first SIM LIMB casts were compared to prosthetic Expert’s plaster casts.

After casts were digitised, linear and circumferential measurements were compared.

Findings

Students
Student’s casts had a mean 1.5% difference in length
Student’s casts had <2% difference in circumference

Clinicians
Expert’s casts had <1% difference in length
Expert’s casts had < 2% difference in circumference

Student’s casts compared to Clinician’s casts
Student’s casts were <1% different to Expert’s casts in overall measurements.

SIMILAR STUDIES
Saunders et.al. (2007) used 3 CAD CAM sockets & had manufacturing variability of ± 1.1%
Garry et.al. (2008) used Tracer CAD and had an A/P variability of 107-113mm
Convery et.al. (2003) compared 2 clinicians cast modifications and found variability of > 2.0 mm
Each of these studies used either CAD CAM generated or rigid plaster casts for their models
Overall MEAN cast A/P differences between Students and Experts = 0.5%
Students 95-112mm (± 8.5 mm) had greater variability than Experts 100-108mm (± 4.0 mm).
Overall MEAN cast circumferential differences between Students and Experts was 0.31% and for Linear Means = 1%

Students MPT Circ 321-334mm (+ 6.5 mm) variability was greater than Experts 324-334mm (+ 5.0 mm).
SIMULATED LIMB REFERENCES

Bokken, Lonneke et.al. (2010) *Instructiveness of Real Patients and Simulated Patients in Undergraduate Medical Education: A Randomized Experiment.* Academic Medicine, V. 85;1, 148-154

Commercial Simulated Limbs:- [http://www.simulation.com/?gclid=CNzB66iBiqwCFSZNpgodbDoWnA](http://www.simulation.com/?gclid=CNzB66iBiqwCFSZNpgodbDoWnA)


Debra Nestel et.al. (2011) *Key challenges in simulated patient programs: An international comparative case study.* BMC Medical Education, 11:69


