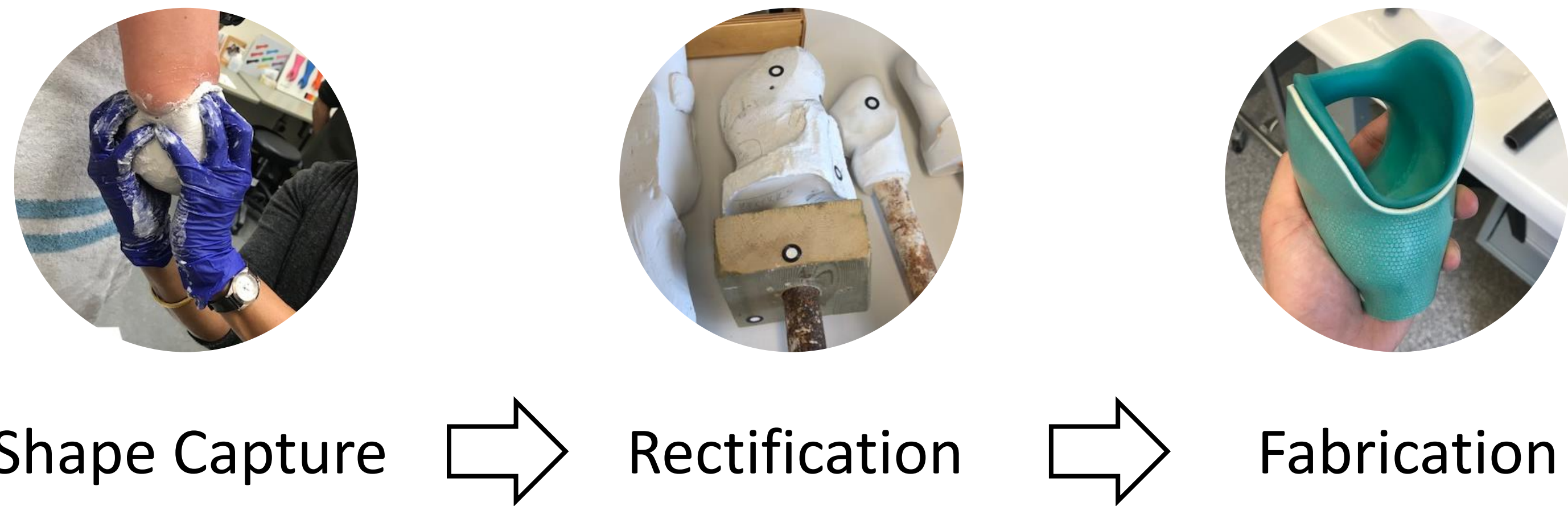


Challenges, Facilitators and Opportunities Associated with the Implementation of Digital Workflows in Orthotic & Prosthetic Practice: Practitioner Perspectives

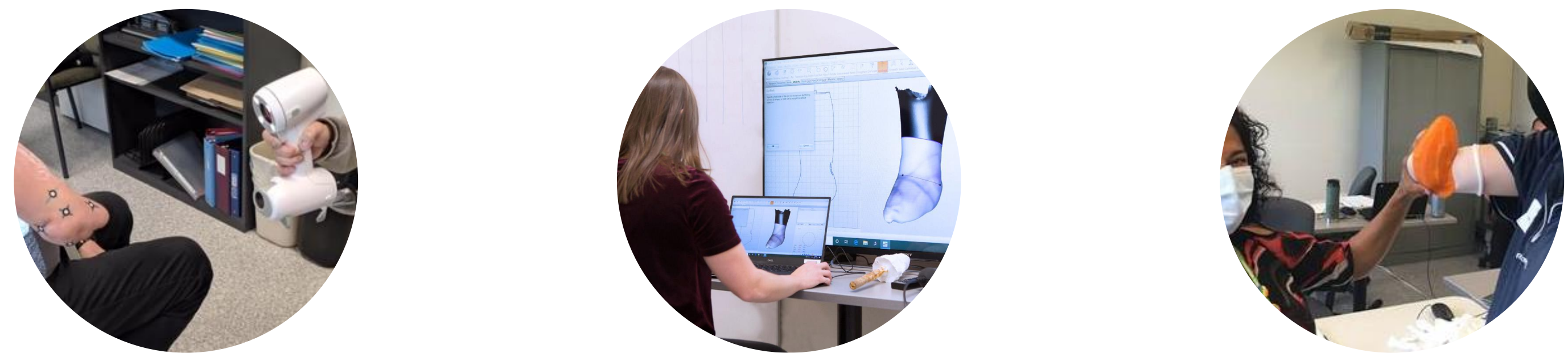
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Background

Conventional Workflow



Digital Workflow



Production of orthotic and prosthetic (O&P) devices have traditionally been a manual, labour-intensive process. And since the early 1980's saw the emergence of digital technology (DT) based workflow, but its adoption in O&P has been slow.

Reasons for slow implementation of digital workflows from previous survey studies

Technical challenges

Limited empirical evidence

Prohibitive costs

But despite these shortcomings, **the perception of DT remains positive, and most believe that these tools will play a major role in the future of practice based on reporting published by Orthotics and Prosthetics Canada.**

Gap

- A clear disconnect between the perception of Digital Technology (DT) in O&P and the current state of penetration in the field
- Need to go beyond survey studies to understand specific barriers and facilitators with fuller, richer information

Aim

This study aimed to identify the challenges and facilitators affecting the implementation of digital technology in O&P by interviewing O&P professionals and to provide recommendations for facilitating the wide adoption of digital technology in the industry.

Method

- Participants were recruited globally through O&P specific professional organizations and met the following inclusion criteria:
 - English-speaking individuals
 - Have experience using or investigating DT toward O&P applications
- Recruitment stopped when informational saturation was achieved
- All interviews were audio recorded and transcribed verbatim
- Inductive thematic analysis was then performed on the transcribed data following the steps outlined by Braun and Clarke to analyze and identify themes

Semi-structured interviews

Recorded & Transcribed

Developed codebook

Code all transcripts

Identify themes

Results and Discussion

Participant Characteristics

- 10 participants
 - Either certified prosthetist and/or orthotist
 - On average: 16.5 years practicing in O&P; 8.1 years of using DT
 - Practicing across four different continents

Key Themes Identified

Theme 1

Continuing **technological advancement** and generation of **scientific evidence** can help to improve current state of DT utilization.

E.g. Rectification Software

E.g. 3D Printing Technology

Challenge: Absence of tactile feedback/physical manipulation

Challenge: Skepticism around its material strength

Recommendations:

- Develop "smart" on-screen socket rectification program
- Incorporate haptic feedback

Recommendations:

- Scientific evidence are much needed to validate its application in O&P

Theme 2

Marketplace, economic, and operational factors should be considered and addressed in the implementation of DT workflows.

E.g. Healthcare Institutions and Vendors

Challenge: Economic barriers faced by healthcare institutions

Recommendations:

- Mutually economical beneficial relationship between healthcare institutions and vendors
- Vendors recognize the practices of healthcare institutions vary drastically
 - client population, funding availability, and client load
- Uptake of DT within healthcare institutions will increase the marketplace for DT solutions, allowing vendors to develop and offer better solutions

Theme 3

O&P needs to embrace DT as part of the future and shift their **mindset within the industry towards a digital based practice.**

E.g. Institutional Support

E.g. Education and Training Centers

Recommendations:

- Shift of organizational priorities
- Adopt a new Digital Technology Specialist role
 - Technical knowledge of DT
 - Clinical background

Recommendations:

- Accredited O&P programs need to further incorporate DT within curriculum offerings

Final Note

The uptake of digital workflows is not meant to replace traditional practice DT should be perceived as a complementary tool for practitioners to utilize. Technical aspects of DT must continue to improve and develop to meet the needs of practitioners and patients, while practitioners that embrace DT can help in the evolution of DT by providing feedback and stating their needs.