



Trevor Binedell

Principal Prosthetist/Orthotist, Prosthetics and Orthotics
Department, Tan Tock Seng Hospital

Research Interests:

- Prosthetics and Orthotics
- 3D printing and digital technology
- Design and innovation

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Biography

Trevor has been a pioneering figure and influence in Singapore in the area of prosthetics and orthotics for more than 18 years. He began his career in Australia, graduating with a Bachelor of Prosthetics and Orthotics, La Trobe University, Melbourne in 2000, before coming to Singapore in 2004. He was awarded the Healthcare Manpower and Development Planning award (HMDP) in 2013 to pursue his Master of Science in Prosthetic Rehabilitation, University of Strathclyde, Scotland. Trevor has also completed his PhD with the Singapore University of Technology and Design – Engineering Product Development (SUTD) researching topics with sensors, materials and 3D technology to improve prosthetic socket comfort. His 3D printing interests have seen many successful collaborations with industry partners and educational institutes to design and innovate patient specific solutions. He has received multiple research grants from funding bodies such as NAMIC, Ng Teng Fong, CAPE and CMTI-NHIC. He was the inaugural President of the International Society of Prosthetics and Orthotics– Singapore chapter, which was established in 2019 and was previously Chairperson for the profession with Ministry of Health until 2020.

Selected Publications

- Binedell, T., Meng, E., & Subburaj, K. (2020). Design and development of a novel 3D-printed non-metallic self-locking prosthetic arm for a forequarter amputation. *Prosthetics and orthotics international*, 0309364620948290.
- Binedell, T., Subburaj, K., Wong, Y., & Blessing, L. T. (2020). Leveraging digital technology to overcome barriers in the prosthetic and orthotic industry: Evaluation of its applicability and use during the COVID-19 pandemic. *JMIR Rehabilitation and Assistive Technologies*, 7(2), e23827

- Binedell T, Subburaj K. Design for Additive Manufacturing of Prosthetic and Orthotic Devices. In: Subburaj K, Sandhu K, Ćuković S, editors. *Revolutions in Product Design for Healthcare: Advances in Product Design and Design Methods for Healthcare* [Internet]. Singapore: Springer Singapore; 2022. p. 75–99. Available from: https://doi.org/10.1007/978-981-16-9455-4_5
- Binedell, T., Ghazali, M. F. B., Wong, C., Subburaj, K., & Blessing, L. (2022). Measuring Discomfort—An objective method for quantifying peak pressure discomfort and improved fit in transtibial amputees. *PM&R*.
- Binedell, T., & Subburaj, K. (2022). Design for Additive Manufacturing of Prosthetic and Orthotic Devices. In *Revolutions in Product Design for Healthcare: Advances in Product Design and Design Methods for Healthcare* (pp. 75-99). Singapore: Springer Singapore.
- Binedell, T., Gupta, U., Sithanathan, B., Subburaj, K., & Blessing, L. (2023). Mapping lines of non-extension in persons with lower limb amputation to aid comfort-driven prosthetic socket design. *Medical Engineering & Physics*, 118, 104018.

Notable Research Awards & Grants

Name of Awards & Grants	Year Obtained
National Healthcare Innovation & Productivity Medals (NHIP)	2019
NAMIC for development of a novel forequarter, locking, non-metallic 3D printed arm prosthesis	2019
Ng Teck Fong Healthcare Innovation Grant Quantifying wound threshold pressures in Transtibial Amputees	-
Ng Teck Fong Healthcare Innovation Grant Protective headgear development proof of concept following craniotomies.	-
Centre for Allied health and Pharmacy Excellence Grant Development of protective headgear following craniotomies – Clinical trial	-
Ng Teck Fong Healthcare Innovation Programme Development of sweat reducing prosthetic liners.	-
CMTi-NHIC joint Medtech Grant Development of a 3D knitted prosthetic socket and liner	-

Translating Research Into Healthcare

- Channel 8, 4 Nov 2020, Tan Tock Seng Hospital and SUTD collaborate to 3D-print more comfortable and flexible prostheses

<https://www.8world.com/news/singapore/article/ttsh-sutd-3d-prosthesis-1300991>