EDITH COWAN UNIVERSITY

PROJECT DETAILS

Project Title:

Exploring intact limb knee joint loading in below-knee unilateral prosthesis users

Project Summary:

It is well established that unilateral prosthesis users are at inflated risk of developing osteoarthritis in their intact limb knee joint relative to the general population. However, interventions to improve outcomes have mostly focused on the functionality of the prosthesis. The overarching objective of this work is to explore preventative strategies for knee joint load regulation in unilateral below-knee prosthesis users across a series of three experimental studies. First, we will investigate whether knee joint loading behaviours differ between individuals with congenital vs. acquired limb loss, to determine whether individuals who grow up in prosthetic technology develop protective strategies for improving musculoskeletal health outcomes. Second, we will evaluate the acute effect of a knee joint loading intervention on individuals with unilateral lower limb loss. The third study will then evaluate gait retraining protocols and opportunities for intervention in rehabilitation settings following acquired limb loss.

Preferred Applicant Skillset:

The applicant should possess skills in:

i) Human participant data collections (ideally but not limited to the assessment of individuals with prostheses/disability),
ii) 3D motion capture,
iii) Data processing and analysis (ideally via OpenSim and MATLAB or Python), and
iv) Electromyography.

Primary Contact:

Kirsty McDonald

kirsty.mcdonald@ecu.edu.au

+61 8 6304 3796