EVALUATING THE ADAPTATION OF THE AMPUTEE SKIN DUE TO PROSTHESIS USE

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1. The Problem
63% of people with lower limb loss report having one or more skin injuries¹, resulting in device abandonment¹, a decrease in social inclusion² and a decline in mental health³.

2. What did we do?
Using Raman spectroscopy and physical characterisation we assessed amputee skin and compared this to healthy skin aimed at reducing skin injury rates.

3. What did we find?
1. I identified that skin characteristics show strong change to prosthetic use, whilst others do not.
2. Hydration levels and skin thickness are very similar.
3. Stump skin is much softer and is also less slippery.

4. The Impact
My current results highlight a need for a new approach to prevent skin injury. Plantar Reprogramming will improve the resilience of amputee skin, facilitating rehabilitation and improving quality of life and reducing cost to the NHS.

5. The Next Steps
• Continue testing skin resilience, linking mechanics and biology across the scales
• Test the validity of tissue engineering to increase resilience of skin using plantar reprogramming
• Scale-up therapy towards a small clinical trial.