# Project Information

This dataset contains kinematic and kinetic motion capture data collected on post-operative total hip replacement patients. The work was undertaken for an EU framework seven grant called lifelong joints (<https://lifelongjoints.eu/>) it formed the patient specific motion data used for work packages 2 and 3 as detailed below-

* **WP2: In vitro simulation and biological assessment of wear in silicon nitride coatings**
* **WP3: Computational modelling and simulation of hip joint mechanics and wear**

We recruited 150 post op total hip replacement patients to undertake 7 activities of daily living whilst being measured using motion capture analysis (Lunn, Chapman et al.) In collaboration with Professor Stephen Fergusons group at ETH Zurich and specifically Enrico de Pieri, we then subsequently used the AnyBody Multibody model to analyse the hip contact force in all patients (n=132) for all trials (n=2000) (De Pieri, Lunn et al.) (Lunn, De Pieri et al.) This data was then used for in silico and in vitro pre clinical testing.

De Pieri, E., D. E. Lunn, G. J. Chapman, K. P. Rasmussen, S. J. Ferguson and A. C. Redmond (2019). "Patient Characteristics Affect Hip Contact Forces during Gait." Osteoarthritis and Cartilage.

Lunn, D. E., G. J. Chapman and A. C. Redmond (2019). "Hip kinematics and kinetics in total hip replacement patients stratified by age and functional capacity." Journal of Biomechanics.

Lunn, D. E., E. De Pieri, G. J. Chapman, M. E. Lund, A. C. Redmond and S. J. Ferguson (2019). "Current Preclinical Testing of New Hip Arthroplasty Technologies Does Not Reflect Real-World Loadings: Capturing Patient-Specific and Activity-Related Variation in Hip Contact Forces." The Journal of Arthroplasty.

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