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*“Muscle Functional Characteristics After Femoroacetabular Impingement Syndrome Surgery”*

Femoroacetabular impingement syndrome (FAIS; or simply hip impingement) is characterized by bony abnormalities that restrict hip mobility, elevate joint stresses, and result in early osteoarthritis. However, as our core and hip muscles are responsible for providing balance, support, and mobility for much of our body’s centre of mass, there are additional factors to the bony hip abnormalities that contribute to FAIS. The goal is to characterize muscle structure and function in individuals with FAIS. A group of FAIS patients and healthy participants will be imaged using a magnetic resonance imaging (MRI) scanner to look at their bones and muscles; and muscle activity will also be captured during various strength assessment tasks. The muscle characteristics from the scans and strength assessments will be compared between FAIS patients and healthy individuals without impingement, as well as FAIS patients before and after surgery (at 1-year follow-up). These links between structure and function will be closely examined to show how core and hip muscles differ and impact the diseased joints. As treatment options for early osteoarthritis are very limited, this research addresses ongoing concerns in pathological hip anatomy, suboptimal musculoskeletal function, and surgical management. The research will shift the overall diagnosis, treatment, and prevention paradigm by focusing on additional anatomical biomarkers and personalized management.