

**Dr. Paul E. Beaulé**

*“Understanding the Etiology and Cause of Osteoarthritis of the Hip: A multi-disciplinary approach”*

Dr. Beaulé and a multi-disciplinary team of basic science researchers looking at gait analysis, as well as bone and cartilage imaging, have furthered our understanding of how a deformity of the femur’s head-neck junction (i.e. cam type femoroacetabular impingement) is a known cause of hip as well as major cause of hip osteoarthritis. This problem usually develops during late adolescence when bones are maturing and could be caused by too much sporting activity at a young age. These deformities cause localized stress and bone remodelling that increases friction between the bone and cartilage, eventually resulting in cartilage failure. The relationship between cam-type FAI deformity characteristics and joint degradation to better identify 'at-risk' patients requiring corrective surgery was scrutinized to gain a better understanding of the condition's natural history. The influence of certain morphologies (e.g. size and location of the deformity) were analyzed to determine and found to lead to aberrant loading of regions of the cartilage and subchondral bone, resulting in cartilage damage and joint degradation. Additionally, this research has shown that changes subchondral bone could be preceding cartilage degeneration. Understanding this means that early joint preservation techniques could delay or even avoid the onset of this painful condition and the eventual need for hip replacements, potentially reducing the health-care costs by hundreds of millions of dollars a year.