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"Multi-directional Pieces to the Osteoarthritis Puzzle"

Abstract:

The polyarticular nature of Osteoarthritis (OA) tends to manifest in multi-joints. Intra-joint and inter-joint cartilage health degeneration associations are understudied. The possibility of mechanically connected joints and joint components being vulnerable to OA propagation remains even more crucial from a prevention point of view. In this talk, we explore some of the technical study designs and findings to understand whether the characterization of hip cartilage degeneration might be linked to the contralateral and ipsilateral patellofemoral joint utilizing Deep-learning-enabled tools. We also analyze how morphological degenerations on patellofemoral bones and cartilages are related to metabolic and compositional PET-MRI changes, and whether those relationship(s) are driven by bodily mechanical loading and gait patterns, especially in patients having isolated patellofemoral OA. Additionally, in recent years, low-field (0.55T) MRI scanners have experienced a renaissance with novel technical developments ensuring high-quality image acquisition. Still in its early days, quantitative biomarker estimation and associated reliability have not been explored in-depth for the musculoskeletal system, particularly for knee OA. Finally, therefore, we talk about our recent experiences in translating some of the discussed tools and techniques of musculoskeletal biomarker estimation in the field of Low-field MRI (0.55T).