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Delayed Gadolinium Enhanced Relaxation Mapping of Osteoarthritis with Magnetic Resonance Fingerprinting

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Mapping of quantitative MRI relaxation values is promising for improving the assessment of musculoskeletal disease. Magnetic Resonance Fingerprinting (MRF) is a new method that enables fast quantitative MRI by exploiting the transient signals caused by the variation of pseudorandom sequence parameters.

This proof-of-concept work demonstrates the utility of MR Fingerprinting in the knee. Seven participants, four of which had knee osteoarthritis (Kellgren-Lawrence (KL) grade 2 or 3), were imaged approximately 80 minutes after gadolinium injection with MRF on a 3.0T MRI. The mean T1 relaxation times were shorter by 5-20% in the KL=2,3 subjects when compared to normal subjects in cartilage.

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