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PhD obtained, 2015

Currently, the assessment of synovitis with Magnetic Resonance Imaging (MRI) requires intravenous contrast, which is associated with discomfort, cost and potential patient complications. In order to reduce these risks, the aim of this study is to develop and validate MRI in patients with arthritis using novel MRI scans that do not require intravenous administration of contrast agents. Utilising the Leeds patient and imaging infrastructure, I will:

- (i) develop novel MRI sequences to image the presence and extent of synovitis;
- (ii) refine and assess these novel MRI techniques;
- (iii) validate the techniques against the gold standard of MRI using intravenous contrast; and
- (iv) explore the feasibility and utility of the techniques for assessing the effect of biologic therapy.

In doing this, I will develop a validated MRI protocol that will be sensitive and specific for assessing synovitis without the need for intravenous administration of contrast agents.

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