

PhD Project Description

School/Department:	Department of Radiology & Nuclear Medicine, Erasmus MC ADvanced Musculoskeletal Imaging Research Erasmus MC (ADMIRE)
Supervisor information:	<ul style="list-style-type: none"> • Associate Professor Edwin H.G. Oei, MD, PhD • Email: e.oei@erasmusmc.nl • Website: www.admire-group.com • Personal Grants: <ul style="list-style-type: none"> - Dutch Research Council (NWO) - GE Healthcare / National Basketball Association (NBA) Patellar Tendinopathy CFP 2016 - Radiological Society of North America (RSNA) 2014 • Most important publications: <ul style="list-style-type: none"> Breda et al. J Magn Reson Imaging. 2020 Aug;52(2):420-430 De Vries et al. Semin Arthritis Rheum. 2020 Apr;50(2):177-182 Eijgenraam et al. Eur Radiol. 2019 Oct;29(10):5664-5672 Verschueren et al. Osteoarthritis Cartilage. 2017 Sep;25(9):1484-1487 Van Tiel et al., Radiology. 2016 May;279(2):523-31. Van der Heijden et al. Am J Sports Med. 2016 May;44(5):1172-8
Project Title:	Analysis of advanced musculoskeletal magnetic resonance imaging (MRI) data from clinical and population-based studies.
Abstract:	<p>The ADMIRE group's research focuses on imaging of common musculoskeletal diseases such as osteoarthritis, osteoporosis, and sports injuries, with advanced imaging techniques. We develop, improve, and validate innovative MRI, CT, ultrasound methods with the aim to identify new sensitive imaging biomarkers for pathological tissue processes and structural and compositional changes in tissues such as cartilage, bone, meniscus and tendon. We apply our novel imaging techniques in various clinical studies in collaboration with clinical departments. Another important research focus is on musculoskeletal population imaging, in which we apply MRI in the large-scale population based Rotterdam Study among elderly and the Generation R cohort among children and adolescents to study and epidemiology, genetics, and development of musculoskeletal diseases and body composition. The aim of this project will be to analyze existing, readily available, but unexplored quantitative MRI datasets acquired in clinical and population cohorts. The exact focus of the project and datasets to be utilized, will be defined at a later stage depending on the candidate's expertise and preference, but may as an example the assessment of bone, cartilage and meniscus quality on MRI from clinical osteoporosis and osteoarthritis studies, and correlation with symptoms or clinical outcomes. In the population imaging studies, an example would be the analysis of knee or hip MRI scans in the Generation R study, and correlation with risk factors and genetics. The project would typically entail the reading, annotation and quantitative biomarker extraction from acquired MRI datasets and correlating these with clinical and/or epidemiological data. According to the PhD student's profile and preference, the level of technical or analytical (MR physics, MRI analysis, deep learning) versus clinical focus will be defined.</p>
Requirements of candidate:	<ul style="list-style-type: none"> • This project requires a highly motivated, hardworking candidate with good communication skills and an affinity with medical imaging and musculoskeletal disease. Given the flexibility in topic and clinical versus technical focus, we encourage candidates with various backgrounds including medical and technical (e.g. biomedical engineering, physics or bioinformatics) to apply. • Master degree or MD • Scholarship that will, at least, cover subsistence allowance and international air plane ticket (we could help with the scientific part of your scholarship proposal) • English language requirement: • <i>English speaking countries & Netherlands:</i> no requirement • <i>Other countries:</i> IELTS 7.0 (<i>min 6.0 for all subs</i>), TOEFL 100 (<i>min 20 for all subs</i>)

Application requirements & Deadlines:

<https://www.eur.nl/en/about-eur/erasmus-university-china-centre/csc-scholarship>

Erasmus MC, ranked world

* No.32 for Clinical Medicine US News 2020:

<https://www.usnews.com/education/best-global-universities/clinical-medicine?page=3>

* No. 30 Nature Index for Biomedical Sciences 2019:

<https://www.natureindex.com/supplements/nature-index-2019-biomedical-sciences/tables/healthcare>

Erasmus MC, ranked world no. 32 for [Clinical Medicine US News 2020](#) no. 30 [Nature Index for Biomedical Sciences 2019](#)

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