

Valentina Mazzoli, PhD

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Stanford University
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EDUCATION

Stanford University

Stanford, CA, USA
Postdoctoral Fellow in Radiology

2018 - present

Eindhoven University of Technology

Eindhoven, Netherlands
Doctor of Philosophy in Biomedical Engineering

2013 - 2017

Eindhoven University of Technology

Eindhoven, Netherlands
Master of Science in Applied Physics
Specialization: Physics of Transport in Fluids

2011 - 2013

Alma Mater Studiorum University of Bologna

Bologna, Italy
Bachelor of Science in Physics

2007 - 2010

RESEARCH EXPERIENCE

Postdoctoral Fellow

Stanford University

Department of Radiology, Stanford University, Stanford, CA, USA
Adviser: *Prof Garry Gold*
Co-Adviser: *Prof Brian Hargreaves*

Feb 2018 – present

PhD

Thesis Title: *“Functional MRI of the lower extremities”*

Nov 2013 – Dec 2017

Eindhoven University of Technology

Biomedical NMR, Department of Biomedical Engineering,
Eindhoven University of Technology, Eindhoven, Netherlands
Adviser: *Prof Klaas Nicolay* (+)

Radboud University Medical Center

Orthopaedic Research Laboratory, Nijmegen, Netherlands
Adviser: *Prof Nico Verdonschot*

Academic Medical Center Amsterdam

Department of Radiology, Academic Medical Center, Amsterdam, Netherlands
Adviser: *Prof Aart J. Nederveen* and *Prof Gustav J. Strijkers*

Master of Science

Aug 2011 – Oct 2013

Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands
Graduation project in the Biomedical NMR group of Prof. *Klaas Nicolay* and Prof. *Gustav J. Strijkers*.
Thesis title: "Ex vivo Diffusion MRI of the Porcine Heart"

Bachelor of Science

Sep 2007 – Dec 2010

Physics, Alma Mater Studiorum University of Bologna, Bologna, Italy

TEACHING/MENTORING EXPERIENCE

Department of Biomedical Engineering, Eindhoven University of Technology

2014-2015

Teaching assistant for the 1st year Magnetic Resonance Imaging course.
Led discussion and laboratory sessions. Designed laboratory demonstrations to illustrate MRI physics concepts explained during the course.

Department of Radiology, Academic Medical Center, Amsterdam

2015-2016

Co-organizer and teacher for "*MR physics for clinicians*", a series of lectures aimed at explaining MR physics and advanced MRI techniques to radiologists and clinical researchers working with MRI.

Department of Radiology, Stanford University

2018-present

Daily supervision of Elka Rubin, winner of the SABR Resonant Innovation Award for the most innovative oral presentation at the Annual Meeting of the Society for Advanced Body Imaging (2019), and winner of the SABR 2020 Young Investigator Award

Department of Radiology, Stanford University

2019-present

Daily supervision of Hollis Crowder, PhD candidate, and Halston Sandford, undergrad

HONORS/ACTIVITIES

Magna cum Laude at ISMRM, awarded to the top 15% abstracts in each review category

2019

Summa cum Laude at ISMRM, awarded to the top 5% abstracts in each review category

2017

Distinguished Reviewer Journal of Magnetic Resonance Imaging

2017

Educational Stipend at ISMRM

2014, 2015, and 2016

Junior Fellow of ISMRM (awarded to young promising researchers in the field of MR)

2020

Trainee Representative Musculoskeletal study group ISMRM (elected)

2020

Journal reviewer:

- Journal of Magnetic Resonance Imaging
- Magnetic Resonance in Medicine
- Magnetic Resonance Materials in Physics, Biology and Medicine
- NMR in Biomedicine
- Investigative Radiology
- Concepts in Magnetic Resonance Part B
- Journal of Orthopaedic Research
- Quantitative Imaging in Medicine and Surgery
- Osteoarthritis and Cartilage
- Scientific Reports

Conference reviewer:

- ISMRM Benelux 2018
- ISMRM 2019 – ISMRM 2020

Grant reviewer:

- ANR (French National Agency for Research)

Professional Memberships:

- International Society for Magnetic Resonance in Medicine (ISMRM)
- OARSI

Active member of:

- *Trainee Council of the Radiological Science Laboratory* (Stanford University), to organize activities to foster collaborations and networking within the department
- *Trainee Diversity Committee*, Department of Radiology, Stanford University, to promote diversity and inclusion in research and clinical environments within the Radiology Department

Organizer of:

- 8th Annual Meeting of ISMRM Benelux, Eindhoven, The Netherlands, 2016
- Secret Session “From ideas to startups” during the 2018 ISMRM Annual Meeting, Paris, France

GRANTS AND FELLOWSHIPS

Rubicon Fellowship

April 2019 – April 2021

Netherlands Organization for Scientific Research (NWO)

\$ 170.000

Title: *Non-invasive sarcomere imaging using advanced MRI methods*

K99/R00 (Pending)

April 2021 – March 2026

NIH – National Institute on Aging

\$ 939.801

Title: *Quantitative assessment of early structural and functional changes in aging skeletal muscle*

JOURNAL PUBLICATIONS

- 1) **Gadolinium-free assessment of synovitis using diffusion tensor imaging.**
HJC Sandford, JW MacKay, LE Watkins, Gold GE, Kogan F, **Mazzoli V**, Submitted
- 2) **Assessment of Quantitative [18F]Sodium Fluoride PET Measures of Knee Subchondral Bone Perfusion and Mineralization in Osteoarthritic and Healthy Subjects**
LE Watkins, JW MacKay, B Haddock, **Mazzoli V**, S Uhrich, GE Gold, F Kogan
Osteoarthritis and Cartilage 2021, Accepted
- 3) **Characterization of transient response of knee cartilage to running: Decreases in global and regional knee cartilage T2 relaxation times of female recreational runners**
Crowder H, **Mazzoli V**, Black, MS, Watkins L, Kogan F, Hargreaves BA, Levenston ME, Gold GE, Accepted
- 4) **Diffusion Tensor Imaging of Skeletal Muscle Contraction Using Oscillating Gradient Spin Echo (OGSE)**
Mazzoli V, Moulin K, Kogan F, Hargreaves B, GE Gold, Front. Neurol, doi: 10.3389/fneur.2021.608549
- 5) **Rapid Volumetric gagCEST Imaging of Knee Articular Cartilage at 3T: Evaluation of Improved Dynamic Range and an Osteoarthritic Population**
Watkins L, Rubin E, **Mazzoli V**, Uhrich S, Desai A, Black M, Ho G, Delp S, Levenston M, Beaupre G, Gold G, Kogan F (2020). Accepted
- 6) **Juvenile idiopathic arthritis: Diffusion-weighted MRI in the assessment of arthritis in the knee**
Barendregt AM, **Mazzoli V**, van Gulik EC, Schonenberg-Meinema D, Nassar-Sheikh al Rashid A, Nusman CM, Dolman KM, van den Berg JM, Kuijpers TW, Nederveen AJ, Maas M, Hemke R
Radiology. 2020 Mar 10;191685. doi: 10.1148/radiol.2020191685
- 7) **It's a thin line: development and validation of Dixon MRI-based semi-quantitative assessment of stress-related bone marrow edema in the wrists of young gymnasts and non-gymnasts**
Kox LS, Kraan RBJ, **Mazzoli V**, Mens MA, Kerkhoffs GMJJ, Nederveen JA, Maas M

- 8) **T1p mapping in the assessment of cartilage integrity of the knee in children with juvenile idiopathic arthritis – demonstration of feasibility and repeatability**
Barendregt AM, **Mazzoli V**, van den Berg JM, Kuijpers TW, Maas M, Nederveen AJ, Hemke R
Pediatric Radiology 2019, doi: 10.1007/s00247-019-04557-4
- 9) **A Noninvasive MRI Based Approach to Estimate the Mechanical properties of Human Knee Ligaments**
Naghibi H, **Mazzoli V**, Gijsbertse K, Hannink G, Sprengers AM, Janssen J, van den Boogaard T, Verdonshot N
Journal of the Mechanical behavior of Biomedical materials 2019; 93:43-51. doi: 10.1016/j.jmbbm.2019.01.022
- 10) **Crossing Muscle Fibers of the Human Tongue Resolved *In Vivo* Using Constrained Spherical Deconvolution**
Voskuilen K, **Mazzoli V**, Oudeman J, Balm AJM, van der Heiden F, Froeling M, de Win MML, Strijkers GJ, Smeele LE, Nederveen AJ
J Magn Reson Imaging, 2018, doi: 10.1002/jmri.26609 (**Top 10% most downloaded paper in JMRI in 2018-2019**)
- 11) **Accelerated 4D phase contrast MRI in skeletal muscle contraction.**
Mazzoli V, Gottwald LM, Peper ES, Froeling M, Coolen BF, Verdonshot N, Sprengers AM, van Ooij P, Strijkers GJ, Nederveen AJ.,
Magn Reson Med. 2018 Mar 5. doi: 10.1002/mrm.27158 (**Journal Cover Image**)
- 12) **An advanced magnetic resonance imaging perspective on the etiology of deep tissue injury.**
Nelissen JL, Traa WA, de Boer HH, de Graaf L, **Mazzoli V**, Savci-Heijink CD, Nicolay K, Froeling M, Bader DL, Nederveen AJ, Oomens CWJ, Strijkers GJ.
J Appl Physiol (1985). 2018 Mar 1. doi: 10.1152/japplphysiol.00891.2017
- 13) **Accelerated 4D self-gated MRI of tibiofemoral kinematics.**
Mazzoli V*, Schoormans J*, Froeling M, Sprengers AM, Coolen BF, Verdonshot N, Strijkers GJ, Nederveen AJ.
NMR Biomed. 2017 Nov;30(11). doi: 10.1002/nbm.3791.
* These authors contributed equally
- 14) **A novel diffusion-tensor MRI approach for skeletal muscle fascicle length measurements.**
Oudeman J*, **Mazzoli V***, Marra MA, Nicolay K, Maas M, Verdonshot N, Sprengers AM, Nederveen AJ, Strijkers GJ, Froeling M.
Physiol Rep. 2016 Dec;4(24). pii: e13012. doi: 10.14814/phy2.13012.
* These authors contributed equally
- 15) **Assessment of passive muscle elongation using Diffusion Tensor MRI: Correlation between fiber length and diffusion coefficients.**
Mazzoli V*, Oudeman J*, Nicolay K, Maas M, Verdonshot N, Sprengers AM, Nederveen AJ, Froeling M, Strijkers GJ.
NMR Biomed. 2016 Dec;29(12):1813-1824. doi: 10.1002/nbm.3661.
* These authors contributed equally
- 16) **Water and fat separation in real-time MRI of joint movement with phase-sensitive bSSFP.**
Mazzoli V, Nederveen AJ, Oudeman J, Sprengers A, Nicolay K, Strijkers GJ, Verdonshot N.
Magn Reson Med. 2017 Jul;78(1):58-68. doi: 10.1002/mrm.26341.
- 17) **Diffusion-prepared neurography of the brachial plexus with a large field-of-view at 3T.**
Oudeman J, Coolen BF, **Mazzoli V**, Maas M, Verhamme C, Brink WM, Webb AG, Strijkers GJ, Nederveen AJ.
J Magn Reson Imaging. 2016 Mar;43(3):644-54. doi: 10.1002/jmri.25025.

INVITED SPEAKER

- 1) **Clinical Applications: Dynamic Imaging of joints**
27th Annual Meeting of ISMRM, Montreal, Canada, 2019 (Educational Talk)

SELECTED CONFERENCE PRECEEDINGS

- 1) **The Differing Effects of the Competitive Season and Off-Season on Knee Articular Cartilage in Collegiate Basketball Players using Quantitative MRI: A Multi-Center Study**
Rubin EB, **Mazzoli V**, Black MS, Young K, Desai AD, Koff M, Sreedhar A, Kogan F, Safran M, Vincentini DJ, Knox KA, Yamada T, McCabe A, Majumdar S, Potter HG, Gold GE
2020 SABI Young Investigator Award
- 2) **Diffusion tensor imaging of articular cartilage at 3T: repeatability and sensitivity to degenerative changes**
Mazzoli V, Watkins LE, Rubin EB, Hargreaves BA, Kogan F, and Gold E
28th Annual Meeting of ISMRM, Paris, France, 2020
- 3) **Detecting Early Changes in ACL-Reconstructed Knee Cartilage Using Diffusion-Weighted MRI**
Sandford HJC, Black MS, Chaudhari AS, Desai A, Kogan F, Hargreaves BH, Garry GE, **Mazzoli V**
28th Annual Meeting of ISMRM, Paris, France, 2020
- 4) **Imaging of skeletal muscle contraction using Oscillating Gradient Spin Echo (OGSE)**
Mazzoli V, Moulin K, Kogan F, Hargreaves BH, Gold GE
28th Annual Meeting of ISMRM, Paris, France, 2020 (Oral)
- 5) **Longitudinal Analysis of Knee Articular Cartilage in Collegiate Basketball Players and Swimmers: Preliminary Results**
Rubin EB, **Mazzoli V**, Black MS, Desai A, Young K, Kogan F, Sreedhar A, Vincentini DJ, Knox KA, Yamada T, McCabe A, Safran M, Majumdar S, Potter HG, Gold GE
28th Annual Meeting of ISMRM, Paris, France, 2020
- 6) **A method for quantification of changes in leg muscle fiber orientations**
Secondulfo L, Suskens J, Kilic O, **Mazzoli V**, Maas M, Tol H, Nederveen AJ, Hooijmans M, Strijkers GJ
28th Annual Meeting of ISMRM, Paris, France, 2020
- 7) **Generalizability of Deep-Learning Segmentation Algorithms on Independent Datasets for Measuring T2 Relaxation Times**
Schmidt A, Desai A, Crowder H, **Mazzoli V**, Rubin E, Watkins L, Lu Q, Black M, Kogan F, Gold G, Hargreaves B, Chaudhari A.
28th Annual Meeting of ISMRM, Paris, France, 2020
- 8) **Diffusion-Weighted Breast MRI in the Supine Position**
Moran CJ, Middione MJ, **Mazzoli V**, Daniel BL, Ennis DB, Hargreaves BA
28th Annual Meeting of ISMRM, Paris, France, 2020
- 9) **Evaluating the Relationship Between Dynamic [19F]-Sodium Fluoride Uptake Parameters and MRI Knee Osteoarthritic Findings**
Watkins LE, MacKay J, Haddock B, Mazzoli V, Uhlrich S, Gold GE, Kogan F
28th Annual Meeting of ISMRM, Paris, France, 2020 (Oral)
- 10) **qDESS ADC as a Biomarker for Early Degeneration in Femoral Cartilage of Post-Reconstruction ACL Tear Patients and Correlations with DWI-EPI ADC**
Hall ME, **Mazzoli V**, Black MS, Sandford HJC, Young K, Yoon D, Sveinsson B, Chaudhari AC, McWalter E, Kogan F, Levenston M, Hargreaves B, Gold GE
28th Annual Meeting of ISMRM, Paris, France, 2020
- 11) **Feasibility of Rapid MRI Assessment of Leg Alignment**
Kogan F, Uhlrich S, Berkson M, Chaudhari AS, Black MS, **Mazzoli V**, Watkins LE, Gold GE, Hargreaves BH
28th Annual Meeting of ISMRM, Paris, France, 2020
- 12) **Sensitivity of Cardiac Diffusion Encoding Waveforms to Myocardial Extracellular Volume: a simulation study**
Moulin K, Viallon M, Maforo N, **Mazzoli V**, Croisille P, Ennis D
28th Annual Meeting of ISMRM, Paris, France, 2020

- 13) **Short Term Effects of Running on Knee Cartilage: Global and Regional T2 Relaxation Times in Femoral Cartilage of Female Recreational Runners**
Crowder H, **Mazzoli V**, Black MS, Watkins L, Kogan F, Hargreaves BH, Levenston L, Gold GE
28th Annual Meeting of ISMRM, Paris, France, 2020
- 14) **Cluster analysis of T2 changes related to acute exercise in individuals with knee osteoarthritis**
Watkins LE, **Mazzoli V**, Black MS, Uhlrich S, Kogan F
28th Annual Meeting of ISMRM, Paris, France, 2020
- 15) **Evaluating the Relationship Between Dynamic [18F]-Sodium Fluoride Uptake Parameters and MRI Knee Osteoarthritic Findings**
Watkins LE, MacKay J, Haddock B, **Mazzoli V**, Uhlrich S, Gold GE, Kogan F
28th Annual Meeting of ISMRM, Paris, France, 2020
- 16) **Fast Musculoskeletal MRI: What the Radiologist Needs to Know**
Boutin RD, Stevens K, Chaudhari A, Kogan F, Foster B, **Mazzoli V**, Gold G
Educational Exhibit, RSNA 2019 MK296-ED-X (RSNA cum Laude Award)
- 17) **Sodium PET-MRI Detects Regions of Abnormal Bone Response to Acute Exercise.**
Watkins L, Haddock B, Uhlrich S, **Mazzoli V**, Gold GE, Kogan F.
2019 International Workshop on Osteoarthritis Imaging, Prince Edward Island, Canada 2019
- 18) **Rapid Whole-Leg MRI For Assessment of Leg Alignment**
Kogan F, Uhlrich SD, Berkson M, Chaudhari A, Black M, **Mazzoli V**, Gold GE, Hargreaves BA.
2019 International Workshop on Osteoarthritis Imaging, Prince Edward Island, Canada 2019
- 19) **A novel DTI method for quantification of skeletal muscle pennation angles**
Secondulfo L, Hooijmans M, Froeling M, **Mazzoli V**, Nederveen AJ, Strijkers GJ
ESMRMB 2019
- 20) **GagCEST at 3T can detect cartilage differences between healthy and OA subjects**
Rubin E, Watkins L, **Mazzoli V**, Desaj A, Ho G, Fogan F, Uhlrich S, Kolesar J, Delp S, Beaupre G, Gold GE
27th Annual Meeting of ISMRM, Montreal, Canada, 2019
- 21) **DOSMA: a deep-learning, open source framework for musculoskeletal MRI analysis**
Desaj A, Barbieri M, **Mazzoli V**, Rubin E, Black M, Watkins L, Gold GE, Hargreaves B, Chaudhari A
27th Annual Meeting of ISMRM, Montreal, Canada, 2019
- 22) **Rapid quantitative simultaneous bilateral knee imaging with fully automated femoral cartilage analysis: toward knee asymmetry evaluation**
Barbieri M, Desaj A, Kogan F, **Mazzoli V**, Rubin E, Castellani G, Gold GE, Hargreaves B, Chaudhari A
27th Annual Meeting of ISMRM, Montreal, Canada, 2019
- 23) **Short-term effects of running on T2 relaxation times of femoral cartilage in female runners**
Crowder H, **Mazzoli V**, Black M, Watkins L, Kogan F, Hargreaves B, Levenston M, Gold GE
27th Annual Meeting of ISMRM, Montreal, Canada, 2019
- 24) **Gait Retraining as a conservative treatment for medial knee OA: preliminary findings**
Mazzoli V, Uhlrich S, Rubin E, Kogan F, Heargraves B, Delp S, Beaupre GS, Gold GE
27th Annual Meeting of ISMRM, Montreal, Canada (Oral presentation, Magna cum Laude award)
Annual meeting of OARSI, Toronto, Canada, 2019
- 25) **Combined accelerated 4D Phase Contrast and 3D Diffusion Tensor Imaging reveals a complex relation between strain and muscle architecture in contracting leg muscles**
Mazzoli V, Froeling M, Gottwald LM, Verdonschot N, Hooijmans MT, Nederveen AJ, Strijkers GJ
26th Annual Meeting of ISMRM, Paris, France, 2018
- 26) **Dynamic knee imaging using 4D self-gated MRI with compressed sensing reconstruction**
Mazzoli V, Schoormans J, Froeling M, Sprengers AM, Nicolay K, Coolen BF, Verdonschot N, Nederveen AJ, Strijkers GJ
25th Annual Meeting of ISMRM, Honolulu, HI, USA, 2017 (Oral presentation, Summa cum Laude award)
9th Annual Meeting of ISMRM Benelux, Tilburg, The Netherlands, 2017
Annual Meeting of ORS, San Diego, CA, 2017
- 27) **The magic angle effect can (partially) explain load-induced increases in meniscal T₂ and T_{1rho}**
Mazzoli V, Tsui D, de Graaf L, Nicolay K, Sprengers AM, Janssen D, Verdonschot N, Nederveen AJ, Strijkers GJ
25th Annual Meeting of ISMRM, Honolulu, HI, USA, 2017 (Oral presentation)
- 28) **Compressed Sensing accelerated time-resolved 3D phase contrast MRI of the lower leg muscles during active dorsi- and plantarflexion**
Gottwald LM, **Mazzoli V**, Peper ES, Zhang Q, Coolen BF, van Ooij P, Strijkers GJ, Nederveen AJ
25th Annual Meeting of ISMRM, Honolulu, HI, USA, 2017 (Oral presentation)
- 29) **Crossing Muscle Fibers in the Tongue Resolved Using Constrained Spherical Deconvolution**

Voskuilen L, **Mazzoli V**, Oudeman J, Smeele L, Balm A, van der Heijden F, Froeling M, Strijkers GJ, Nederveen AJ

25th Annual Meeting of ISMRM, Honolulu, HI, USA, 2017

30) Physeal Overuse Injury: Is Radial Epiphysitis A Misnomer? 3T MRI of the Distal Radial Growth Plate in Young Gymnasts Compared to Non-Gymnastic Controls

Kox, LS, Kraan RB, **Mazzoli V**, Mens MA, Nederveen AJ, Maas M

103rd Annual Meeting of RSNA, Chicago, IL, USA, 2017 **(Oral presentation)**

31) T1rho Mapping in the Assessment of Articular Cartilage Integrity of the Knee in Children with Juvenile Idiopathic Arthritis

Barendregt AM, **Mazzoli V**, van Gulik C, Kuijpers T, Maas M, Nederveen AJ, Hemke R, Schonenberg-Meinema D, van den Berg M, Dolman KM

103rd Annual Meeting of RSNA, Chicago, IL, USA, 2017 **(Oral presentation)**

32) Passive stretch of muscle fibers measured in vivo using a novel MRI diffusion tensor imaging based approach

Mazzoli V, Oudeman J, Marra MA, Strijkers GJ, Nederveen AJ, Nicolay K, Verdonschot N, Sprengers AM, Froeling M

Annual Meeting of ORS, Orlando, FL, USA, 2016 **(Oral Presentation)**

33) In vivo skeletal muscle fiber length measurements using a novel MRI diffusion tensor imaging approach: reproducibility and sensitivity to passive stretch

Oudeman J, **Mazzoli V**, Marra M, Nicolay K, Maas M, Verdonschot N, Sprengers AM, Nederveen AJ, Strijkers GJ, Froeling M

24th Annual Meeting of ISMRM, Singapore, 2016 **(Oral presentation)**

8th Annual Meeting of ISMRM Benelux, Eindhoven, The Netherlands, 2016 **(Oral presentation)**

34) Assessment of passive muscle elongation using DTI: Correlation between fiber length and diffusion coefficients

Mazzoli V, Oudeman J, Marra M, Nederveen AJ, Nicolay K, Verdonschot N, Sprengers AM, Froeling M, Strijkers GJ

24th Annual Meeting of ISMRM, Singapore, 2016 **(Oral presentation)**

8th Annual Meeting of ISMRM Benelux, Eindhoven, The Netherlands, 2016

35) Novel MRI Techniques for Early Detection of Stress Injury of the Distal Radial Physis in Young Gymnasts

Kox LS, **Mazzoli V**, Nederveen AJ, Oudeman J, Mol AM, Maas M

102nd Annual Meeting of RSNA, Chicago, IL, USA, 2016 **(Oral presentation)**

36) Real Time Fat Suppressed MRI of the Knee Joint During Flexion/extension allows the study of PCL motion

Mazzoli V, Sprengers AM, Nederveen AJ, Strijkers GJ, Nicolay K, Verdonschot N

23th Annual Meeting of ISMRM, Toronto, Canada, 2015

7th Annual Meeting of ISMRM Benelux, Ghent, Belgium, 2015

37) Ex vivo cardiac DTI: on the effects of diffusion time and b-value

Froeling M, **Mazzoli V**, Nederveen AJ, Luijten PR, Strijkers GJ

17th Annual Meeting of SCMR, New Orleans, LA, USA, 2014

38) Cardiac diffusion MRI beyond DTI

Mazzoli V, Froeling M, Nederveen AJ, Nicolay K, Strijkers GJ

22nd Annual Meeting of ISMRM, Milan, Italy, 2014