



**Vahid Arbabi**

Assistant Professor

Faculty: Engineering

Department: Mechanical Engineering

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### Educational Information

Grade	Graduated At	Major	University
BSc	2003	Mechanical Engineering - Solid Design	University of Sistan & Baluchestan
MSc	2006	Mechanical Engineering - Applied Design	Yazd University
Ph.D	2016	Biomechanical Engineering	Delft University of technology
Post Doctoral	2018	Orthopaedic-Biomechanics	University Medical Centre Utrecht

### Executive Activities

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Head of Orthopaedic-Biomechanics Research Group

Actual member of the University Academic Diplomacy Council

### Executive Awards

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[Runner-up prize for the Best Doctoral Thesis Award in Biomechanics by the European Society of Biomechanics \(ESB\).](#)

### Professional Education Subjects

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Selected topics in Orthopaedic-Biomechanics

## Course Topics

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Vibrations

Dynamic of Machinery

## Papers in Conferences

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1. Vahid Arbabi ,Orientational functionality of vertebral trabecular trajectories: a finite element approach. ,8 th World Congress of Biomechanics ,2018/07/08 - 2018/07/12.
2. Vahid Arbabi ,Structural anisotropy in the human vertebral body: implications of loading direction. ,8 th World Congress of Biomechanics ,2018/07/08 - 2018/07/12.
3. Arbabi V., Pouran B., Weinans H., Zadpoor A.A ,Transport of neutral solute across articular cartilage and subchondral plate ., 22nd Congress of the European Society of Biomechanics, Lyon, France ,2016.
4. Arbabi V., Pouran B., Weinans H., Zadpoor A.A ,Combined artificial neural networks for robust estimation of the diffusion coefficients across cartilage ,22nd Congress of the European Society of Biomechanics, Lyon, France ,2016.
5. Pouran B., Arbabi V., Zadpoor A.A., Weinans H ,Effects of bath attributes on the transport of solute across articular cartilage. ,22nd Congress of the European Society of Biomechanics, Lyon, France ,2016.
6. Arbabi V., Pouran B., Weinans H., Zadpoor A.A ,Application of a biphasic-solute model in predicting diffusive properties of osteochondral interface ,International Workshop on Osteoarthritis Imaging (IWOAI), Oulo, Finland ,2016.
7. Pouran B., Arbabi V., Zadpoor A.A., Weinans H ,Mechanical condition of articular cartilage regulates enzymatic activity. ,International Workshop on Osteoarthritis Imaging (IWOAI), Oulo, Finland ,2016.
8. Arbabi V., Pouran B., Weinans H., Zadpoor A.A ,Multiphasic finite element models enable determining fixed charge density and the diffusion coefficient of charged solutes in articular cartilage. ,Orthopaedic Research Society Annual Meeting, Orlando, Florida ,2016.
9. Pouran B., Arbabi V., Zadpoor A.A., Weinans H ,Micro-features affect the transport of solutes at the interface of cartilage and subchondral plate ,Orthopaedic Research Society 2016 Annual Meeting, Orlando, Florida ,2016.
10. Pouran B., Arbabi V., Zadpoor A.A., Weinans H ,Micro-architecture affects the transport of solutes at the interface of cartilage and bone ,Osteoarthritis and Cartilage ,2016.
11. Arbabi V., Pouran B., Weinans H., Zadpoor A.A ,Coupled finite element model-artificial neural networks can predict mechanical properties of articular cartilage ,Orthopaedic Research Society Annual Meeting, Las Vegas, Nevada ,2015.
12. Pouran B., Arbabi V., Villamar J., Zadpoor A.A., Weinans H ,Contrast agent's transport across healthy articular cartilage under various bath conditions ,Orthopaedic Research Society Annual Meeting, Las Vegas, Nevada ,2015.
13. Arbabi V., Campoli G., Weinans H., Zadpoor A.A ,Estimation of cartilage properties using indentation tests, finite element models, and artificial neural networks ,11th World Congress on Computational Mechanics & 5th European Conference on Computational Mechanics, Barcelona, Spain ,2014.
14. Arbabi V., Campoli G., Weinans H., Zadpoor A.A ,Nanoindentation-based estimation of cartilage properties using artificial neural networks trained with finite element data ,Simulia BENELUX Regional User Meetings, Hoeven, The Netherlands (invited speaker), ,2013.

15. Heisiyattalab S., Shakeri M., Arbabi V., Keikha M.M ,Study of Ethanol Fuel Cell Performance. ,The First Iranian Conference on Renewable Energies and Distributed Generation, Birjand, Iran ,2010.
16. Ebrahimzade I., Arbabi V., Rakhshani H.A ,Effect of Heat Treatment on Microstructure and Property of CuZn40Al11 Alloy ,Regional Conference on Mechanical Engineering, Shiraz, Iran, ,2009.
17. Arbabi V., Shafiei A.R. Mashaie A ,Calculation of Dynamic Yield Stress of Ductile Porous Materials with a Relative Density by Using a Linear Function of Compressive Strain. ,17th Annual (International) Conference on Mechanical Engineering, Tehran University, Tehran, Iran ,2009.
18. Arbabi V., Zahedi S.A ,Theoretical Study of Tearing in Hydro forming Deep Drawing ,Recent Advances in Engineering Mechanics, Structures and Engineering Geology, Greece ,2009.
19. Arbabi V., Zahedi S.A ,Analytical Investigation of Nonlinear KdV Equation ,Recent Advances in Engineering Mechanics, Structures and Engineering Geology, Greece ,2009.
20. Jamalizadeh M.R., Moghaddamnia A., Piri J., Arbabi V., Homayounifar M., Shahryari A ,Dust Storm Prediction Using ANNs Technique (A Case Study: Zabol City). ,5th International Conference on Climate Change and Global Warming. Heidelberg, Germany ,2008.

### Papers in Journals

1. وحید اربابی et al., Bone texture analysis for prediction of incident radiographic hip osteoarthritis using machine learning: data from the Cohort Hip and Cohort Knee (CHECK) study, OSTEOARTHRITIS AND CARTILAGE, Vol. 6, No. 27, pp. 906-914, 2019, JCR.Scopus.
2. وحید اربابی et al., Unravelling the knee-hip-spine trilemma from the CHECK study, Bone & Joint Journal, Vol. 91, No. 102, pp. 1261-1267, 2020, ISI.JCR.Scopus.
3. وحید اربابی et al., Predicting the mechanical hip-knee-ankle angle accurately from standard knee radiographs: a cross-validation experiment in 100 patients, Acta Orthopaedica, Vol. 91, pp. 1-6, 2020, ISI.JCR.Scopus.
4. Hirvasniemi J, Gielis WP, Arbabi S, Agricola R, van Spil WE, Arbabi V, Weinans H, Bone Texture Analysis for Prediction of Incident Radio-graphic Hip Osteoarthritis Using Machine Learning: Data from the Cohort Hip and Cohort Knee (CHECK) study., Osteoarthritis Cartilage, 2019.
5. Vahid Arbabi, V. Everts, S. Fazaeli, J.H. Koolstra, F. Lobbezoo, F. Mirahmadi, J. Snabel, R. Stoop, G.H. van Lenthe, H. Weinans, Aging does not change the compressive stiffness of mandibular condylar cartilage in horses, OSTEOARTHRITIS AND CARTILAGE, Vol. 26, 2018, ISI.SCOPIUS.
6. Vahid Arbabi, Ambika G. Bajpayee, Jukka S. Jurvelin, Jos Malda, Behdad Pouran, Juha Toyras, Jasper van Tiel, Harrie Weinans, Amir A. Zadpoor, Multi-scale imaging techniques to investigate solute transport across articular cartilage, JOURNAL OF BIOMECHANICS, Vol. 78, 2018, ISI.SCOPIUS.
7. Vahid Arbabi, Jos Malda, Parisa R. Moshtagh, Behdad Pouran, Jeffrey Ruberti, Jessica Snabel, Reinout Stoop, Harrie Weinans, Amir A. Zadpoor, Non-enzymatic cross-linking of collagen type II fibrils is tuned via osmolality switch, JOURNAL OF ORTHOPAEDIC RESEARCH, Vol. 36, 2018, ISI.SCOPIUS.
8. Vahid Arbabi, Pim A. de Jong, Willem Paul Gielis, Gabrielle J. M. Tuijthof, Nazli Tamer, Harrie Weinans, Amir A. Zadpoor, Three dimensional analysis of shape variations and symmetry of the fibula, tibia, calcaneus and talus, JOURNAL OF ANATOMY, Vol. 234, 2017, ISI.SCOPIUS.
9. Vahid Arbabi, Ronald LAW Bleys, Behdad Pouran, P. Ren van Weeren, Harrie Weinans, Amir A. Zadpoor, Solute transport at the interface of cartilage and subchondral bone plate: Effect of micro-architecture, JOURNAL OF BIOMECHANICS, Vol. 52, 2017, ISI.SCOPIUS.
10. Vahid Arbabi, Behdad Pouran, Harrie Weinans, Amir A. Zadpoor, An Experimental and Finite Element Protocol to Investigate the Transport of Neutral and Charged Solutes across Articular Cartilage, Jove-Journal of Visualized Experiments, Vol. 122, No. 122, 2017, ISI.SCOPIUS.
11. Vahid Arbabi, Behdad Pouran, Harrie Weinans, Amir A. Zadpoor, Isolated effects of external bath osmolality, solute concentration, and electrical charge on solute transport across articular cartilage, MEDICAL ENGINEERING and PHYSICS, Vol. 38, 2016, ISI.SCOPIUS.
12. Vahid Arbabi, Behdad Pouran, Harrie Weinans, Amir A. Zadpoor, Combined inverse-forward artificial

- neural networks for fast and accurate estimation of the diffusion coefficients of cartilage based on multi-physics models, *JOURNAL OF BIOMECHANICS*, Vol. 49, 2016, ISI.SCOPIUS.
13. Vahid Arbabi, N.M. Korthagen, P.R. Moshtagh, B. Pouran, J. Rauker, J. van Tiel, H. Weinans, A.A. Zadpoor, M.R. Zuiddam, Micro- and nano-mechanics of osteoarthritic cartilage: The effects of tonicity and disease severity, *Journal of the Mechanical Behavior of Biomedical Materials*, Vol. 59, 2016, ISI.SCOPIUS.
  14. Vahid Arbabi, Behdad Pouran, Harrie Weinans, Amir A. Zadpoor, Multiphasic modeling of charged solute transport across articular cartilage: Application of multi-zone finite-bath model, *JOURNAL OF BIOMECHANICS*, Vol. 49, 2016, ISI.SCOPIUS.
  15. Vahid Arbabi, Gianni Campoli, Behdad Pouran, Harrie Weinans, Amir A. Zadpoor, Determination of the mechanical and physical properties of cartilage by coupling poroelastic-based finite element models of indentation with artificial neural networks, *JOURNAL OF BIOMECHANICS*, Vol. 49, 2016, ISI.SCOPIUS.
  16. Vahid Arbabi, Behdad Pouran, Harrie Weinans, Amir A. Zadpoor, Application of multiphysics models to efficient design of experiments of solute transport across articular cartilage, *COMPUTERS IN BIOLOGY AND MEDICINE*, Vol. 78, 2016, ISI.SCOPIUS.
  17. Moshtagh P.R., Pouran B., van Tiel J., Rauker J., Zuiddam M.R., Arbabi V., Korthagen N.M., Weinans H., Zadpoor A.A., Micro- and nano-mechanics of osteoarthritic cartilage: The effects of tonicity and disease severity, *Journal of the Mechanical Behavior of Biomedical Materials*, 2016.
  18. Vahid Arbabi, Behdad Pouran, Harrie Weinans, Amir A. Zadpoor, Neutral solute transport across osteochondral interface: A finite element approach, *JOURNAL OF BIOMECHANICS*, Vol. 49, 2016, ISI.SCOPIUS.
  19. Vahid Arbabi, B. Pouran, H. Weinans, A. A. Zadpoor, Transport of Neutral Solute Across Articular Cartilage: The Role of Zonal Diffusivities, *JOURNAL OF BIOMECHANICAL ENGINEERING-TRANSACTIONS OF THE ASME*, Vol. 137, 2015, ISI.SCOPIUS.
  20. Vahid Arbabi, I. Ebrahimzadeh, Effects of wall thickness on microstructures and properties of brasses pipes produced by horizontal continuous casting, *INTERNATIONAL JOURNAL OF CAST METALS RESEARCH*, Vol. 23, 2013, ISI.SCOPIUS.
  21. Vahid Arbabi, S Heisiattalab, M M Keikha, M Safari, An investigation into the effect of die temperature and heat treatment on A360 properties produced by the semi-solid forming and cooling slope method, *PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART B-JOURNAL OF ENGINEERING MANUFACTURE*, 2011.
  22. Vahid Arbabi, I. Ebrahimzadeh, Effects of wall thickness on microstructures and properties of brasses pipes produced by horizontal continuous casting, *INTERNATIONAL JOURNAL OF CAST METALS RESEARCH*, 2010.