



ALIREZA HASHEMI OSKOU EI, PhD

Musculoskeletal Biomechanics | Human Movement Science | Motor Control | EMG & Motion Analysis

Associate Professor of Biomechanics

Sahand University of Technology, Tabriz, Iran

PhD in Musculoskeletal Biomechanics, University of Otago, New Zealand, 2012

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ACADEMIC PROFILE

Academic and researcher with a PhD in Musculoskeletal Biomechanics from the University of Otago, New Zealand (2012) and extensive experience in university teaching, research, postgraduate supervision and academic administration and leadership.

My research and teaching expertise is focused on human movement, musculoskeletal biomechanics, motor control, gait analysis, motion analysis and surface electromyography (EMG).

I have extensive experience teaching biomechanics and biomedical engineering subjects and supervising postgraduate research students. I am particularly interested in research and teaching at the intersection of motor learning and control, human movement science, neuromuscular control and biomechanics.

RESEARCH AREAS

Musculoskeletal biomechanics

Human movement science

Motor control and neuromuscular function

Gait biomechanics and gait analysis

Three-dimensional motion analysis

Surface electromyography (EMG)

Lower-limb kinematics and kinetics

Sports biomechanics

Movement performance and task constraints

Reliability and repeatability of biomechanical measurements

Biomechanical analysis of walking, stair negotiation and jumping

Biological signal acquisition and analysis

EDUCATION

PhD in Musculoskeletal Biomechanics

University of Otago, New Zealand | 2012

PhD research focused on the relationship between hand grip force, forearm surface electromyography (EMG) and forearm surface dimensional changes, including the reliability and predictive relationships between biomechanical and physiological measures.

University of Otago Postgraduate Scholarship

MSc in Medical Physics

Mashhad University of Medical Sciences, Iran | 1999

Thesis: The effect of low-power lasers on wound healing in mice.

BSc in Applied Physics

Isfahan University of Technology, Iran | 1995

ACADEMIC AND PROFESSIONAL EXPERIENCE

Associate Professor of Biomechanics

Faculty of Biomedical Engineering, Sahand University of Technology, Iran

March 2021 – Present (Assistant Professor 2012-2021)

Conduct research in biomechanics, human movement and biomedical engineering.

Teach undergraduate and postgraduate courses.

Supervise MSc and PhD research projects.

Develop and manage interdisciplinary research projects.

Mentor students and early-career researchers.

Contribute to academic administration and curriculum development.

Publish research in biomechanics, EMG, human movement and related areas.

Research Assistant

School of Physiotherapy, University of Otago, New Zealand

Research involving human movement and biomechanics.

Contributed to data collection and analysis.

Worked within an interdisciplinary health and movement science research environment.

Vice-President for Student Affairs

Sahand University of Technology, Iran

December 2018 – December 2022, and March 2024 - Present

University-level leadership and student affairs.

Worked with students from diverse academic and social backgrounds.

Administrative and organizational responsibilities.

Supported student welfare and university community activities.

Head of Cultural Department

Sahand University of Technology, Iran

April 2013 – December 2018

University cultural and student-facing responsibilities.

Coordination of student and university community activities.

Engagement with students from diverse backgrounds.

Lecturer in Bioengineering
Sahand University of Technology, Iran
2001 – 2006
Teaching included:
Medical Physics
Physics of Radiology and Radiotherapy Systems
Ultrasound
Biostatistics
Biomedical engineering-related subjects

Lecturer
Medical University of Kermanshah, Iran
1999 – 2001
Teaching included:
Medical Physics
Diagnostic Radiology Physics
Radiotherapy Physics
Medical Devices

TEACHING EXPERIENCE

Human Movement & Biomechanics
Human movement analysis
Biomechanical measurement and analysis
Gait biomechanics
Motion analysis
Biomechanics & Biomedical Engineering
Recording and Analysis of Biological Signals
Biophysics
Medical Physics
Radiology and Radiotherapy
Ultrasound
Biostatistics
Advanced Mathematics for Engineering
Technical Language for Bioengineering students

POSTGRADUATE SUPERVISION

I have extensive experience supervising postgraduate research students in biomechanics, biomedical engineering and human movement research.

Completed supervision:

2 PhD student

26 MSc students

Current supervision:

5 PhD students

8 MSc students

Peer Reviewed Journal Publications from 2013:

Ayati Najafabadi, S.M., Niroomand-Oscuii, H., **Hashemi Oskouei, A.** (2026). From Pressure Patterns to Personalized Insoles: A Systematic Review of Demographic Influences on Plantar Pressure. *Journal of Foot and Ankle Research*, March 2026, 19(2)

Hassanzadeh Khanmiri, S., Ghaderyan, P., **Hashemi Oskouei, A.** (2025). Integrating frequency and dynamic characteristics of EMG signals as a new inter-muscular coordination feature. *Physical and Engineering Sciences in Medicine*, 48(4):1775-1789

Reisi, A., **Hashemi Oskouei, A.**, Najafi, M., & Bahrpeyma, F. (2023). Role of sensory feedback in postural control of patients with diabetic neuropathy. *International Journal of Diabetes in Developing Countries*, 44(1), 77–83.

Emamian Shirazi, S.A., **Hashemi Oskouei, A.**, & Hejazi Dinan, P. (2022). Correlation of vertical jump height with ground reaction force and anthropometric parameters of male athletes. *Thrita*, 11(2).

Emamian Shirazi, S.A., **Hashemi Oskouei, A.**, Azrah, R., & Carroll, K. (2022). Effects of task constraints on countermovement jump kinematics following short-term training. *Journal of Motor Learning and Development*, 10(2), 257–272.

Hashemi Oskouei, A., Emamian Shirazi, S.A., & Carman, A. (2021). Reliability of forearm medial-anterior surface dimensional changes at different isometric hand grip forces. *Journal of Bodywork and Movement Therapies*, 28, 92–97.

Ayati, S.M., **Hashemi Oskouei, A.**, & Rafiayi, S.M. (2021). Using changes in center of mass to measure balance in people with different leg lengths when climbing stairs. *Iranian Journal of Biomedical Engineering*, 15(2), 141–150.

Ayati, S.M., **Hashemi Oskouei, A.**, & Rafiayi, S.M. (2021). Kinematics of lower limb joints in people with leg length discrepancy during stair ascending with and without a compensating insole. *Iranian Journal of Biomedical Engineering*, 15(1), 73–85.

Farhadi, M., **Hashemi Oskouei, A.**, Emamian Shirazi, S.A., & Karimi, M.T. (2021). Reliability of kinematic parameters of the lower limb joints during walking on the ground and treadmill. *Sports Medicine Studies*, 12(27), 53–66.

Azrah, R., **Hashemi Oskouei, A.**, & Emamian Shirazi, S.A. (2020). Effects of short-term plyometric training on countermovement vertical jump height and kinematics of take-off. *Thrita*, 9(2).

Sadat Khorasani, S.M., **Hashemi Oskouei, A.**, & Ghader, F. (2018). Effect of normalization methods on the reliability of EMG during stair negotiation and ramp walking. *Journal of Rehabilitation Medicine*, 6(4), 201–209.

Naser Berenj Abad, S., **Hashemi Oskouei, A.**, Niroomand Oskuii, H., Emamian Shirazi, S.A., & Eteraf Oskoei, S.A. (2017). Reliability of EMG parameters during walking on stairs and an inclined surface. *Jundishapur Scientific Medical Journal*, 16(3), 307–316.

Hajizadeh, M., **Hashemi Oskouei, A.**, & Ghalichi, F. (2017). Reliability of knee kinematics and ground reaction force during stair negotiation. *Iranian Journal of Biomedical Engineering*, 11(3), 201–210.

Riahi, H., **Hashemi Oskouei, A.**, & Eteraf Oskoei, S.A. (2017). Activity of quadriceps muscle among people with knee osteoarthritis during stair ascending and descending with different heights. *Medical Journal of Tabriz University of Medical Sciences*, 39(6), 29–34.

Hajizadeh, M., **Hashemi Oskouei, A.**, Ghalichi, F., & Sole, G. (2017). Intra-session reliability and repeatability of knee kinematics in subjects with ACL deficiency during stair ascent. *Journal of Mechanics in Medicine and Biology*, 17(6).

Hajizadeh, M., **Hashemi Oskouei, A.**, Ghalichi, F., Tabatabai Ghomshe, F., Razi, M., & Sole, G. (2016). Knee kinematics and joint moments during stair negotiation in participants with ACL deficiency and reconstruction: A systematic review and meta-analysis. *PM&R*, 8(6), 563–579.

Hajizadeh, M., **Hashemi Oskouei, A.**, Ghalichi, F., Tabatabai Ghomshe, F., Razi, M., & Sole, G. (2015). Kinematic differences in participants with ACL-deficient knees during stair ascending with different height. *Iranian Journal of Biomedical Engineering*, 9(1), 17–31

Hashemi Oskouei, A., Carman, A., & Paulin, M. (2013). Intra-session and inter-day reliability of forearm surface EMG during varying hand grip forces. *Journal of Electromyography and Kinesiology*, 23(1), 216–222.

SELECTED CONFERENCE PRESENTATIONS

Hassanzadeh Khanmiri, S., Ghaderyan, P., Hashemi Oskouei, A. (2025). Alternations in Muscle Coordination During gait Following Post-Knee Injury. 32th National and 10th International Conference on Biomedical Engineering, Tabriz, Iran

Mousavi, Hashemi Oskouei, A. Hassanzadeh Khanmiri, S. (2025) A Biomechanical Analysis of Postural Balance in Young and Elderly Adults on Stable and Unstable Surfaces Using Kinetic Indices of Ground Reaction Force. 32th National and 10th International Conference on Biomedical Engineering, Tabriz, Iran

Alborzi, K. Hashemi Oskouei, A., Mansouri, P. Ayati Najaf Abadi, SM. (2025) Corrective Insoles Enhance Center of Mass Stability During Stair Descent in Individuals with Leg Length Discrepancy. 32th National and 10th International Conference on Biomedical Engineering, Tabriz, Iran

Jafari, A. Hashemi Oskouei, A. Hasanzadeh, Sh. (2025). The application of gait biomechanics and gait analysis in optimization of CP, 32th National and 10th International Conference on Biomedical Engineering, Tabriz, Iran

Karimi Bokti, M., & Hashemi Oskouei, A. (2018). Using electromyography of five muscles and joint angle to predict knee joint moment. 36th Conference of the International Society of Biomechanics in Sports, Auckland, New Zealand.

Hashemi Oskouei, A., & Carman, A. (2012). Prediction of hand grip force using forearm surface displacement. 18th Congress of the European Society of Biomechanics, Portugal.

Hashemi Oskouei, A., & Carman, A. (2012). Hand grip force and forearm surface EMG: relationship and reliability. 18th Congress of the European Society of Biomechanics, Portugal.

Hashemi Oskouei, A., Carman, A., Paulin, M., & Baxter, D. (2009). Relationship between hand grip force and forearm EMG: a reliability study. 4th Asian-Pacific Conference on Biomechanics, University of Canterbury, Christchurch, New Zealand.

Hashemi Oskouei, A., Carman, A., Paulin, M., & Baxter, D. (2009). Relationship between hand grip force, forearm surface shape changes and forearm surface EMG. 7th Australasian Conference on Biomechanics, Gold Coast, Australia.

PROFESSIONAL AND INTERPERSONAL SKILLS

University teaching and curriculum development

Research project development

Postgraduate supervision

Academic leadership

Human participant research

Interdisciplinary collaboration

Scientific writing and publication

Communication with culturally diverse communities

Student mentoring and support

Teamwork and collaboration

LANGUAGES

English: Fluent

Farsi: Native

Turkish: Native