Hadi Salehi PhD MSc

Forensic Biomechanics Expert | Biomechanical Scientist | Research and R&D Leader

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Toronto, Canada and Los Angeles, USA | US citizen | Open to remote and hybrid opportunities

Professional Profile

Biomechanical scientist and forensic consultant with research, engineering, clinical motion-analysis, teaching, and litigation-support experience across the United Kingdom and United States. Specializes in injury mechanics, human movement, musculoskeletal biomechanics, accident reconstruction, and assessment of whether claimed injuries are biomechanically consistent with a reported event.

Combines quantitative modeling, motion capture, mechanical testing, medical-record review, signal processing, and machine learning with multidisciplinary research leadership. Experience includes expert reports, deposition testimony, rehabilitation research, medical-device development, and coordination among physicians, clinicians, engineers, and attorneys.

Areas of Expertise

• Forensic biomechanics: injury mechanisms and causation; motor-vehicle collisions; slip and trip falls; sports injuries; litigation support and expert testimony.

• Collision and occupant analysis: delta-V, impact configuration, acceleration and loading, occupant kinematics, head-neck and torso dynamics, and assessment of injury criteria where case data support their application.

• Human movement: gait, running, joint kinematics and kinetics, hand and foot modeling, musculoskeletal function, rehabilitation, and injury prevention.

• Research and computation: experimental design, statistical analysis, signal processing, machine learning, EMG analysis, simulation, finite element analysis, and interpretation of clinical and engineering data.

• Leadership and consulting: multidisciplinary project coordination, laboratory operations, workflow improvement, technical communication, client consultation, and research translation.

Career Focus

Senior forensic biomechanics and expert-witness roles; Lead Scientist and research leadership; Director or Head of R&D; biomechanical and biomedical engineering; computational modeling; and AI/ML applications in healthcare and human movement.

Education and Advanced Training

PhD in Biomechanical Engineering — University of Salford, England

MSc — University of Salford, England

BSc in Mechanical Engineering — Sharif University of Technology, Iran

Postdoctoral training in Biomechanics — University of Wisconsin–Milwaukee, USA

Graduate research included hand modeling and walking prediction, followed by applications to running, rehabilitation, movement across clinical populations, and sports injury biomechanics.

Forensic Consulting and Business Leadership

Founder and Chief Executive Officer

Era Health Inc. | 2024–Present

• Lead a consulting business supporting personal-injury attorneys through injury-mechanism assessment, case analysis, and biomechanical interpretation.

• Develop tailored consulting workflows and case-management strategies to improve communication and the delivery of technical findings.

Founder

PainFreedom

• Develop biomechanical consulting and healthcare platform concepts connecting scientific injury analysis, patient-specific assessment, and clinical expertise.

• Provide litigation-support services and translate engineering findings for attorneys and medical professionals.

Senior Consulting Work

MLG Attorneys

• Contribute biomechanical expertise to personal-injury matters, including injury mechanisms, causation assessment, and expert-report preparation.

Senior Consultant

Walter Forensics

• Provide forensic biomechanics consultation, case analysis, and interpretation of engineering and injury evidence.

Independent Biomechanical Consultant

Sutton Pierce | 2025–Present

• Prepare case-specific biomechanical analyses and expert opinions for litigation matters; review incident evidence and relevant medical findings.

Biomechanical Engineer

Peter R. Thom & Associates | 2021–Present

• Consult on accident reconstruction and injury causation for litigation matters, integrating incident mechanics with expected human-body response.

Senior Biomechanical Engineer

Nederveld Inc. | 2023–2025

• Analyze collision and incident mechanics, occupant motion, biomechanical loading, and the consistency of claimed injuries with the available evidence.

• Prepare technical analyses and explain assumptions, calculations, and findings for legal audiences.

Biomechanical Engineer

Motusi | 2022–2023

• Contribute biomechanical engineering expertise in human movement and motion analysis.

Biomechanical Engineer

Liske Forensics | 2018–2020

• Provide biomechanical consulting on accident reconstruction and injury-mechanism analysis.

Clinical Research and Academic Experience

Motion Analysis Lead Engineer and Lab Director

Phoenix Children’s Hospital | 2017–2023

• Lead motion-analysis and biomechanics activities supporting clinical assessment, rehabilitation, and injury-prevention research.

• Collect and interpret three-dimensional kinematics and kinetics, EMG, pressure-mat measurements, and other human-movement data.

• Apply signal processing and machine-learning tools to EMG post-processing; conduct simulation, three-dimensional modeling, and biomechanical incident analysis.

• Coordinate multidisciplinary work on quantitative return-to-play criteria for ACL and MPFL injuries with physicians, clinicians, and engineers.

Research Instructor

University of Arizona | 2017–2022

• Contribute to biomechanics research and instruction connected with movement analysis and clinical engineering.

Research Assistant Professor and Research Engineer

Indiana University Health | 2016–2017

• Research human gait and develop rehabilitation interventions for stroke and spinal-cord-injury populations.

• Integrate engineering modeling and movement analysis with clinical rehabilitation questions.

Postdoctoral Researcher

Indiana University Health and Indiana University School of Medicine

• Conduct biomechanics and rehabilitation research linking human-movement analysis with clinical applications.

Research Consultant

Rehabilitation Institute of Chicago | 2016

• Contribute biomechanical and rehabilitation research expertise.

Adjunct Lecturer in Biomechanics and Motor Control

Loyola Marymount University | 2016–2017

• Teach Biomechanics and Motor Control courses, connecting movement mechanics with human function.

Project Scientist and Research Scientist

UC Davis Health and Department of Orthopaedic Surgery, UC Davis Medical Center | 2014–2016

• Design interventions for functional disability using gait monitoring, simulation, and prediction.

• Develop three-dimensional medical-device models and prototypes and perform Instron mechanical testing and biomechanical evaluation.

• Conduct femur and tibia material testing to evaluate designs relevant to total knee and total hip arthroplasty, using mechanical testing and motion capture.

Earlier Research and Model Development

Research Associate and Hand Model Developer

Hand Rehabilitation Lab, University of Wisconsin–Milwaukee | 2013–2014

• Build a multi-segment finger and hand model to estimate posture-dependent grip forces.

• Develop interventions for stroke populations and a computerized mallet test for people with functional deficits.

• Study EEG patterns during pinching and interhemispheric transfer in stroke research.

• Investigate ladder-fall mechanics and design questions relating to fall-risk reduction.

Research Engineer

University of Birmingham | 2010–2012

• Design and develop human gait models in Vicon Nexus, transfer data to MATLAB, and compare outputs with Visual3D data.

• Analyze motion-capture data to support rehabilitation planning and prediction of movement outcomes.

Research Assistant

University of Salford | 2008–2010

• Develop a three-dimensional human gait model for intervention design in amputee populations.

Research Assistant

University of Salford | 2006–2008

• Create a nine-segment foot model in SIMM to investigate multi-segment foot motion.

Selected Research and Development Themes

• Return to play and sports injury: multidisciplinary development of quantitative criteria for ACL and MPFL injury rehabilitation and return to activity.

• Hand function and rehabilitation: posture-dependent grip-force estimation, multi-segment hand modeling, functional testing, and stroke-related motor control.

• Gait and clinical populations: walking prediction and movement analysis in amputee, stroke, spinal-cord-injury, and pediatric populations.

• Orthopaedic devices and materials: prototypes, mechanical testing, and biomechanical evaluations related to lower-limb joint replacement.

• Wearable and rehabilitative robotics: research interests and technical development involving robotic hand and glove technologies for functional assistance.

• MoVO platform concept: camera-based motion tracking with IMU verification, movement assessment, and machine-learning approaches to injury-risk and task-success estimation.

• PainFreedom platform concept: patient-specific assessment and AI-supported healthcare workflows with specialist oversight.

Technical Skills and Software

Programming and data science

MATLAB, Python, R, LabVIEW, statistics, statistical data analysis, machine learning, deep learning, numerical analysis, optimization, and signal processing.

Motion capture and musculoskeletal modeling

Vicon Nexus, Visual3D, OpenSim, SIMM, three-dimensional kinematics and kinetics, gait analysis, EMG, pressure measurements, and human-movement simulation.

Engineering and reconstruction tools

MADYMO, HVE, ANSYS, Abaqus, AutoCAD, SolidWorks, CAD, finite element analysis, mechanical modeling, and accident-reconstruction methods.

Experimental systems and quality

Instron testing, material and mechanical testing, medical-device prototyping, equipment calibration, maintenance, reliability, and quality control.

Professional communication

Expert reports, clinical reporting, technical investigations, medical-record interpretation, client interfacing, multidisciplinary collaboration, and Microsoft Office.

Expert Reports and Testimony

Forensic casework spans motor-vehicle collisions, slip and trip falls, sports incidents, and claimed musculoskeletal injuries. Experience includes expert-report preparation, litigation consultation, deposition testimony, and assessment of cervical, lumbar, head-neck, and torso injury mechanisms.

Analyses integrate photographs, video, reconstruction evidence, vehicle characteristics, occupant position and restraints, medical records, symptom history, and relevant biomechanical literature. Calculations may address delta-V, acceleration, forces, and injury criteria when the available measurements and assumptions justify their use.

Communicate the distinction between measured data, reconstruction estimates, modeling assumptions, and conclusions, including limitations affecting case-specific interpretation.

Research Outputs and Professional References

Research activity includes multidisciplinary work on quantitative return-to-play criteria and other biomechanics topics.

Professional references available upon request.

Pluto Profile Summary

I am a forensic biomechanics expert and biomechanical scientist with experience in injury causation, collision analysis, human movement, clinical research, computational modeling, and multidisciplinary leadership. I prepare expert reports and provide litigation support and deposition testimony, while applying motion analysis, mechanical testing, signal processing, and machine learning to biomechanics and rehabilitation. I am seeking senior forensic, Lead Scientist, research leadership, and R&D opportunities where these skills can contribute to technical decision-making and practical outcomes.