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EDUCATION

- 2008 Ph.D. and M.S., Northwestern University, Evanston, IL
 NU Prosthetics Research Lab/VA Chicago Motion Analysis Research Lab
 Major Program: Biomedical Engineering
- 1998 B.S.E., Duke University, Durham, NC; Major: Biomedical Engineering

PROFESSIONAL EXPERIENCE

- 2015 – present Research Biomedical Engineer, Warfighter Performance Department, Naval Health
 Research Center, San Diego, CA
- Director, Physical and Cognitive Operational Research Environment (PhyCORE) Laboratory
 - Act as subject matter expert for the department in the field of biomechanics
 - Manage and run research projects using the Computer Assisted Rehabilitation Environment (CAREN) system and perform other related research
 - Write grants, reports, proposals, and manuscripts for the Warfighter Performance Department related to human movement, musculoskeletal injury prevention, rehabilitation, and human performance
 - Mentor interns working in the lab
 - Supervise personnel working in the Physiological and Cognitive Operational Research Environment (PhyCORE) laboratory
 - Manage collaborations between other CAREN sites, universities and treatment facilities
 - Manage purchases, systems, and software related to the research group
- 2014 – present Faculty Lecturer/Adjunct Professor, Department of Exercise and Nutritional Sciences, San
 Diego State University, San Diego, CA
- 2008 – 2015 Engineering Analyst, Biomechanist, Naval Health Research Center, San Diego, CA
 (Contracting Company: Leidos/SAIC, San Diego, CA)
- Start up research protocols and operate the CAREN system and perform other related research
 - Create normative active duty database of gait for use in biomechanics research
 - Write grants, proposals, and manuscripts for the Warfighter Performance Department related to human motion analysis, rehabilitation, and human performance
 - Supervise Leidos/SAIC personnel working at NHRC
- 2001 Industrial Intern, Honda Fundamental Research Laboratory, Mountain View, CA
- Performed human modeling and studied muscle force distributions of the lower limb in gait.
 - Worked with SIMM (musculoskeletal modeling) package to create walking model.

HONORS AND AWARDS

1998	Cum Laude, Duke University
2000	Walter P. Murphy Fellowship, Northwestern University
2004	Best paper prize at the 11 th International Society for Prosthetics and Orthotics World Congress. “Effects of prosthetic foot roll-over shape arc length on gait of trans-tibial Prosthesis Users”.
2010	SAIC/Naval Health Research Center Service Award
2012	Best poster award at the 21 st Annual Meeting of the European Society of Movement Analysis for Adults and Children (ESMAC). “Effectiveness of a fall-prevention training program for persons with lower extremity amputations: Initial results”.
2014	Leidos Certificate of Appreciation for Service
2014	Naval Health Research Center Service Award (February, April, and July)
2015	National Training and Simulation Alliance (NTSA) Modeling and Simulation (M&S) Cross-Function Award for outstanding achievement in support of the overall M&S effort, entitled “Expansion of the Computer Assisted Rehabilitation Environment (CAREN) for Warfighter Performance Training and Research across Disciplines”.
2016	Special Achievement Award for outstanding contributions to the Warfighter Performance Department, NHRC, promoting injury prevention and resilience.

COMMITTEES AND MEMBERSHIPS

Reviewer Peer Reviewed Journals: Gait and Posture; Virtual Reality; Archives of Physical Medicine and Rehabilitation; Transactions on Neural Systems and Rehabilitation Engineering; Archives of Physical Medicine and Rehabilitation; Journal of Rehabilitation Research and Development

Reviewer Proposals: VA SPIRE

Reviewer Conference Abstracts: Gait and Clinical Movement Analysis Society Conference; The Orthotic and Prosthetic Education and Research Foundation

Professional Memberships: American Society of Biomechanics, International Society for Virtual Rehabilitation

Member: Defense Health Agency JPC-5 Musculoskeletal Injury Prevention Working Group (2015-2016)

Chair: Defense Health Agency JPC-5 Musculoskeletal Injury Prevention Working Group (2017-present)

CERTIFICATIONS and CLEARANCES

CPR/BLS certified	2008-present
Hologic X-ray Bone Densitometer (DXA) Operator Certification	2009
Computer Assisted Rehabilitation Environment (CAREN) Operator Certification	2009
Computer Assisted Rehabilitation Environment (CAREN) Advanced Operator Certification	2013
National Security Clearance (Secret)	2009-present

CURRENT AND PAST RESEARCH PROJECTS

2018-present	The use of mobile visual and auditory technologies to implement augmented reality tasks for vestibular physical therapy; Sponsor: Department of Defense - FY16 CDMRP Psychological Health and Traumatic Brain Injury Research Program Complex Traumatic Brain Injury Rehabilitation Research Award; Role: PI; Objectives: Our objective is to improve TBI neurosensory symptoms in patients, who are nonresponsive to traditional rehabilitation, through use of mobile technologies that can be transitioned to clinics and the home. We hypothesize that a mobile VR system, incorporated with augmented reality and 3D spatial audio, will have sufficient detail and function to provide feedback to patients comparable to those received while utilizing the CAREN.
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- 2016-present Advanced Assessment and Rehabilitation Systems for Evaluating and Treating Wounded Warriors; Sponsor: Navy Bureau of Medicine and Surgery (BUMED) Role: PI; Objectives: To enhance warfighter readiness and rehabilitate wounded warriors, this project develops and implements advanced rehabilitation programs using modern technologies integrated within the Computer Assisted Rehabilitation Environment (CAREN). Outcomes will provide wounded warriors access to multidimensional therapies that simultaneously challenge cognitive, balance, and motor systems.
- 2016-present Novel approaches for treating PTSD with synergistic sleep and immersion therapy programs; Sponsor: Navy Bureau of Medicine and Surgery (BUMED) Role: PI; Objectives: To investigate the effectiveness of Motion-Assisted, Multi-Modal Memory Desensitization and Reprocessing (3MDR) therapy and brief behavioral therapy for insomnia (BBT-i), individually and combined, improves treatment outcomes in Warfighters with post traumatic stress. We hypothesize that the use of each individual treatment will show improvements in PTSD and sleep behavior symptoms of people with PTSD. We also hypothesize that the combined effect of both programs together will provide enhanced effectiveness, either by reducing PTSD and sleep behavior symptom severity, reducing time of treatment, or providing longer term reduction in symptom severity.
- 2015-present EOD Warrior Athlete; Role: Scientist; Objectives: Measure psychological and physical assessments of EOD operators over time to help improve training and evaluation of the operator for reduction of injury and improvement in performance.
- 2016-present Improved Training Program for Fall Prevention of Warfighters with Lower Extremity Trauma; Sponsor: DoD CDMRP; Role: site PI; Objectives: To apply a technique that has successfully reduced falls in patients with unilateral amputation to the rehabilitation program of patients with bilateral amputations and patients using dynamics orthoses. The goals of the study are to accelerate the rehabilitation process, increase weight bearing strategies on the prosthetic or injured limb, and achieve significantly reduced fall risk.
- 2015-2017 Effect of Personal Protection Equipment Design Variations on Alteration in Performance as it Relates to Survivability; Sponsor: Office of Naval Research; Role: PI; Objectives: Determine the differences in performance of the operator on military related tasks for different personal protective equipment and loads for objective measurements of survivability.
- 2014-2016 Evaluation of Personal Protective Equipment (PPE) for the Marines; Sponsor: Marine Corps Systems Command; Role: Scientist; Objectives: Use the Computer Assisted Rehabilitation Environment (CAREN) to evaluate new modular body armor and load distributing PPE on biomechanics and human performance.
- 2013-2014 Validation of Enhanced Technologies for Optimization of Warfighter Load (ETOWL); Sponsor: Office of Naval Research; Role: Scientist, Engineer; Objectives: Evaluate the simulation outcomes of ETOWL human performance software with biomechanical and physiological data collected on operators walking in the CAREN.
- 2011-2015 Development of a Rapid Rehabilitation Program for Fall Prevention of Lower Limb Amputees. Sponsor: DoD DMRDP; Role: Co-PI; Objectives: Develop and test a rehabilitation program aimed at reducing falls and injuries caused by falls in persons with lower limb amputation.

- 2011-2015 Development of a Rapid Rehabilitation Program for Fall Prevention of Lower Limb Amputees. Sponsor: DoD DMRDP; Role: Co-PI; Objectives: Develop and test a rehabilitation program aimed at reducing falls and injuries caused by falls in persons with lower limb amputation.
- 2008-2016 Surveillance of Mild TBI in Military Personnel; Sponsor: BUMED, Wounded Ill and Injured; Role: Scientist; Objectives: Construct NHRC's CAREN and develop eight CAREN-focused and four other research protocols benefitting the warfighter and the wounded warrior. To provide increased readiness, jointness, and value to DoD clinicians, service members, and other military stakeholders by enhancing rehabilitation of the wounded warrior through the development and implementation of novel rehabilitation and assessment strategies utilizing the CAREN and associated technologies.
- 2010-2013 Expanding Immersion Capabilities for Reset and Performance; Sponsor: DHP 6.7; Role: Scientist/Engineer; Objectives: expand and test the capabilities of CAREN to improve research and immersive capabilities of the system for warfighter performance. Added features to increase immersive capabilities (including scent system, improved graphics, driving simulator, and gaming systems) and to test and upgrade equipment to improve data accuracy.

PUBLICATIONS (selected)

- Markham AE, Collins JD, **Sessoms PH**. Learning and Long-Term Retention of Task-Specific Training in a Non-injured Population Using the Computer Assisted Rehabilitation Environment (CAREN). International Conference on Serious Games, Interaction and Simulation 2016 Jun 16 (pp. 99-108). Springer International Publishing.
- Sessoms, PH**, Gobrecht, M, Niederberger, B, Sturdy, J, Collins, J, Dominguez, J, Jaworski, R, and Kelly, K. Effect of a Load Distribution System on Mobility and Performance during Simulated and Field Hiking while under Load. Personal Armor Systems Symposium 2016; also Ergonomics. *Under Review*.
- Cox, BD, Edwards, H, Service, K, **Sessoms, P**, Dominguez, J, Zheng, W, and Reini, S. Cognitive Two-Way Interactions In an Immersive Virtual Reality Environment. Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC) 2015. Received honorable mention for best paper competition.
- Gottshall, KR and **Sessoms, PH**. Improvements in dizziness and imbalance results from using a multi disciplinary and multi sensory approach to Vestibular Physical Therapy - A case study. *Frontiers in Systems Neuroscience* 2015; 9, 106.
- Sessoms, PH**, Gottshall, KR, Sturdy, J, and Viirre, E. Head stabilization measurements as a potential evaluation tool for comparison of persons with TBI and vestibular dysfunction with healthy controls. *Military Medicine* 2015, 180(3S), 135-42.
- Sessoms, PH**, Gottshall, KR, Collins, JD, Markham, AE, and Service, KA. Improvements in Gait Speed and Weight Shift of Persons With Traumatic Brain Injury and Vestibular Dysfunction Using a Virtual Reality Computer-Assisted Rehabilitation Environment. *Military Medicine* 2015; 180 (3S), 143-149.

- Kaufman, KR, Wyatt MA, **Sessoms, PH**, Grabiner, MD. Task-specific fall prevention training is effective for warfighters with transtibial amputations. *Clinical Orthopaedics and Related Research* 2014; 472(10): 3076-3084.
- Collins, JD, Markham A, Service K, Reini LS, Wolf E, **Sessoms, P**. A systematic literature review of the use and effectiveness of the computer assisted rehabilitation environment for research and rehabilitation as it relates to the wounded warrior. *Work* 2015; 50(1): 121-129.
- Sessoms, PH**, Wyatt, M, Grabiner, M, Collins, JD, Kingsbury, T, Thesing, N, Kaufman, K. Method for evoking a trip-like response using a treadmill-based perturbation during locomotion. *Journal of Biomechanics* 2014; 47(1): 277-80.
- Rauh, MJ, Aralis, HJ, Melcer, T, Macera, CA, **Sessoms, PH**, Bartlett, JL, Galarneau, MR (2011) Effect of traumatic brain injury among US Service members with amputation. *Journal of Rehabilitation Research and Development* 2013; 50(2): 161-172.
- Bartlett JL, **Sessoms, PH**, Reini, SA (2012). Strength Through Science: Using Virtual Technology to Advance the Warfighter. *Aviation Space and Environmental Medicine*. 84(2): 165-166.
- Hansen, AH, Meier, MR, **Sessoms, PH**, Childress, DS. (2006). The effects of prosthetic foot roll-over shape arc length on the gait of trans-tibial prosthesis users. *Prosthetics and Orthotics International*, 30 (3), 286-99.
- Taylor, D, Atkins, B, **Hungspreugs, P**, Jones, T., Reedy, M., Hutcheson, K., Glower, D., and Kraus, W. (1998). Regenerating functional myocardium: improved performance after skeletal myoblast transplantation. *Nature Medicine*. 4(8), 929-33.

OTHER PUBLICATIONS

- Johnson, D, **Sessoms, P**, and Reini S. (2013). “Improvements in Targeting Precision by Applying Point Corrections to a Computer Assisted Rehabilitation Environment (CAREN)” *Technical Report – Naval Health Research Center*.
- Harvey, E and **Sessoms, P**. (2013). “Design and Integration of a Scent Delivery System in the Computer Assisted Rehabilitation Environment (CAREN)” *Technical Report – Naval Health Research Center*.
- Harvey, E, Johnson, D, and **Sessoms, P**. (2013). “Implementation of wireless input methods (game controllers and accelerometers) for simulated weapon trigger fire in the Computer Assisted Rehabilitation Environment (CAREN)” *Technical Report – Naval Health Research Center*.
- Anderson, B and Sessoms, P. (2012) “Force plate Signal Noise Characterization for the Computer Assisted Rehabilitation Environment (CAREN)” *Technical Report – Naval Health Research Center*.
- Sessoms, PH** and Gard, SA. (2008). Step length modulation in able-bodied persons. *Capabilities*, 16 (1), 6-7. Northwestern University, Chicago, IL.
- Hungspreugs, P**, Thelen, D, Dariush, B, and Ng-Thow-Hing, V. (2001). “Muscle Force Distribution Estimation Using Static Optimization Techniques,” *Technical Report – Honda R&D Americas*.