



Aerospace and Mechanical Engineering Seminar

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Assessing Upper-Extremity Motion: An Innovative Method to Identify Frailty and Low Functional Capacity in Older Adults

Health care systems spend a disproportionate amount of time and resources on elders requiring care; some of these elders are robust and will benefit from high-risk procedures. Other are “frail” with higher vulnerability to stressors and are at higher risk of adverse outcomes. They will require less aggressive care, and increased support using a multidisciplinary team of clinicians to avoid adverse outcomes. This age-related heterogeneity requires a risk stratification approach, and requires objective methods to differentiate different levels of risk. Common methods for assessing functional capacity and frailty are often: 1) focused on singular diseases; 2) based on self-report questionnaires that may be burdensome or inaccurately recalled; 3) difficult or dangerous to perform for those at high fall risk or those with mobility impairments; or 4) require significant clinical space and/or staff time. The focus of this presentation is to introduce a novel approach for identification of vulnerable frail adults presenting for medical care, using a quick and simple assessment tool, which is feasible to perform in both inpatient and outpatient settings. This research is novel for three primary reasons: 1) It incorporates objective wearable sensor technology for assessing functional capacity; 2) It uses a unique upper-extremity biomechanical algorithm for assessing motor performance, alleviating the need for gait assessment; and 3) it incorporates cognitive assessment similar to dual-tasking paradigms used in gait. The developed methods are suitable for basic musculoskeletal biomechanics, aging and neuroscience research, and translational studies, with high potential for clinical application to support management and treatment strategies targeted to improve health system and patient-centered outcomes.

Bio:

Nima Toosizadeh is an assistant professor in the division of geriatrics, general internal medicine and palliative medicine at the University of Arizona College of Medicine, with a co-appointment in the University of Arizona Department of Biomedical Engineering. He has over 10 years of experience in biomechanical modeling, measuring methods of physiological and biomechanical properties using traditional motion analysis lab equipment, and innovative body-worn sensor technology in healthy and geriatric patients.

AME Lecture Hall, Room S212

Thursday, Feb. 16, 2017

4 p.m.

Refreshments and socializing 3:45 p.m. at the east end of the AME Courtyard