סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ה' 8.09.16 (ה' באלול, תשע"ו), בבניין דן-קאהן, קומה 0, אודיטוריום 1, 14:30.

תרצה: דבורה סולומונוב - אבנון

מנחה: פרופ"ח אלון וולף

על הנושא:

Hip Joint Gait Biomechanics and Efficacy of Foot Center of Pressure Manipulation Employed for the Non-Invasive Treatment of Hip Joint Osteoarthritis

The seminar will be given in English

להלן תקציר ההרצאה:

Gait is the primary way in which we ambulate from one place to another in our daily lives. Degenerative pathologies of the lower limb joints are exceptionally detrimental to quality of life because they affect ambulation and cause minor to extreme pain and deteriorated physical function. Osteoarthritis (OA), a disease causing degeneration of the articular cartilage, and other secondary pathological findings of joint deformity, is the most common of the degenerative pathologies, characterized by pain, stiffness, limited range of motion, dysfunctional muscle activation, and overall joint deformity, among others. It affects a very large number of the population causing tremendous personal and economic burden. Of the joints affected by this disease, OA of the hip joint may have the worst prognosis. Left untreated, hip OA progresses, often rapidly, ultimately leaving total hip replacement as the sole cure. The current clinically accepted nonsurgical treatment includes medication, exercise, diet, use of walking aids, appropriate footwear, and in general, unloading of the diseased joint. To date, however, footwear recommendations are based solely on clinician opinion, and no biomechanical mechanism by which to unload the hip joint has been previously described or investigated. The current study was a multi-stage clinical trial study in which we investigated 1) the effect of frontal-plane foot center of pressure manipulation, using a foot-worn biomechanical device, on hip biomechanics during gait in both healthy and hip OA patients, as well as on neuromuscular pattern in hip OA patients, and 2) the efficacy of a one-year long gait treatment program, which is a clinical implementation of foot center of pressure manipulation, on quality of life and gait parameters in hip OA patients. In part 1 of the study, we found a specific foot center of pressure location which reduces hip joint reaction force by 8 % and 2 % in healthy subjects and hip OA patients, respectively, and significantly alters neuromuscular activity of hip-spanning and back muscles in hip OA patients. We describe in detail the possible biomechanical mechanism by which hip loads are reduced. In part 2 of the study, we show evidence for efficacy of the gait treatment program, as seen by improvement in subjective quality of life measures and objective gait outcome measures. The study results have substantial clinical and biomechanical significance in the field of non-invasive hip OA treatment interventions.

בברכה,

שרון אמיר

מרכז הסמינרים