



PROFESSOR ITSHAK MELZER: WALKING WITH CONFIDENCE, THE BaMPer SYSTEM

The treadmill of the BaMPer machine goes into motion as Prof. Itshak Melzer, a physical therapy researcher and head of the Faculty's Recanati School for Community Health Professions, flips a switch. This cutting-edge device helps therapists teach clients balance control during walking in order to prevent dangerous falls.

Research has shown that about 50% of adults over the age of 80 slip, trip and fall quite often, breaking their hips, legs, spine, and other bones in the process. These accidents can lead to a deteriorating quality of life. BaMPer therapy can prevent this process from starting. It provides an effective intervention that can prevent the occurrence of falls, especially in the elderly population. It teaches older adults balance control, so that they can learn how to balance and how to step to avoid falls and to recover balance. Melzer explains, "The BaMPer system allows us to put people in a controlled situation in which the patient uses his feet and legs to prevent falls and learns to do so faster and more effectively over time. Success is based on the combination of the patient's loss of fear as he gains the ability to prevent falls, plus the increasing speed with which he executes the balancing step he needs, and the reduced number of falls he experiences."

Patient movements are monitored by a series of live-action cameras placed around the Rehabilitation and Motion Analysis Laboratory, while a painless Surface Wireless Electromyography technique, which works using a small button placed on the patient's skin, diagnoses the health of a patient's muscles and nerves as they move.

The BaMPer System debuted at the inauguration of the Schwartz Movement Analysis & Rehabilitation Laboratory, during the Computational Motor Control International Conference held at the Faculty in June 2015. The laboratory was established through a grant from the new initiative to advance Agricultural, Biological and Cognitive Robotics R&D funded by the Harry B. Helmsley Charitable Trust. It was developed by Melzer and Prof. Amir Shapiro from the Department of Mechanical Engineering, together with the late Prof. Amir Karniel, who headed the Department of Biomedical Engineering and the research group.

