Low back disorders (LBDs) continue to represent a major challenge for the U.S. health care system and for society in general. As a nation we spend over $90 billion treating these problems and treatment procedure rates have increased dramatically over the past decade. Yet, these increases have not been accompanied by population level improvements in patient outcomes or disability rates. In addition, recent literature reviews have cast doubts on the work-relatedness of LBDs and musculoskeletal disorders in general. These findings suggest a need for a better understanding of the causal pathways and basic science underlying LBDs.

Within the Biodynamics Laboratory, we view the spine as a multidimensional system that is influenced by physical and psychosocial work exposures, individual factors, and organizational factors. Over the years we have been exploring common pathways to LBDs that are influenced by these various factors. A series of epidemiologic and laboratory studies have led us to the development of person-specific modeling of the spine in an effort to better understand the causal pathways for LBD and to evaluate potential preventive and treatment interventions. This presentation will review some of these efforts and discuss future directions and need for research.

All interested persons are welcome to attend

William S. Marras holds the Honda Professor Chair in the Department of Integrated Systems Engineering at the Ohio State University. He serves as the director of the Biodynamics Laboratory, the Center for Occupational Health in Automobile Manufacturing and is Executive Director for the Institute for Ergonomics. Dr. Marras also holds joint appointments in the Departments of Orthopaedic Surgery, Physical Medicine & Rehabilitation, as well as Biomedical Engineering. His research is centered on musculoskeletal causal pathway investigations including occupational biomechanical epidemiologic studies, laboratory biomechanics studies, mathematical modeling, and clinical studies of the back and spine. His findings have been published in over 195 peer reviewed journal articles and numerous books and book chapters including a recent book entitled “The Working Back: A Systems View.” He holds Fellow status in five professional societies and has been widely recognized for his contributions through numerous national and international awards including an honorary Sc.D. degree. Professor Marras was the past Chair of the Board on Human Systems Integration at the National Research Council, Editor in Chief of Human Factors, Deputy Editor of Spine, and has been elected to the National Academy of Engineering (the National Academies)