

**College of Health and Human Development
Faculty Research Themes**

Musculo-Skeletal Health

John Challis

Associate Professor

Kinesiology

Email Address: **JHC10@PSU.EDU**

Research Interests

Measurement and simulation modeling of the human musculo-skeletal system, with the aim of examining the role, function, and coordination of muscle in vivo. Development of improved biomechanical measurement protocols.

Mark Latash

Distinguished Professor

Kinesiology

Email Address: **MLL11@PSU.EDU**

Research Interests

Control and coordination of multi-element systems participating in the production of voluntary movements. Equilibrium-point hypothesis of motor control. Control of posture, multi-joint reaching, finger coordination, and other motor tasks; the neurophysiological mechanisms of the production of voluntary movements. Changes in motor control and coordination with age, neurological disorder, and rehabilitation.

Philip Martin

Professor and Department Head

Kinesiology

Email Address: **PMARTIN@PSU.EDU**

Research Interests

Biomechanics and energetics of locomotion; factors affecting preferred rates of movement in cyclic activities, with particular emphasis on the biomechanics and economy of walking, running, and cycling; kinematic and kinetic determinants of walking and running patterns in below knee amputees.

Nicole McBrier

Assistant Professor

Kinesiology

Email Address: **nmm13@psu.edu**

Research Interests

Skeletal muscle regeneration following injury and the influence of therapeutic modalities and rehabilitation on the regenerative processes. Currently, Dr. McBrier is investigating the influence of therapeutic ultrasound on skeletal muscle regeneration following contusion injury.

Roger McCarter

Professor

Biobehavioral Health

Email Address: **rjm28@psu.edu**

Research Interests

Mechanisms of aging, calorie restriction and aging, involvement of energy metabolism, muscle function and body temperature in the aging process.

Karl Newell

Professor and Associate Dean

Deans Office

Email Address: **KMN1@PSU.EDU**

Research Interests

Coordination, control and skill of normal and abnormal human movement across the life-span; development of coordination, acquisition of skill, information and movement dynamics, mental retardation and motor skills, drug exercise influences on movement control.

Stephen Piazza

Associate Professor

Kinesiology

Email Address: **STEVE-PIAZZA@PSU.EDU**

Research Interests

Kinematic and dynamic computer simulation applied to the study of normal and pathological human gait; effects of design and surgical variation on the mechanics of total knee replacements; modeling of articular contact.

Robert Sainburg

Associate Professor

Kinesiology

Email Address: **RLS45@PSU.EDU**

Research Interests

Neural mechanisms underlying control of multijoint arm movements in humans. We combine both psychophysical experiments and biomechanical simulations to determine the neural processes responsible for coordinating the complex mechanics of the musculoskeletal system. Studies in patients with neurological lesions are conducted to determine the contributions of specific neural structures to control.

**College of Health and Human Development
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Neil Sharkey

Research Interests

Professor

Kinesiology

Email Address: **NAS9@PSU.EDU**

Functional aspects of the musculoskeletal system viewed from an orthopaedic perspective; normal, pathologic, and reconstructed function of bones and joints; mechanisms of injury to bone, ligament, and tendon and associated healing responses; laboratory modeling of skeletal and diarthroidal joint loading; internal biomechanical behavior of the foot and ankle, knee, hip and

Vladimir Zatsiorsky

Research Interests

Professor

Kinesiology

Email Address: **VXZ1@PSU.EDU**

Sport biomechanics and conditioning of athletes. Biomechanical basis of motor control, in particular biomechanics of standing posture and force sharing between individual muscle groups, maximal muscular power in burst-like activities, RI study of lumbar vertebrae under mechanical load, application of wavelets in human biomechanics, science of training athletes, especially strength training.