



International PhD Course – March 9-14th 2015

Assessment and evaluation of human muscle, nervous system and tendon-aponeurosis function in sports science, clinical science and aging

Institute of Sports Science and Clinical Biomechanics, University of Southern Denmark (SDU)

Topics

Mechanical muscle function in vivo

Per Aagaard: Assessment and evaluation of mechanical muscle function in vivo - paradigms and applications from elite sports to patient rehabilitation

Human tendon and aponeurosis function in vivo

Peter Magnusson: Assessment and evaluation of muscle tendon and aponeurosis function in vivo - paradigms and applications.

Jens Bojsen-Møller: Muscle use and force transduction in vivo evaluated by imaging techniques (PET, MRI, US) - evidence of non-uniform tendon force transmission

Molecular and cellular aspects related to tendon adaptation in vivo

Katja Heinemeier: How do tendons adapt to exercise? Possible roles of species, growth factors and tissue turnover rates

Adaptive plasticity in human skeletal muscle with exercise

Jesper L. Andersen: Assessment and evaluation of muscle morphology, fibertype composition and MHC isoform distribution - paradigms and applications.

Per Aagaard: Assessment of anatomical muscle morphology in vivo – adaptive changes induced by exercise and disuse

Assessment and evaluation of neuronal function in vivo - paradigms and applications

Per Aagaard: Use of surface EMG recording and evoked H-reflex responses to evaluate neuromuscular function – adaptations elicited by resistance training

Jesper Lundbye-Jensen: Use of transcranial magnetic stimulation and neuroimaging methods to evaluate the effect of exercise and disuse on human neuromotor function

Cellular signalling pathways and muscle growth

Peter Schjerling: Assessment and evaluation of molecular mechanisms related to myofiber growth – signalling pathways, growth factors, growth inhibitors, effects of exercise

Lars Holm: Resistance exercise intensity: effects on muscle protein turnover and related cellular signaling, muscle growth, and optimization with protein supplementation.

Kristian Vissing: The Akt–AMPK switch mechanism - Antagonistic cellular signaling with resistance exercise vs. endurance exercise

From macroscopic muscle morphology and architecture to single fiber contractility

Olivier Seynnes: Assessment of anatomical muscle architecture and size in vivo – adaptive changes induced by exercise, aging and disuse

Lars Hvid: Contractility of isolated single myofibers – influence of training and disuse in young and old adults

Skeletal muscle glycogen and fatigue resistance

Joachim Nielsen: Subcellular glycogen localization in skeletal muscle - assessment techniques, regulation, role in cellular fatigue, effects of exercise aging and disuse

Myogenic satellite cells and myonuclei regulation

Abigail Mackey-Sennels: Activating satellite cells in humans: mechanical and pharmacological stimuli

Fawzi Kadi: Regulation of myonuclear number in human skeletal muscle - role of satellite cells and effects of exercise, relationship to 'muscle memory'

Muscle atrophy and regrowth with disuse and retraining

Charlotte Suetta: Molecular mechanisms and treatment options for muscle atrophy and muscle wasting with disuse and disease – age related aspects

Ulrik Frandsen: Novel regulatory signaling mechanisms in the myogenic stem cell niche in relation to aging, disuse and regeneration

Muscle, sarcopenia, neuromuscular function and training in the elderly

Jesper L. Andersen: Changes in muscle morphology and fibertype composition with aging – effects of resistance training, adaptive responses in the very old

Per Aagaard: Neuromuscular and sarcopenic changes with advanced aging – use of exercise as a countermeasure, exercise in the hospitalized elderly

Paolo Caserotti: Changes in body composition with aging, impact on function, and reversibility with training

Use of resistance exercise in clinical patients

Lars L. Andersen: Muscle function in clinical patients – effects of exercise in myalgia and stroke patients, influence on ADL function and movement performance

Evaluation of neuromechanical function in orthopaedic patients

Jonas Thorlund: Neuromuscular function in meniscectomized patients at high risk of osteoarthritis

Anders Holsgaard-Larsen: Assessment of between-limb asymmetry and the association of objective and subjective outcomes in ACL patients

Injury rehabilitation and prevention in human muscle, tendon and ligaments

Mette Zebis: Neuromuscular aspects related to non-contact ACL injury in elite female athletes - pre-injury screening, effects of neuromotor training, design of training

Tine Alkjær: Antagonist muscle co-activation following ACL injury - copers vs non-copers

Per Aagaard. Prevention and rehabilitation of musculo-tendinous overuse injury by use of exercise – biomechanical and neuromuscular aspects

For more information, please contact Per Aagaard (arranger): paagaard@health.sdu.dk

For more course information, please also visit:

http://www.sdu.dk/en/Om_SDU/Institutter_centre/Iob_Idraet_og_biomekanik/Forskning/Forskningsenheder/MuskelfysiologiBiomekanik/Nyheder/Phd+kursus

Course registration:

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