

Research fields and areas in Physical Therapy and Occupational Therapy

Advanced Physical Therapy for Neurological Disabilities and Developmental Disabilities (Master's Course/Doctor's Course)

Naoki Kozuka, RPT, PhD

Takeshi Sasaki, RPT, PhD

Our research interests are in the rehabilitation management of neurological and developmental disabilities, the physiological, pathological, kinesiological and neurological analyses of children with motor disabilities (Cerebral Palsy, Spina Bifida, Muscular Dystrophy, High-Risk infant caused by low birth weight) and adult cerebrospinal disorder patients (Stroke, Spinal Cord Injury, Neuromuscular Disorder), the adequate following up system and developmental care for premature infant, and the effectiveness therapeutic interventions for disturbances of postural control and locomotion in animals and patients with different brain lesions.

Sensory Integrative Dysfunction (Master's Course/Doctor's Course)

Yasuhito Sengoku, OTR, PhD

Sonomi Nakajima, OTR, PhD

Toshio Ohyanagi, PhD

Yuji Nakamura, OTR, PhD

Sensory integration is defined as the neurological process that organizes sensation from within the body and from the external environment. People with brain injury have some difficulties in their daily livings because of dysfunctions in their sensory integration. We study the mechanism of sensory integration process and dysfunction from viewpoints of visual attention, space visualization and behavior analysis to find new way of Occupational Therapy that helps people with developmental disabilities or higher brain dysfunction and then makes their life better.

Biomechanics · Orthopaedic Sports Medicine (Master's Course/Doctor's Course)

Kota Watanabe, MD, PhD

The Biomechanics Laboratory supports the core values of Health Sciences by conducting innovative and integrated basic and applied research to provide the most up-to-date devices and techniques. From the viewpoint of rehabilitation, we support the highest quality patient care and educate physical therapists, occupational therapists, and scientists regarding the musculoskeletal system and sports medicine.

Central nervous system dysfunction (Master's Course/Doctor's Course)

Hisaaki Ota, OTR, PhD

We know that neuropsychological and neurological dysfunction due to the brain damage may affect many aspects of activities of daily living though it has not established yet what we should do therapy for people with them. The aim of our research is, therefore, to analyze and understand characteristics of those symptoms in detail to find much more appropriate therapeutic approaches facilitating both behavioral and neural change. One of our research interests focuses on unilateral spatial neglect (USN) to develop new ways of evaluation and assessment and to confirm the effectiveness of prism adaptation technique as a therapeutic intervention.

Orthopedic Sports Physical Therapy & Internal Disorder physical therapy (Cardiac Physical Therapy included) (Master's Course/Doctor's Course)

Masaki Katayose, RPT, JSPO-AT, MSc, PhD

Fuminari Kaneko, RPT, JASA-AT, MSc, PhD

Keigo Tainguchi, RPT, MSc, PhD

At this course, for the several targeted clients and population to practice all sports activities at various levels not only athletes, we promote the study of sports activities and exercise therapy with safe and effective. Mainly, the study of prevention and physical therapy for trauma disorders associated with sports activities, and prevention and exercise therapy for lifestyle-related diseases such as myocardial infarction and cardiovascular system are focused. The study of clinical application of sports physical therapy was considered more effective.

Human Activities and Therapeutic process (Master's Course /Doctor's Course)

Mariko Nakamura, OTR, PhD

The purpose of occupational therapy is to help patients with psychological or physical problems regain the ability of applied movements and the social adaptation for them to be able to come back to society again through the activities of daily life. At this course, we study relations with life and action of the person who had a disorder in body function.

Neurophysiology and Neuropsychiatry (Master's Course /Doctor's Course)

Kiyoji Matsuyama, MD, PhD

In order to develop new rehabilitation strategies suitable for persons with neural disorders, this area aims to advance understanding of neural mechanisms of sensorimotor and mental functions of the central nervous system (CNS) together with underlying mechanisms of neurological symptoms caused by CNS damages. For this purpose, we attempt to obtain updated knowledge from latest journal articles, and also through animal and human experiments using electrophysiological techniques and noninvasive measurement methods of human brain functions.

Psychiatric rehabilitation (Master's Course/Doctor's Course)

Nozomu Ikeda, OTR, MA, PhD

Takafumi Morimoto, OTR, PhD

Enhancing resilience and the ability to cope with stress and psychiatric symptoms is an important issue in psychiatric rehabilitation. In this course, we conduct studies on psychosocial interventions and factors that can positively affect the recovery of persons with psychiatric disabilities. As several factors are involved in recovery, an interdisciplinary perspective that includes cognitive science, behavioral science, and neuroscience is required. Therefore, a variety of research approaches, such as experimental methods, quantitative methods, qualitative methods and mixed methods, are used.

Older people and community health science (Master's Course /Doctor's Course)

Taketo Furuna, RPT, PhD

At this course, we conduct various studies which contribute to aging society, focusing on aging of physical function, movement and physical activity. In particular, it is conducted some intervention research for older citizens living in the community to establish an effective exercise program which can enhance their health status. These studies mentioned above are basis on exercise epidemiology or kinesiology (especially motor control), and are carried out from field research to experimental settings for any purpose.

Disabilities in diseases of nerve and muscle (Master's Course /Doctor's Course)

Tomihiro Imai, MD, PhD

The aim of this course is twofold: (1) to understand disabilities in diseases of nerve and muscle; and (2) to develop practical knowledge and tactics of rehabilitation for the patients. Therefore, this course includes regular updates of latest knowledge by various sources, and experiments to elucidate the underlying mechanisms for dysfunction of nerve and muscle in the patients using clinical neurophysiology and pathology.

Physical Anthropology (Master's Course/Doctor's Course)

Hirofumi Matsumura Sc PhD

The Physical Anthropology, a field of Biological Anthropology that aims to anatomically explore formation of human morphology. The goal of our study is to understand human evolution spanning 700 million years, including our anatomical modern humans, from interdisciplinary perspectives of evolutionary anatomy, comparative anatomy, mutation and diversity, environmental adaptation and functional adaptation.

Occupational Science (Master's Course)

Mari Sakaue, OTR, PhD

Yasuhito Sengoku, OTR, PhD

Occupational science, the study of how people's engagement in their daily activities, maintains and regains health and well-being after disease and disability. This science defines people as occupational beings who engage in occupations and construct their lives and identities through them. This course promotes the study of occupations and occupational beings for the purpose of fully providing the aged, persons with disabilities or those with chronic health problems the opportunity to participate in their community. Additionally, this course further focuses on the relationships between occupation, place and time in order to assist people in either coping with or overcoming their life crises.

Community and Human Life Science (Master's Course) **Yoko Goto, OTR, PhD**

It is necessary that we put in a lot of efforts to start handling the community based rehabilitation hereafter not only the care promotion of senior citizens and the handicapped people, but also the actions from the point of view to support the whole community. We analyze the health scientifically from the view point of "Community Empowerment".

Muscle Physiology (Master's Course) **Takashi Yamada, RPT, PhD**

To develop novel therapeutic interventions to treat skeletal muscle weakness, we investigate the mechanisms behind muscle adaptations in response to physical therapy and maladaptations in aging and primary and secondary myopathies. To a large extent our research relates to the complex interactions between mechanical stress, force production, intracellular calcium handling, myofibrillar function, inflammation, and reactive oxygen/nitrogen species.

Biofunctional & Imaging Evaluation in Physical Therapy (Master's Course) **Keigo Taniguchi, RPT, MSc, PhD**

The medical imaging technique is a reliable technology that provides novel insights into the monitoring and investigation of muscular responses to rehabilitation. The aim of our study is to serve a foundation

for exploring the use of muscle architectural, functional, and mechanical properties as clinically relevant information for assessing the severity of musculoskeletal and neuromuscular disorders, and potential improvements due to various treatments.