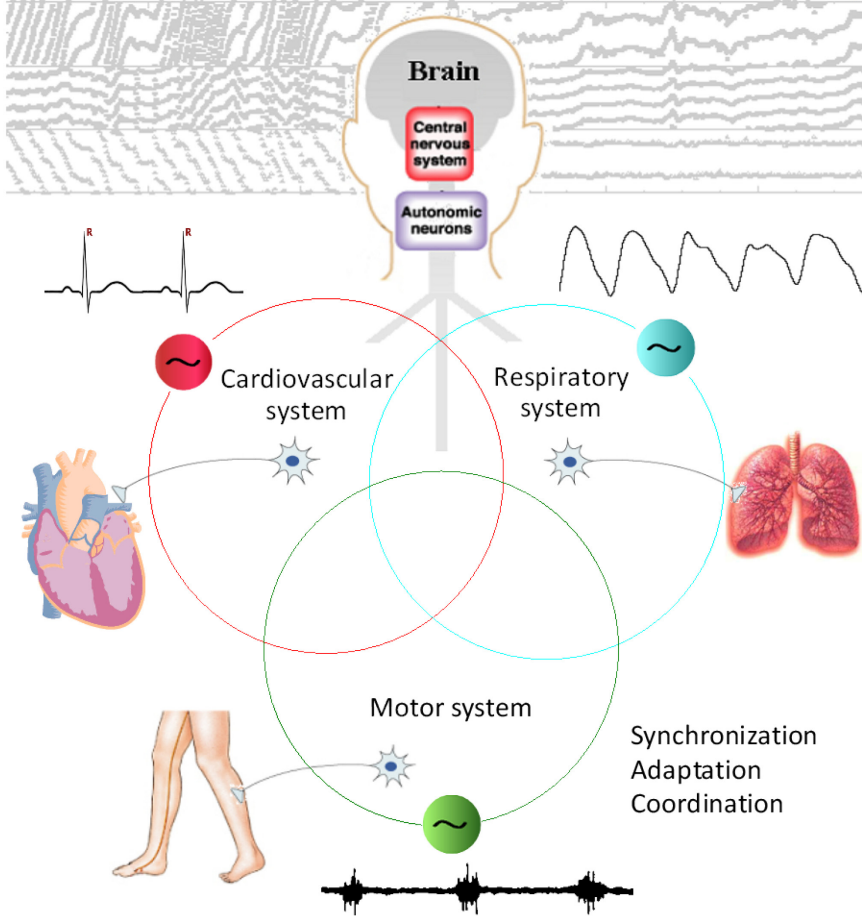


Integrative Physiology of Cardiorespiratory and Motor Control

Professor Kyuichi Niizeki

Analyzing coordination of cardiorespiratory and locomotor rhythms

● Biomedical Engineering ● System Physiology ● Exercise Physiology ● Signal Processing



Our laboratory's major research objectives are to provide insight into the function of the cardiorespiratory system using engineering and scientific principles. Research efforts include:

Analyses and modeling of cardiorespiratory response to exercise

We are examining the ventilatory and circulatory responses to dynamic exercise using system identification technique, especially focusing on kinetics of oxygen uptake and their limiting factor(s) including computer modeling of gas exchange in the lung and peripheral tissue.

Analysis of coordination of cardiac, respiratory and locomotor rhythms

We are investigating how the cardiac, respiratory, and locomotor rhythms coordinate during exercise. Knowledge gained through this research is that the cardiac and respiratory rhythms have phase-dependent nature to other biological rhythms which causes the synchronization among those rhythms.

Development of noninvasive apparatus for measuring biosignals

We are developing the monitoring devices that enable to measure cardiac and respiratory signals unconstrained and non-invasively. We are also interested in the signal processing techniques that provide new insights on the physiological nature of the healthy and diseased humans.

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Research Interest : Biophysiological engineering

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