S-Ⅲ-2 Embodiment and movement in "coordination-theory"

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Motor control has already developed into a defined research area. It has been traditionally investigated by biomechanical or neurological methods. The basic principals of controlling human voluntary movement include the "coordination theories". These theories are proposed in many fields, that is, physical fitness, sports training, motor skills and rehabilitation. However, all theories are common at a point related motor and sensory systems.

In the thought of traditional "body works" in the early 20th century, the integration or the synergy effects of motor control and sensory information processing were emphasized. Likewise, in the same times, Otfrid Foerster, German doctor, investigated physiological and pathological aspects of "coordination" and Nikolai A. Bernstein formulated the hierarchical theory of motor coordination. On the other hand, the brain functions have been widely studied in many research area, engineering, Philosophy and so on. These studies use "coordination" as technological term recently. Therefore, the methods of exercise and movement physiology based on the "coordination theory" will be able to investigate a new problem of not only motor-sensory integration, movement development and motor skills, but potentiality related to human behavior.

Key Words: Motor Control, Coordination theory, motor-sensory integration, Human Behavior

S-Ⅲ-3 The approach from physiological anthropology

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Physiological anthropology is a biological science that studies human beings mainly in terms of physiological functions. It may be said that physiological anthropology is the anthropology of humans living in modern civilizations, and is closely related to exercise physiology in its methods of studying human physiological functions. There are various levels at which humans can be studied: molecular, cell, organ, individual, population and ecosystem levels. In physiological anthropology, we study human beings mainly at the individual and population levels.

The study of physiological anthropology in Japan was begun by Toshihiko Tokizane and Masahiko Sato. The research topics in this field later expanded into the work capacity of individuals, and the environmental adaptability of populations. Furthermore, the research field of "Physiological Anthropology" was established in JSPS Grant-in-Aid for Scientific Research program in 2003. The keywords established in this research field were "Environmental Adaptability", "Physiological Polytypism", "Functional Potentiality", "Whole-body Coordination" and "Technological Adaptability." Various researches related to these keywords have emerged in the field.

My topics of research have changed; however, I always focus on the physiological functions of human beings. I also try to explore the dynamics of evolution, adaptation, and variation of human beings, from the viewpoint of physiology anthropology. In this symposium, I introduce the concept of physiology anthropology, present examples of some studies and offer a topic for discussion.