

Personal Career of Research Activities and Future Direction

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Opinion

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Opinion

In 1960, I started my research life on human movements at the Laboratory of Physical Education, Faculty of Education, University of Tokyo. The laboratory had been supervised by Professor M Ikai (1913-1971). There was no textbook written in Japanese. Therefore, I had to read the English textbooks. The first book was “The Integrative Action of Nervous System” written by Sherrington 1). From this book, I learned that the reflex of the nervous system is the primary function that controls human movements. The second book was “Muscular Movement in Man: The Factors governing Speed

and Recovery from Fatigue” by Hill 2). I understood that the amount of energy required to perform human movements can be estimated by the oxygen consumption.

Through physical movement, man converts chemical energy accumulated in the body into mechanical energy (Figure 1). The total amount of chemical energy in the body is expressed as physical resources. On the other hand, mechanical energy results in physical performance.

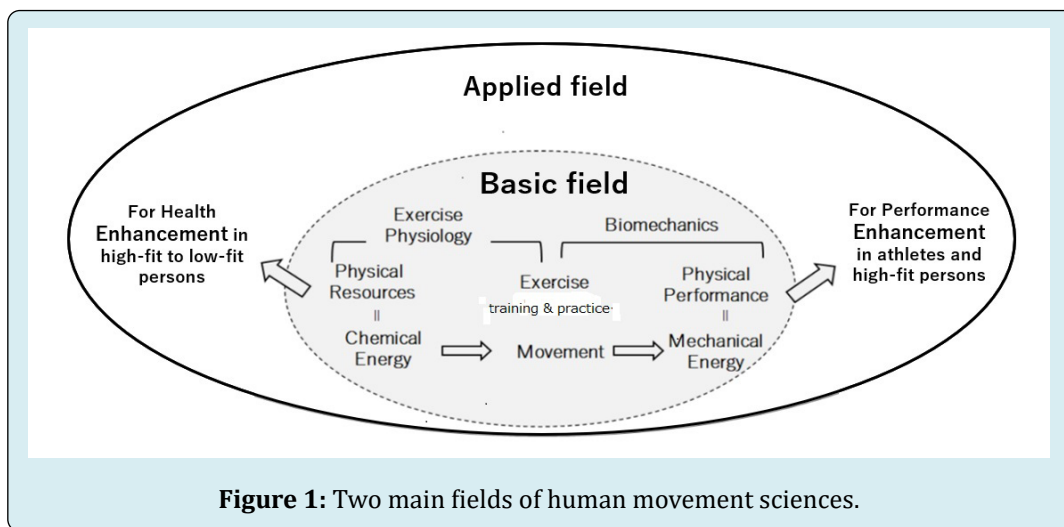


Figure 1: Two main fields of human movement sciences.

The matters concerning physical resources are studied mainly in the field of exercise physiology, while the matters concerning physical performances are mainly in the field of biomechanics. As both fields form a foundation for physical education, sports and health, I decided to research human movements from two aspects of exercise physiology and biomechanics.

Since 1972 when Professor Ikai died suddenly, I followed his position, and have supervised many graduate students in exercise physiology and biomechanics.

Future Direction

For the past 10-20 years, the remarkable development of computer-controlled motion analysis helps the researchers

of biomechanics to investigate human movements more precisely and rapidly than before.

Also, recently, chemical biology, molecular biology, and genetics bring wider views to exercise physiology. Consequently, researchers get a lot of experimental data about the research target: human activity. Therefore, I am afraid that experiments have produced too much data for the recent researchers to deal with.

The research results should be selected and proposed for

the instructors to use them with the laypersons. Consequently, the young researchers have to select the research means and purposes, and apply the obtained results effectively for the laypersons.

- Sherrington CS: The Integrative System of Nervous System. (6th printing) Yale University Press. New Haven, 1920
- Hill AV: The Muscular Movement in Man: The Factors Governing Speed and Recovery from Fatigue. McGraw-Hill Publishing Co. London, 1972

