

S-III-4 Body-Mind Unifying Science based on Gravity Health Science ~Dual layers of human dynamic life system and spontaneity emerged from self consciousness.

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Purpose: Despite the fact that human being belongs to multicellular organism, recent progress of life science clearly demonstrates that cell is a basic unit for adaptation/learning. Although cell has not been appreciated in exercise physiology and/or physical education field, cell is a system does survive and adapt by itself keeping relation to environment like human individual system. Here we propose body-mind unifying science since human being has been evolved uniquely different from other animals to control the autonomous body system with consciousness by brain system, which producing "self". **Methods:** Dynamic observation systems are appreciated for analyses at different stages of cell, tissue, and an individual as well as molecular cellular biology and exercise physiology and biomechanics. **Results & Discussion:** Principle of emergence of life system on the earth and evolution under the gravity is "activity-dependence as a rule of life system for survival and "mild stress" for inducing adaptive change. Molecular chaperone alphaB-crystallin as a protein to support adaptation and leaning was discovered and characterized in muscle cell and glial cell system in the brain. "The cytoskeleton" is one of it's interacting molecule, especially tubulin/microtubule system, which organizes the fulcrum to develop tension, and control cell shape with an intrinsically dynamics called "dynamic instability". Considering bipedal human system to keep standing position as normal state for living, dynamic instability is also an important idea. Since logics states by language are essential for human beings to understand new concept, an education program of body and mind/brain unifying science that give such unfamiliar knowledge becomes essential. A pilot program to know thyself has enforced at the Univ. of Tokyo from 2006 for this purpose. **Key words:** Body-Mind Unifying Science, Gravity Health Science, dynamic instability, mild stress, alphaB-crystallin.

S-IV-1 Evidence based health promotion by exercise and physical activity

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Many findings now show that being physically active provides people of all ages with a wide range of physical, social and mental health benefits, and reduces the overall-mortality risk. For example, regular exercise prevents cardiovascular diseases, particularly by maintaining weight, reducing blood pressure and improving cholesterol levels. Furthermore, it decreases the incidence of diabetes, colon cancer, osteoporosis as well as injuries, and improves mood and depression.

In recent years, a national health policy came to be determined based on the scientific evidences obtained from epidemiological research. Therefore, the researcher of this field is required to produce many results which are useful for the health promotion. Japanese Ministry of Health, Labour and Welfare showed the exercise and physical activity guide for Japanese people in 2006. Now, the revised work of this guideline is progressing.

However, there are very few research findings for Japanese people. Therefore, as for most, the European and American evidences must be adopted as the guideline of Japanese. For the Japanese researcher of the exercise epidemiology, this is a serious problem.

At this symposium, Dr. Sanada reported about the evaluation of sarcopenia. Dr. Miura talked about the effects of exercise intervention for an arterial function. Dr. Kato examined the exercise method for strengthening a bone. And Dr. Kitabatake presented the influence of exercise on depression condition.

It is expected very much that the evidences which these researchers created will contribute to development of the physical activity guideline of our country.