

be understood independently. In a broad sense of *techno-adaptability*, it is included into a meaning of *environmental adaptability*. However, *techno-adaptability* has focused on a living environment supported by highly developed technology, and suggests a consequence of approach to modern living environment in the field of physiological anthropology. The nature of human adaptability would be explored by elucidation of *physiological polytypism* taking account of *functional potentiality* and *whole-body coordination*. At present, there might be two different definitions of techno-adaptability. The one is human adaptability to technology, and the other is that with support of technology. The former suggests that technological development has brought about great change in our living environment. Such living environment might bring us unprecedented stresses on human physiological function. It is a significant interest how humans adapt the newly created living environment. The later suggests that many artificial aids have realized human longevity resulted from increased efficiency in food production, highly developed medical technology and any convenience of daily life. Baker (1984) described as follows; "this diversity of stresses was a result of an interlocked process whereby populations, in adapting to new environments, created new stresses which evoked further adaptive responses". Techno-adaptability could be understood in a history of human adaptation and following new stresses through the development of technology.

S13-2 Historical Review on the Change of Ondol in Korea

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A historical review about Ondol is briefly discussed in this paper. The concept of Ondol was used as a useful method for heating from prehistoric era to improve thermal environment in residential space. As time passed by, the concept of Ondol has been changed, but the purpose of utilizing Ondol remained same, which was the supply of heat to indoor space.

From beginning, a fireplace was used in the room to heat the room and cook meal. The number of fireplace increased up to two, and they were used for each different purpose. Two types of hypocaust were used from BC 4 century. The hypocaust for entire room was used after 11 century. It was the starting line of practical concept of Ondol. This type of Ondol had each specific part that functions for better heating in each house.

After 1945, coal started to be used as a main

fuel for Ondol, but this fact did not influence on changing Ondol designs. Pipe was inserted in the structure of Ondol and heated hot water from boiler was passed through the pipe releasing heat toward indoor space. This was the turning over point where the modern concept of Ondol came to the world.

The Ondol is considered to provide good thermal environment in space due to radiation from floor, but it does not provide enough ventilation rates since it was designed only for heating. In order to solve the problems, various designs for Ondol are suggested. In summary, Ondol was effectively used to improve thermal environment and still mainly used to ensure better condition in residential building. In order to make sure no problem occur, further effort will be necessary. That way better quality of life can be achieved using Ondol.

S13-3 Influence of Visual Display Terminal (VDT) Use to Health among Administrative Officers

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Visual display terminal (VDT) is standard equipment for many office workers, and its use may increase the risk of developing adverse conditions related to vision, musculoskeletal system and mental health. We carried out a survey among 3070 administrative officers aged from 18 to 67 years (mean, 39.9 years) with three-fourth of visual display terminal (VDT) users. We examined the relationship between duration of daily VDT use and eyestrain, neck or upper extremity pain, back pain and mental health, and estimated the effect of breaks and rest during VDT work on these symptoms. The 12-item General Health Questionnaire (GHQ-12) was used to identify the possible presence of mental stress. Total scores ranged from 0 to 12, with higher scores indicating that a respondent experiences more symptoms of psychological distress. Subjects with GHQ-12 scores of 4 or more were classified as the GHQ-12 high score group. Seventeen percent of subjects reported eyestrain, 19.1% reported upper extremity pain, 11.6% reported back pain, and 17% of subjects had GHQ-12 scores of 4 or higher. Logistic regression analysis showed that duration of daily VDT use and lack of breaks and rest during VDT work were significantly associated with eyestrain, neck or upper extremity pain, back pain and mental stress. To protect users from adverse effects of VDT work, reducing daily VDT to less than 5hr/day and increasing the breaks and rest during VDT work are important.