

# Environmental adaptability of Japanese to artificial environments

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## 【 Outline of survey 】

Our everyday life is increasingly dependent on artificial environments, and often human sensibility is neglected when convenience or economy has priority. For example, artificial lighting can violate human biological rhythms, and excessive use of air cooling systems in summer can cause disorders. We are striving to increase our understanding of the adaptability of Japanese by conducting physiological studies, and the knowledge obtained is applied to the actual design of artificial environments directly. We evaluate various artificial environments from the viewpoint of physiological anthropology, and draw guidelines to design suitable environments.

## 【 Expected results 】

We will obtain useful results from the following studies:

- 1) Effects of hypobaric hypoxia and low humidity on physiological responses during prolonged sitting.
- 2) Effects of hyperoxia on thermoregulatory responses during heat exposure in humans.
- 3) Physiological responses to color temperature of lighting during exercise.
- 4) Effects of frequent use of air cooling systems on children ' s heat tolerance.
- 5) Effects of whole body vibration on physiological responses in humans.
- 6) Effects of luminance and color temperature of lighting on biological rhythms of the elderly.
- 7) A field study on physiological responses and indoor thermal environments in bathrooms in Japan.

## 【 References by the principal researcher 】

Mizuho Fujita, Deshu Lee, Mohamed Saat Ismail and Yutaka Tochihara, Seasonal effects of sleep deprivation on thermoregulatory responses in a hot environment, J Physiol Anthropol Appl Human Sci, 22(6), 2003, 273-278

Kazuaki Yamashita and Yutaka Tochihara, Effects of hyperoxia on thermoregulatory responses during feet immersion to hot water in humans. J Physiol Anthropol Appl Human Sci., 22(4), 2003, 181-185

Yutaka Tochihara, Health Effects and Comfort in Artificial Environments, IK Corporation, 1-163,1997

【 Term of project 】 FY 2004 - 2008

【 Budget allocation 】 79,500,000 yen

【 Homepage address 】 <http://host.id.design.kyushu-u.ac.jp/ninkou/tochihara/index.htm>