

# 発汗の動的特性による 衣服の着心地評価に関する研究

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## **Clothing Comfortableness on the Dynamic Properties of Sweating**

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### **ABSTRACT**

By applying various heat stimuli to volunteer subjects, changes in the volume of sweating were subjected to a frequency analysis to ascertain the dynamic properties of sweating. The results revealed that, like other physiological phenomena such as brain waves and heart rates, thermal sweating is a phenomenon exhibiting fluctuations. Subjects were divided into heat acclimatized and heat non-acclimatized groups. Under a high heat environment, changes in sweating and thermal sensation were then compared between the two groups. Although no marked differences between the two groups were observed in the degree of fluctuations in sweating, differences were observed in frequency components of the specific frequency band in sweating power spectra. Changes in comfortableness differed according to acclimatization status, and the factors contributing to comfortableness for the acclimatized group were different to those for the non-acclimatized group. These findings suggest that when developing comfortable clothing for high heat environments, it is important to clarify the heat adaptability of test subjects. The results of the present study demonstrate that acclimatization to heat can be objectively assessed based on the dynamic properties of sweating, and this will prove useful for designing comfortable clothing for high heat environments.

## 要 旨

被験者に様々な温熱性刺激を与えた際の発汗量経時変化を周波数解析し、発汗の動的特性について検討を行った。温熱性発汗は、脳波や心拍数など他の生理学的現象と同様、ゆらぎを持つ現象であることが示された。被験者を暑熱馴化している馴化群と非馴化群とに分け、暑熱暴露下での発汗および感覚の時間的な変動の特徴を比較検討した。両群の発汗ゆらぎに差はなかったが、発汗パワースペクトルにおける特定周波数域の周波数成分の多寡が異なることが明らかとなった。快・不快感覚の経時変化は暑熱馴化により異なり、馴化群と非馴化群で快・不快の構成要素は異なっていた。暑熱環境を想定した快適な衣服の開発に際し、着用対象者の暑熱適応能を明らかにすることの重要性が示唆された。発汗の動的特性を用いて馴化・非馴化の評価を可能にする本研究の成果は、暑熱下での着心地の良い衣服設計を目指すにあたり有用である。