

高温環境下におけるフェンシング実施時の 体温調節反応に及ぼす着衣の影響

京都女子大学 中井 誠一
(共同研究者) 同 新矢 博美
東京農業大学 高橋 英一

Effects of Clothing on Thermoregulatory Responses During Fencing Practice in a Hot Environment

by

Seiichi Nakai, Hiromi Shinya
Kyoto Women's University
Eiichi Takahashi
Tokyo University of Agriculture

ABSTRACT

This study was performed to analyze the effects of clothing on thermoregulatory responses during fencing practice in hot environments.

In experiment No.1, sweat rate, and fluid intake of college-aged male fencers (n=16) were measured during practice sessions held on several hot summer days under two conditions, i.e., with two different sets of clothing, T-shirts and short trunks (TS) and fencing uniforms (FU). During practice, fencers performed fundamental actions and footwork, wearing TS, and also performed matches and lessons with a saber, wearing FU. The fencers were allowed free access to a sports beverage during the practice sessions. The environmental conditions (wet-bulb globe temperature, WBGT []) varied during the study, with temperatures ranging from 17.2 to 29.1 .

Sweat rate and fluid intake during practice with both TS and FU increased according to

the increase in WBGT, and sweat rate with the FU was significantly higher than that with the TS when WBGT was lower than 27 .

In experiment No. 2, the heart rate, rectal temperature and chest skin temperature were measured in college-aged male fencers (n=6) during practice with both TS and FU on several hot summer days. Heart rate response was similar between TS and FU. Rectal temperature and chest skin temperature during practice was significantly increased according to the increase in WBGT, and these temperatures were significantly higher with the FU than with the TS.

These results suggest that thermal stress is higher with the FU than that with the TS during fencing practice in a hot environment.

要 旨

高温環境下におけるフェンシング実施時の体温調節反応に及ぼす着衣の影響について検討した。

調査1として、大学フェンシング部員男子16名を対象として、夏期暑熱環境下でのフェンシング練習時の飲水量、発汗量、体重減少量を調査した。その際、着衣の条件としてTシャツ・短パンでトレーニングおよびフットワークを行うTS条件とマスクとユニフォームと剣を用いてレッスンおよびファイトを行うFU条件について比較検討した。練習中、選手は市販のスポーツ飲料を自由に摂取した。調査時の環境温度・WBGT (wet-bulb globe temperature) は、17.2 から29.1 の範囲であった。

フェンシング練習時の着衣条件、TS条件およびFU条件での発汗量および飲水量は環境温度(WBGT)の上昇に伴い増加し、FU条件での発汗量は27.0 以下の温度条件でTS条件の発汗量よりも有意に高値を示した。

調査2では大学フェンシング選手6名を対象に、夏期高温環境においてTS条件およびFU条件で練習時に心拍数、直腸温、胸部皮膚温(衣服内温)を調査した。

TS条件およびFU条件での心拍数の平均値に差

はみられなかった。直腸温、胸部皮膚温は環境温度(WBGT)の上昇に伴い増加し、これらの温度上昇度はTS条件に比してFU条件が高値を示した。

これらの結果から、高温環境下でのフェンシング練習時の温熱ストレスはTS条件よりもFU条件で大きいことが示された。