Medicine & Science in Sports & Exercise
Issue: Volume 37(5) Supplement, May 2005, p S401

Publication Type: [**F-31**: Free Communication/Poster - **Occupational and Military Physiology**: FRIDAY, JUNE 3, 2005 2:00 PM - 5:00 PM, ROOM: Ryman C2]
ISSN: 0195-9131
Accession: 00005768-200505001-02060

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Decay Of Heat Acclimation: 2061 *Board #200* 2:00 PM - 3:30 PM

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Acclimation can have a positive impact on heat tolerance. A period of time away from heat can result in the loss of the physiological adaptations of acclimation increasing the risk of heat illness, injury and death. The decay of acclimation has not been determined.

PURPOSE

To examine the decay pattern of acclimation to heat.

METHODS

Participants (6 M, 6 F; BSA = 2.11 & 1.74 m^2; max VO_2 = 38.45 & 35.53 ml/kg/min) unerwent an acclimation period by walking on a treadmill in a climatic chamber. Environmental conditions of the chamber were set at 50° C and 20% rh. The treadmill speed and grade was set to elicit a moderate metabolic rate of approximately 40% max VO_2. A 3-day plateau in core temperature (T_{re}) was used as evidence of acclimation. Participants were then randomly assigned to one of 2 decay groups. Group A returned for 1 acclimation session at 1,3 and 5 weeks post-acclimation. Group B returned for 1 acclimation session at 2,4 and 6 weeks post-acclimation. A repeated measures ANOVA was performed with levels of decay as the independent variable and end T_{re}, end heart rate (HR), sweat rate (SR) and tolerance time (TT) as the dependent variables. A trend analysis was used to examine the relationship between the independent and dependent variables.

RESULTS

Average time for acclimation was 7 days. Tolerance time increased from the first to the final acclimation session (TT=88 & 112 min). There was a trend for a decrease in TT with increasing time away from the heat with TT equivalent for the first acclimation session and decay week 6. Other independent variables were not significant although there was a trend for an increase in end T_{re} with increased time away from heat.

CONCLUSIONS

Complete decay of acclimation occurs after 6 weeks away from heat as evidenced by a decrease in TT and an increase in T_{re}.

Supported by NIOSH Grant RO3 OH07836