



Moderate exercise effects on orthostatic intolerance while wearing protective clothing

Submitted by Emmanuel Lemoine on Tue, 02/24/2015 - 15:45

Titre	Moderate exercise effects on orthostatic intolerance while wearing protective clothing
Type de publication	Article de revue
Auteur	Jimenez, C. [1], Fortrat, Jacques-Olivier [2], Delapierre, B. [3], Melin, B. [4]
Editeur	Aerospace Medical Association
Type	Article scientifique dans une revue à comité de lecture
Année	2012
Langue	Anglais
Date	2012
Numéro	6
Pagination	570 - 6
Volume	83
Titre de la revue	Aviation, Space, and Environmental Medicine
ISSN	0095-6562
Mots-clés	Adult [5], Cross-Over Studies [6], Dehydration/complications [7], Exercise [8], Fever/complications [9], Heat Stress Disorders/etiology [10], Hemodynamics [11], Humans [12], Male [13], Orthostatic Intolerance/etiology [14], Protective Clothing/adverse effects [15], Random Allocation [16], Tilt-Table Test [17]

Résumé en
anglais

INTRODUCTION: Wearing protective clothing can have deleterious effects on operational capacities and can cause non-compensable thermal stress. We studied the effects of moderate exercise on orthostatic tolerance while wearing protective clothing in eight healthy subjects tolerant to orthostatism. METHODS: Subjects performed a 60-min moderate exercise on a treadmill followed by a 45-min head-up tilt test. Subjects performed the moderate exercise either in a comfortable condition (control, CON) or wearing protective clothing (PRO) in a random order. RESULTS: Compared with the CON trial, exercise in the PRO trial induced higher body dehydration, heart rate, and rectal temperature and a decrease in plasma volume. Orthostatic tolerance was significantly reduced in the PRO trial (23.7 +/- 0.2 min) compared with the CON trial (40.7 +/- 1.0 min). Transition from supine to head-up position caused a significant decrease in blood pressure in the PRO compared with the CON. RR interval was smaller in the PRO trial compared with CON in both the supine and head-up positions. Spontaneous baroreflex sensitivity was decreased in the PRO, either supine or standing, compared to CON (4.6 +/- 0.5 ms x mmHg(-1) and 14.5 +/- 4.2 ms x mmHg(-1) in supine, and 3.3 +/- 0.6 ms x mmHg(-1) and 7.0 +/- 0.6 ms x mmHg(-1) in standing, for PRO and CON, respectively). DISCUSSION: These results suggest that the large decrease in the tolerance to orthostatism after exercise while wearing protective clothing was due to the impossibility of maintaining an adapted blood pressure induced by a conflict between the needs of peripheral vasoconstriction linked to the standing posture, the needs of vasodilatation linked to thermoregulation, and a drop in the sensibility of the spontaneous baroreflex.

URL de la
notice

<http://okina.univ-angers.fr/publications/ua8326> [18]

DOI

10.3357/ASEM.3141.2012 [19]

Lien vers le
document

<http://dx.doi.org/10.3357/ASEM.3141.2012> [19]

Titre abrégé

Aviat Space Environ Med

Liens

- [1] [http://okina.univ-angers.fr/publications?f\[author\]=14357](http://okina.univ-angers.fr/publications?f[author]=14357)
- [2] <http://okina.univ-angers.fr/j.fortrat/publications>
- [3] [http://okina.univ-angers.fr/publications?f\[author\]=14359](http://okina.univ-angers.fr/publications?f[author]=14359)
- [4] [http://okina.univ-angers.fr/publications?f\[author\]=14360](http://okina.univ-angers.fr/publications?f[author]=14360)
- [5] [http://okina.univ-angers.fr/publications?f\[keyword\]=1002](http://okina.univ-angers.fr/publications?f[keyword]=1002)
- [6] [http://okina.univ-angers.fr/publications?f\[keyword\]=13600](http://okina.univ-angers.fr/publications?f[keyword]=13600)
- [7] [http://okina.univ-angers.fr/publications?f\[keyword\]=13601](http://okina.univ-angers.fr/publications?f[keyword]=13601)
- [8] [http://okina.univ-angers.fr/publications?f\[keyword\]=13424](http://okina.univ-angers.fr/publications?f[keyword]=13424)
- [9] [http://okina.univ-angers.fr/publications?f\[keyword\]=13602](http://okina.univ-angers.fr/publications?f[keyword]=13602)
- [10] [http://okina.univ-angers.fr/publications?f\[keyword\]=13603](http://okina.univ-angers.fr/publications?f[keyword]=13603)
- [11] [http://okina.univ-angers.fr/publications?f\[keyword\]=1578](http://okina.univ-angers.fr/publications?f[keyword]=1578)
- [12] [http://okina.univ-angers.fr/publications?f\[keyword\]=991](http://okina.univ-angers.fr/publications?f[keyword]=991)
- [13] [http://okina.univ-angers.fr/publications?f\[keyword\]=968](http://okina.univ-angers.fr/publications?f[keyword]=968)
- [14] [http://okina.univ-angers.fr/publications?f\[keyword\]=13604](http://okina.univ-angers.fr/publications?f[keyword]=13604)
- [15] [http://okina.univ-angers.fr/publications?f\[keyword\]=13605](http://okina.univ-angers.fr/publications?f[keyword]=13605)
- [16] [http://okina.univ-angers.fr/publications?f\[keyword\]=10441](http://okina.univ-angers.fr/publications?f[keyword]=10441)
- [17] [http://okina.univ-angers.fr/publications?f\[keyword\]=13606](http://okina.univ-angers.fr/publications?f[keyword]=13606)
- [18] <http://okina.univ-angers.fr/publications/ua8326>
- [19] <http://dx.doi.org/10.3357/ASEM.3141.2012>

