

AMMA JOURNAL VOL 6 ISSUE 1

MARCH 1997

Abstracts from the Literature

by
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Feuerstein M et al. Musculoskeletal-related disability in US Army personnel: Prevalence, gender and military occupational specialties. *J Dec Environ Med* 1997;39(1):68-78

Research on military populations indicates that musculoskeletal-related disorders represent a prevalent source of outpatient visits, lost work time, hospitalisation, and disability. Despite the increasing role of women in the military, little is known regarding the association among military occupations, gender and disability. The study presented here analysed 41,750 disability cases to determine: (1) prevalence of work-related musculoskeletal disability, (2) specific jobs associated with greater risk of musculoskeletal disability and (3) association among gender, job-type and disability. Results indicate: (1) back-related disorders represent the most prevalent sources of disability, (2) certain occupations were associated with higher disability risk, (3) women experienced higher overall, and musculoskeletal, disability risk, and (4) 40 specific jobs were identified in which women experienced higher rates of a musculoskeletal disability. These findings highlight the need to consider the interaction between workplace factors and gender on disability in the military workforce.

Comment. *Despite the attempt to say they were producing new information; it is hardly new to say that women are at greater risk of musculoskeletal injury in the military than men. It merely confirms the well-established finding that women are some four times more likely to suffer a significant musculoskeletal injury during basic training than men. The rates are around twice for women than men in this study, which covers the whole of a military career, rather than only basic training. It may also be that with more women dropping out of basic training than men, those who survive are less likely to suffer injury over the rest of their career.*

Gambel JM, Hibbs RG. US military overseas medical research laboratories. *Mil Med* 1996. 161(11):638-45

Many infectious disease threats to US Military operations are uncommon in the United States. The advanced development and testing of countermeasures, such as vaccines, drugs, or insect repellents, requires the capability to study militarily important infectious diseases where they occur. With formal agreements between the US and each host country, the US military operates seven overseas medical research laboratories. Six labs conduct infectious disease research and are distributed over three continents: Africa (labs in Egypt and Kenya), Asia (labs in Indonesia and Thailand), and South America (labs in Brazil and Peru). One other lab is located in Germany and conducts psychosocial related to military personnel and their families. In addition to product development, these labs play a vital role supporting overseas deployments, providing technical training, and promoting international relations. Also, these labs are well-positioned to become part of a developing global surveillance and response system to help address the threat posed by emerging infectious diseases. This article will present an overview of this unique medical research capability, describe the history and some of the activities of each lab, and discuss the importance of maintaining these labs in the 21st century.

Comment: *Undoubtedly an attempt to propagandise the importance of these labs. I hardly need to be convinced given the emerging infectious diseases (read *The Coming Plague*, by Laurie Garrett), and the increasing risk of biological warfare, but the reasoning for two labs in each continent I found to be a little tenuous. An interesting read, anyway.*

Cooper JK. Preventing heat injury: Military versus civilian perspective. Mil Med 1997; 162(1):55-8

Guidelines for preventing heat injury (HI) among personnel are not directly applicable to civilian personnel. Military guidelines call for relatively large volumes of prophylactic water consumption and physical activity limitations depending on the wet bulb globe temperature. However, in civilian populations, there is an increased prevalence of HI risk factors: older age, medications use, especially anticholinergic and psychotropic medications, obesity, previous HI and skin disorders. Although dehydration is a major contributor to HI in military situations, it is unlikely in classical heat stroke among civilians. Civilian guidelines are based on the heat index. Activity levels must be restricted more for civilians, and prophylactic water consumption (beyond replacing loss from sweat) is not necessary. This review discusses the pathophysiology of heat injury, contrasts the military and civilian approach to prevention of HI and describes appropriate field intervention for HI.

***Comment:** Dehydration is unlikely in classical heat stroke among civilians? In the military, water discipline is emphasised. Any commander failing to maintain such discipline should be harshly judged. No such discipline exists in the civilian situation. So where is dehydration more likely to occur? I think Capt Cooper is suffering a little from heat injury himself.*

Edwards M. Anthropometric measurements and ejection injuries. Aviat Space Environ Med 1996; 67(12): 1144-7

Background: A previous study examined anthropometric variables to determine possible ejection seat risk factors. It concluded that individuals who weighed below the average body weight or who met the criteria of having a tall, thin physique as measured by body mass index (BMI) were significantly more at risk for acceleration induced back injuries. **Hypothesis:** Because of the increased number of female pilots and the potential need to modify ejection seats for lighter aviators, this retrospective analysis of Naval Safety Center data attempted to reproduce and confirm the same results with more current data, covering a 5-yr period from Jan 1989-Dec 1993. **Methods:** In this study, the same criteria were used to define back injury, including thoracic or lumbar vertebral fractures and soft tissue injuries, and the same anthropometric variables were used, including weight, height, BMI, and below-average weight. Additional categories of injury were examined, including all spinal fractures alone without soft tissue back injuries, all injuries combined and severity of injury. Sitting height and trunk height were added to the variables. Results: Out of 810 aircrew involved in mishaps, 199 ejected. Of all the ejections, 111(56%) had some type of injury as a result of the ejection. Severe injuries occurred in 8 (4%) including 4 (2%) fatalities. Back injuries occurred in 44 (22%) and 8 (4%) involved spinal fractures. Although there were no significant risk factors for ejection back injury, weight and height were statistically significant risk factors for severe injury and spinal fracture, respectively. **Conclusions:** Aircrew with severe injury were heavier (average weight 88 kg vs. 79 kg), taller aircrew (185 vs. 180 cm) were at increased risk for any spinal fracture.

***Comment:** Only 8 spinal fractures out of 199 ejections! It would be nice to achieve that in Australia. The expectation is that aviators at the very low end of the weight curve will be at significantly increased risk from ejection. This study does nothing to resolve that issue.*

Rudland S et al. The enemy within Diarrhoeal rates among British and Australian troops in Iraq. Mil Med 1996; 161 (12):728-31

British and Australian medical teams working in Northern Iraq in 1991 providing primary care to refugees and the war-wounded were subjected to a descriptive retrospective survey, 5 weeks after arriving in Iraq. The aim was to document different rates of diarrhoea in British and Australian troops. The British, who were not taking daily doxycycline and did not enforce a plate and handwashing routine, experienced higher rates of diarrhoea (69% of British troops compared with 36% of Australian troops), which was more severe and of longer duration ($p < 0.001$) and resulted in twice as many days being lost ($p < 0.001$) in spite of the British team being half the size of the Australian contingent, and the region having enteropathogens with a high rate of antibiotic resistance. Vigorous hand and plate washing routines along with doxycycline prophylaxis appear to significantly reduce incapacitation from diarrhoea in this military setting and have an important implication for operational effectiveness.

Comment: *I suspect that the authors are correct in assigning the benefit in Australians to better preventive measures, but not all confounders have been dealt with. What was the exposure history of each team, for instance? Nevertheless, a good paper, and another pat on the back for the Australian military medical fraternity.*