

appear to be a short-term risk of suicide among Danish UN soldiers. However, the fact that the two soldiers committed suicide after discharge belonged to the same unit, and that this unit sustained a heavy artillery strike is worthy of note. A questionnaire study found less psychological morbidity among the personnel of the unit in question compared to other units at the time they were involved in combat. 2

**Conclusion:** Personnel from traumatised units carry a risk of PTSD and suicide. Special methodology to perform research into the area needs to be developed, and current programmes to detect these problems in repatriated units should be evaluated.

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2. Andersen HE: Danske FN-Soldater 2 år efter. Forsvarets Center for Lederskab, 1998.

**Keywords:** combat; military; peacekeeping; post-traumatic stress disorder; risk; suicide; United Nations

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### Changes in Attitudes Are Associated with Increased Reporting of Exposure to Illegal Drugs in Finland

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**Introduction.** In Finland, organised questionnaire studies among conscripts at the entry to common military service have been carried out since 1968. The aim of this study was to describe the behaviour characteristics of the July 2001 entry cohort's health, especially their lifetime exposure to illegal drugs.

**Methods.** The July 2001 questionnaire data were collected in 10 garrisons (every 5th conscript sampled) by using a 78-item questionnaire during the entry medical examination.

**Results.** The 2001 study database was comprised of 1,482 respondents. In 2001, 52% knew a user of illegal drugs among their peers in civilian life, 48% had been approached to purchase such drugs, and 21% had tried illegal drugs at sometime during their lifetime. The first use (93%) and later uses (94%) were associated primarily with consumption of hashish/marijuana. Interestingly, attitudes among those who had not tried illegal drugs changed from 80% in the 1985–1992 Group to 50% in the 1996–2001, the latter stating that the use of hashish is a danger to health. During the same time divisions, there was an increase in reporting of trials of illegal drugs from 5–10% in the 1985–1992 Group to 20% in 1996–2001 Group.

**Conclusions.** Twenty percent of the conscripts entering common military service in Finland report having tried illegal drugs in civilian circumstances. These data suggest that changes in attitudes among those who have not tried illegal drugs recently have been associated with actual trials of illegal drugs in the age groups studied.

**Keywords:** attitudes; drugs, illegal; exposure; Finland; military

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### Stress Fractures: Diagnosis with MRI, Bone Scintigraphy, and Radiography

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**Purpose:** To compare MR imaging (MRI), bone scintigraphy, and radiography in the diagnosis of stress fractures of the pelvis and lower extremities.

**Materials and Methods:** A total of 50 consecutive military recruits clinically suspected of having a stress fracture underwent MR imaging and scintigraphy. Of these patients, 43 were studied also with plain film radiography, and follow-up radiographs were taken of 24 patients. A total of 41 stress fractures were diagnosed in 32 patients using MR imaging.

**Results:** Of the patients, 36% had a false-positive clinical diagnosis of stress fracture. The sensitivity of radiography was 56%, specificity = 94%, accuracy = 67%, positive predictive value (PPV) = 95%, and negative predictive value (NPV) = 48%. In the follow-up, the sensitivity increased to 72%, NPV to 60%, accuracy to 79%, and PPV to 96%, and specificity remained the same. The kappa value for MR imaging and radiography was fair (0.39) initially, and moderate (0.57) in the follow-up. The sensitivity of bone scintigraphy was 92%, specificity = 90%, accuracy = 92%, PPV = 95%, and NPV = 86%. The kappa value for bone scintigraphy and MR imaging was very good: 0.81. Three false-negative and two false-positive scintigrams were identified.

**Conclusions:** The clinical diagnosis of stress fractures of the pelvis and the lower extremity is not reliable. If the primary radiography is negative, the use of MR imaging is preferable to bone scintigraphy and follow-up radiographs. The diagnostic value of MR imaging is higher than bone scintigraphy.

**Keywords:** diagnosis; fractures, stress; MRI; scintigraphy; x-ray

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### Possible Exposure to Depleted Uranium without Adverse Health Effects among the Finnish Peacekeepers in Kosovo

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**Introduction:** The Finnish peacekeeping troops in Kosovo had their first exposure to depleted uranium (DU) in April 2000. The purpose of the study was to describe exposure to DU and the health characteristics of Finnish peacekeeping veterans who had served in Kosovo.

**Methods:** Those who served in Kosovo were identified using the registries of the Finnish Defense Forces. A 33-item questionnaire was mailed to the veterans in late February 2001 data. The study database was closed on 30 September, 2001, and it comprised of 752 accepted responses.

**Results:** Of all the respondents, 15% had visited a place where a DU exposure was possible, 6% had been inside a DU-destroyed armored weapon, and 5% had handled DU-ammunition. A total of 83 (11%) responses suggested possible DU exposure. Health or the use of health care parameters during or after Kosovo deployment was similar between the potentially exposed and others.

**Conclusions:** Of the 752 Finnish peacekeepers who had served in Kosovo, 11% possibly were exposed to DU according to their responses in a mailed questionnaire in 2000. However, health and use of healthcare parameters during or after Kosovo service were similar between those classified as possibly exposed and those not exposed. These epidemiological results match well the results obtained in earlier reports.

**Keywords:** effects, health; exposure; health; Kosovo; peace-keeping; uranium

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### Body Heat Balance During Interval Exercise in a Cold Environment

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**Introduction:** The effect of simultaneous changes in exercise and ambient temperature on body heat balance and physiological strain was studied.

**Methods:** The exercise/rest periods were either 10/10 minutes or 30/30 minutes, and the total duration of the protocol was 120 min. Exercise (walking 6 km/h on a treadmill with a slope of 2°) was performed in a cold environment (-15°C, air velocity 2.5 m/s). The resting periods were spent sitting at +10°C, air velocity 0.2 m/s, wearing the same clothing worn during exercise. The subjects were seven voluntary, healthy young men. They were wearing Finnish military winter clothing (M91, thermal insulation about 2 clo) and a rucksack (12 kg). The subjects were allowed to drink water freely during the rest periods.

**Results:** Data are given as mean  $\pm$ SE. The mean skin temperature was 31.7  $\pm$ 0.2°C during the 10/10 schedule and 31.3  $\pm$ 0.3°C during the 30/30 schedule. The deep body temperature was 37.5°C on average during both schedules. At the end of the last exercise period, oxygen consumption was 33.5  $\pm$ 0.9 ml/min/kg in the 10/10 schedule and 32.4  $\pm$ 3.8 ml/min/kg in the 30/30 schedule. During the exercise periods, heart rate was 150 beats/min on average for both schedules. The amount of perspiration was similar during the 10/10 schedule (809  $\pm$ 118 g) and the 30/30 schedule (777  $\pm$ 81 g). The fluid intake was greater ( $p = 0.01$ ) during the 10/10 schedule (457  $\pm$ 121 g) than during the 30/30 schedule (141  $\pm$ 41 g). The accumulation of perspiration in the subjects' clothing was greater ( $p = 0.02$ ) during the 30/30 schedule (392  $\pm$ 32 g) than during the 10/10 schedule (353  $\pm$ 28 g).

**Conclusion:** The body heat balance and physiological strain were similar comparable in both exercise/rest schedules. The fluid intake was greater during the 10/10 minutes exercise/rest schedule, while the amount of perspiration was similar for the two schedules. The accumulation of perspiration in the subjects' clothing was greater during the 30/30 schedule. The longer continuous period in a cold environment (30 min.) could have led the perspiration to condense inside the clothing, thus reducing the capacity for evaporation. These findings suggest that specific instructions for clothing type and fluid intake are needed for different combinations of exercise and rest in changing ambient temperatures.

**Keywords:** clothing; cold; evaporation; exercise; fluid; heat; perspiration; rest; temperature

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### Military Fitness Class of Finnish 18-Year-Old Men: Prediction of Military Fitness Class at Call-Up

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**Introduction:** Military service lasting from 6 to 12 months is obligatory for Finnish men. They undergo a medical examination during the spring of the year they turn 18 years of age. The purpose of the examination is to obtain a preliminary assessment of their fitness class for military service. A call-up board confirms the fitness class the following autumn. The percentage of releases ranged between 7.5% and 10.8% in 1990–1998. During the same period, 6.0–8.6% of those who were regarded as capable of beginning their military service were discharged during the period of service due to health problems, mostly related to their mental health. The aim of this study was to develop methods for more accurate screening at the time of call-up.

**Materials and Methods:** The basic population of the study is the about 32,000 Finnish men who were born in 1981 and thus, had their obligatory call-up in 1999. At the time of their call-up, they completed two questionnaires: 1) the Conscript Screen; and 2) the P2-test that was developed for the use by the Finnish Military Forces. The Conscript Screen is a 25-item questionnaire developed by one of the authors (KP). The P2-test includes scales assessing the leadership capabilities of the conscript, and includes the following scales of the Minnesota Multiphasic Personality Inventory (MMPI): 1) lie; 2) infrequency; 3) correction; 4) hypochondriasis; 5) psychopathic deviate; 6) psychasthenia; and 7) schizophrenia.

**Results:** Preliminary results suggest a strong statistical correlation ( $p < 0.0001$ ) between the risk of being released from military service at the call-up either temporarily or permanently using the Conscript Screen and most of the scales of the P2-test.

**Conclusions:** There should be some test to evaluate the suitability of conscripts for military service at call-up. The two tests described are valuable tools at conscription.

#### References

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**Keywords:** Conscript Screen; conscripts; fitness; mental health; military; Minnesota Multiphasic Personality Inventory (MMPI); screening

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### Displaced Stress Fractures of the Femoral Shaft

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**Introduction:** Military trainees often are affected by displaced stress fractures of lower extremities. The displacement of a long bone fatigue fracture is a rare but serious injury. The most common sites of stress fractures are the tibia, metatarsal bones, and the calcaneus. The incidence of fatigue fractures reported among military conscripts during the training period ranges from 3–4% up to 64%, depending on the exact nature of the training. The proportion of femoral shaft stress fractures out of all stress fractures studied ranges from 3–5% up to 25–43% in military conscripts, and from 3–7% up to 14–21% in athletes. The purpose of this study was to scrutinize the incidence, the etiologic factors, and the morphologic characteristics of displaced femoral shaft fatigue fractures over a 20-year period, in order to evaluate the chances of preventing prolonged morbidity caused by these injuries in healthy conscripts during their basic military training.