

Patients and Methods: All displaced femoral shaft fatigue fractures treated at the Central Military Hospital during a 20-year period from 01 January 1980 through 31 December 1999 were analyzed. The original, complete medical records, including radiographs of each patient, were retrieved and reviewed. The conscripts concerned were invited to the outpatient department for a physical and radiographic examination. The median follow-up time was seven years (range: 2–16 years). The previous health condition including medication, cigarette smoking, sports participation, possible injuries, and operations, was recorded. The body mass index at the time of the fracture onset was measured. The military training level, prior pain, or other symptoms of the lower extremity after the beginning of the service, the activity during the fracture onset, the fatigue fracture morphology, and the fracture treatment also were recorded.

Results: Ten previously healthy male conscripts sustained displaced femoral shaft fatigue fractures, with an incidence of 1.5 per 100,000 person-years in military service. The median age of the patients was 19 years (range: 18–20 years). None had any prior fatigue fractures. The median body mass index was normal (21.5 kg/m², range: 18.3–32.2 kg/m²). Before the fracture displacement, nine conscripts had suffered from thigh or knee pain for 1–6 weeks. Six of ten fractures were located in the distal third of the diaphysis, and the most common fracture pattern was a noncomminuted, oblique or oblique-transverse configuration. Only one fracture occurred in the proximal third. Five fractures were treated using an intramedullary nail, four fractures with a dynamic compression plate, and one with a dynamic condylar screw-plate. The bone at the fractures proved to be brittle, and six fractures suffered from additional comminution intraoperatively. Two reoperations were necessary to exchange a nail and a screw. The median time to solid bony union was 3.5 months (range: 3–5 months). The conscripts returned to alleviated military service six weeks postoperatively on average. Two were exempted from the military service for two years.

Conclusions: Displacement is a rare, highly undesirable consequence of stress fracture of the femoral shaft among young conscripts during their basic military training. Preventive methods should focus on the early, effective detection of developing fatigue fractures to avoid fracture displacement, with subsequent prolonged morbidity and possible complications. Gentle handling of the bone during the fracture fixation procedure is imperative because of the extraordinary brittleness of the fracture fragments.

Keywords: conscripts; fractures fatigue; fractures femur; military; prodrome; stress; trainees; training
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A Follow-Up Survey of NATO Peacekeeping Personnel in Kosovo: TMBN/KFOR I 1999–2000: "How are you now, 6 months after service?"

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Introduction: Public attention has been directed to mental health problems among Norwegian soldiers after serving in international peacekeeping operations. The UNIFIL study, conducted 3–10 years after service, documented that 5% of the Norwegian soldiers who completed their tour, and 15% of personnel who did not, reported mental problems after serving in the peacekeeping mission in Lebanon (Aarhaug et al, 1993; Mehlum, 1995; Weisæth et al, 1996). The main tasks of the

Norwegian Armed Forces' Stress Management Team for International Operations (SMT) are to prepare personnel for international operations, and to provide support and advice during deployment. The SMT also works to identify personnel with service-related, mental health problems, and provides follow-up services if necessary. In October and November 2000, six months after redeployment from Kosovo, all personnel from Telemark Battalion (TMBN)/KFOR I were invited to a veteran reunion arranged by the Telemark Regiment. In order to obtain a broader understanding of the personnel's view of the mission, and to identify personnel who might need follow-up due to mental health-related problems as a consequence of their service, an anonymous survey was conducted for former members of TMBN/KFOR I by SMT.

Methods: A questionnaire was developed by SMT and administered to all of the veterans who attended the reunion, and was mailed to personnel who did not attend. The results reported are based on the questionnaire.

The questionnaire included questions concerning whether the individual has experienced any problems related to mental health, physical condition, sleep, or with family/friends, as a consequence of the service. The questionnaire also was used to survey the existing friendships and networks within the group in order to find out if former personnel still were in touch with each other, and if they would provide comrade-support if needed. Benefits from service (self-confidence, personal development), comradeship, and evaluation of military leadership during the mission were measured. In addition, assessment of the reunion by those who participated also was assessed.

Results: The participants included 632 soldiers or officers, which represents 53% of the total possible population. Less than 2% reported mental health problems connected to the service. Of the participants, 80–85% reported personal benefits from their tour of duty, had experienced a positive outcome related to the experiences while in the service, and would recommend to a good friend that they should serve abroad with Telemark Battalion. In addition, 85% of the respondents showed great interest in the reunion organized by their Regiment.

Conclusion: When surveyed six months after redeployment, 98% of the respondents did not report any negative health effects due to serving with the TMBN in Kosovo. An officially organized reunion for all personnel after redeployment seems to be an adequate way to bring to a close the service, maintain comradeship, and express an appreciation for the personnel's efforts. Reunions provide a good opportunity to survey and initiate follow-up services without stigmatizing personnel.

Keywords: effects; health; follow up; NATO peacekeeping in Kosovo; reunion; survey; veteran
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Antioxidant Status of Soldiers Associated with Smoking and Morbidity during Military Service

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Aim: to investigate antioxidant status of servicemen at the beginning and at the end of the service in relation to their smoking habits and morbidity during their time in service.

Object and Methods: A total 177 recruits, aged 20.7 ± 1.3 years (mean ± SD) from Panevezys region MIB were interviewed for smoking habits and for their morbidity (mainly for the frequency of cold troubles per service year). Concentration of lipid peroxidation marker malondialdehyde (MDA) and

antioxidant vitamins E and A in blood serum have been measured.

Results: The level of concentration of MDA of recruits was 4.56 ± 0.79 micromol/l (range 2.6–7.0 micromol/l); concentration of vitamin E = 21.8 ± 0.41 micromol/l (range: 8–44 micromol/l); and concentration of vitamin A = 2.18 ± 0.41 micromol/l (range 1.3–3.3 micromol/l). Increased MDA concentration (≥ 5.0 micromol/l) was found for 38.3% smokers and 27.7% non-smokers respectively ($p < 0.05$). Vitamin E of smokers did not differ from its concentration of non-smokers. Vitamin A level of smokers was higher than of non-smokers (2.23 ± 0.39 and 2.07 ± 0.41 micromol/l respectively, $p < 0.01$). Morbidity among smokers and non-smokers did not differ significantly. The MDA concentration of recruits with higher morbidity (>3 cold troubles) was higher (4.68 ± 0.85 micromol/l) than of those with less morbidity (4.44 ± 0.97 micromol/l) ($p < 0.05$). Among persons with higher morbidity during service MDA concentration had a tendency to increase and vitamin E concentration tended to decrease.

Conclusion: Smoking and morbidity of recruits were associated directly with oxidative stress marker, MDA, and morbidity was adversely associated loosely with the levels of Vitamin E; an increase of the level Vitamin A in serum of smokers has been known as a biochemical response to this harmful habit among young persons.

Keywords: antioxidants; military; morbidity; smoking; soldiers; vitamins

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A 58 Year Follow-Up of World War II Veterans

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Introduction: The paper reports preliminary findings from a study of veterans from a Norwegian infantry battalion ($n = 797$), who still are alive ($n = 85$), and who fought the invading German forces in Northern-Norway during April–June 1940. The data from the combat veterans were compared with those from the soldiers from a battalion that was kept in reserve and did not experience combat. During the subsequent occupation of Norway, members of both battalions, however, experienced with their families, other war stressors, in particular the scorched earth policy of the retreating Wehrmacht during the fall and winter of 1944–1945.

The combat battalion had six weeks of continuous operations in high-mountain terrain under severe winter conditions. The battalion was part of the first allied combined operations during World War II, which ended in the successful liberation of Narvik. They were on the offensive the whole time, suffered few losses — but when the final victory was reaped, the allies had to withdraw from Norway because of the critical development on the European continent, and Norway capitulated.

Methods: The veterans underwent extensive personal physical and psychiatric examinations. The military health records from the war time and throughout their later military service as well as medical data from their civilian lives were studied.

Results and Conclusions: A response rate of 99% was obtained. The following preliminary findings will be discussed: 1) No increase in mortality was found among the combat veterans compared to non-combat veterans and civilian groups

matched for age, place of birth, and living; 2) No cases that fit within the post-traumatic stress spectrum were identified in the non-combat battalion; 3) About 30% of the combat veterans suffered from partial PTSD with low rates of co-morbid disorders; 4) Few of the partial PTSD cases had suffered a diminished work capacity; and 5) No cases of late psychic sequelae or significantly delayed PTSD were identified.

Keywords: combat veterans; comorbidity; mortality; post-traumatic stress disorder (PTSD); work, capacity for
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Traumatic Stressors in Terrorism: Norwegian Merchant Sailors in the Arabian Gulf 1984–1988

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Traumatic stressors and their aftermath were studied in 188 Norwegian merchant sailors who were exposed to terror attacks or threats of attacks while sailing through international waters in the Arab Gulf during the first Gulf War (1984–1988). Two years after the end of the war, 38 cases (20%) of post-traumatic stress reactions were identified in the sample — of which 66% had been exposed to one or more terror attacks. A significant correlation was found between the number of attacks and also, the number of voyages into the Arab Gulf; each had a separate and independent effect.

Keywords: merchant sailors; post-traumatic stress reactions; terrorism

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