

# **Ergonomic assessment of a helicopter crew seat: the HH-60G flight engineer position.**

[Grant KA.](#)

Environmental Quality Management, Inc, Fair Oaks Ranch, TX 78015, USA. kgrant@gvtc.com

**BACKGROUND:** Reports of back pain among military helicopter aircrew have appeared in the aviation medicine literature since the 1960s. Likewise, anecdotal complaints of back and neck pain among HH-60G crewmembers have long persisted. The purpose of the present study was to identify specific work factors that could contribute to increased musculoskeletal discomfort among HH-60G flight engineers and gunners, and to recommend actions to remedy observed workplace deficiencies. **METHODS:** The physical dimensions of the HH-60G flight engineer/gunner workstation were measured, and the activities and work postures of a flight engineer and gunner were observed and photographed during flight. Measurements of crew station dimensions were compared against anthropometric data for U.S. Air Force flying personnel to estimate of the percentage of the crew accommodated by the available work area. **RESULTS:** Results show that the current crew seat configuration forces the vast majority of HH-60G flight engineers/gunners to assume a variety of awkward neck, back, and lower extremity postures during flight. Based on existing epidemiological evidence, it is highly plausible that maintaining these postures for sustained periods of time could lead to increased musculoskeletal fatigue and discomfort in this population. **CONCLUSIONS:** Two major deficiencies that can be addressed to improve posture and reduce musculoskeletal stress among HH-60G flight engineers and gunners involve the design of the crew seat backrest, and the lack of space between the seat and the side of the aircraft for the legs and feet. Specific recommendations for crew seat design are provided.

PMID: 12234044 [PubMed - indexed for MEDLINE]

# **Aircraft type and diagnosed back disorders in U.S. Navy pilots and aircrew.**

[Simon-Arndt CM](#), [Yuan H](#), [Hourani LL](#).

Naval Health Research Center, Department of Health Sciences and Epidemiology, San Diego, CA 92186-5122, USA.

**BACKGROUND:** Back disorders have long been recognized as a serious problem within the military aviation community and a possible threat to mission accomplishment. The purpose of the present study was to determine the extent to which the type of aircraft flown is associated with diagnosed back problems, and to examine differences in the prevalence of back disorders between pilots and aircrew. **METHODS:** A case-control study was conducted in which U.S. Navy pilots and aircrew members with a diagnosed back disorder on their most recent physical exam between 1991 and 1993 were compared with pilots and aircrew without such diagnoses. Data were obtained from the automated physical examination records maintained by the Naval Operational Medicine Institute for all Naval aviation personnel. **RESULTS:** Results showed that aircrew members have a higher risk of diagnosed back problems than pilots for both helicopters and fixed-wing aircraft. The study revealed that flight engineers have a higher risk of diagnosed back problems than other aircrew members. Among pilots, no association was found between type of aircraft and diagnosed back problems.

PMID: 9383501 [PubMed - indexed for MEDLINE]

# Back pain in aircrew--an initial survey.

[Sheard SC](#), [Pethybridge RJ](#), [Wright JM](#), [McMillan GH](#).

Royal Naval Air Station, United Kingdom.

**BACKGROUND:** In the early 1990's staff at a Royal Naval Air Station formed the view that pilots and observers of the Navy Lynx helicopter fleet appeared to have a higher incidence of back pain, to be seeking medical assistance more frequently and to be spending more time medically "unfit to fly" when compared to their counterparts in other helicopters. **HYPOTHESIS:** To quantify the incidence of low back pain in helicopter aircrew by use of a questionnaire. **METHODS:** A questionnaire was used to establish the prevalence and nature of back pain in Naval aircrew (161) compared to a control group of randomly selected non-flying military personnel (310). **RESULTS:** Results show that aircrew (82%) experience significantly more back pain than controls (52%) ( $p < 0.01$ ) though the nature of pain was similar in both groups. Significantly more aircrew (73%) than controls (49%) ( $p < 0.01$ ) reported a previous history of back pain and report pain in shoulders (19%), midback (42%), lower back (72%) and across the buttocks (12%). Ergonomic factors were thought to be causative. Of aircrew surveyed, 11 (8%) had been issued with personal lumbar supports which resulted in major subjective improvements in flight-related symptoms. **CONCLUSIONS:** Helicopter aircrew have a higher incidence of back pain. Crew station design was identified as a major contributor to the prevalence of back pain while personal supports reduced the levels of discomfort. While these findings are not new, no significant steps have been taken to redesign the crew station. It is recommended that personal supports are provided to all aircrew and that a more detailed study of crew station ergonomics is indicated following a more comprehensive study of prevalence of back pain in Royal Navy aircrew.

PMID: 8725476 [PubMed - indexed for MEDLINE]

## Tinnitus & Hearing Loss

Go someplace quiet. Listen carefully. Do you hear that ringing in your ears? If you do, you have [tinnitus](#). Tinnitus and hearing loss are common for helicopter crew members. While its causes are uncertain and varied, one of the key factors is prolonged exposure to excessively loud noises. As helicopter crew members, we were exposed to the sound of turbine engines and machine guns for prolonged periods. When combined with the hearing loss expected in helicopter crew members, it can become debilitating and can reduce your ability to function. Depending on the severity, you may be entitled to disability benefits for hearing loss.