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[Int Arch Occup Environ Health](#). 2010 Oct;83(7):743-51. doi: 10.1007/s00420-010-0515-5.
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Effects of nocturnal aircraft noise on cognitive performance in the following morning: dose-response relationships in laboratory and field

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Abstract

Objective: Nocturnal aircraft noise disturbs sleep and impairs recuperation. We investigated in laboratory and field studies whether noise-induced sleep fragmentation is associated with performance impairments in a psychomotor vigilance task (PVT) and a memory search task.

Methods: In the laboratory, 112 participants were exposed to aircraft noise during 9 consecutive nights. In the field, 64 participants were examined during 9 consecutive nights in the vicinity of Cologne/Bonn airport. Reaction time, signal detection performance and subjective task load were recorded.

Results: Dose-response relationships showed significant, linear impairments in reaction times. In the laboratory, reaction time in PVT increased with 0.13 ms/dB equivalent noise level (LAeq) plus 0.02 ms/noise event. In the field study, reaction time increased with 0.3 ms/dB LAeq. Participants worked significantly less accurate after nocturnal noise exposure.

Conclusion: Influences of LAeq and number of noise events on daytime performance were small but consistent and significant, stressing the potential public health impact of nocturnal noise exposure.

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