



Neurological Effects of Repeated Exposure to Military Occupational Levels of Blast

A Review of Scientific Literature

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There is increasing concern over the common, repetitive forms of blast—often unrelated to combat—to which military members are exposed during service, and how those exposures could affect the central nervous system, potentially resulting in neurological and emotional consequences. The authors of this report review the relevant literature and identify research and policy gaps related to military occupational blast exposure.



RESEARCH QUESTIONS

- What is known about the occurrence of repeated occupational blast exposure incurred during military service?
- What is the scientific evidence relating to the potential neurological health effects of repeated occupational blast exposure?
- What are promising strategies for preventing the potential neurological effects of repeated MOB exposure?
- What are promising early detection indicators for the potential neurological consequences of repeated MOB exposure?



KEY FINDINGS

The research team found no generalizable military-wide or service-specific population data (or ongoing studies) from which to estimate the occurrence of repeat, low-level MOB exposure or its potential health consequences

- The research team identified no research on the overall frequency with which low-level MOB exposure occurs.
- Most research on the issue of blast-related brain injury is generally concerned with a magnitude of blast exposure that is stronger than low-level MOB exposure.

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- Among animals, studies in mouse and rat models suggest it is plausible that low-level MOB exposure could result in neurological effects.
- Among humans, completing carefully designed prospective, longitudinal research is essential.
- There is some evidence that improvements to helmets and improved adherence to hearing protection may mitigate the neurological effects of blast exposure.



RECOMMENDATIONS

- The authors' main recommendation is to develop and conduct research that advances understanding of the specific health effects of low-level MOB exposure.
- Epidemiologic and other research is needed to better establish whether low-level MOB exposure poses neurological or other health risks to service members and what, if any, the specific risks are.
- Implementing aggressive preventive programs against this threat without adequate evidence of preventable injury may yield unintended consequences and require considerable resourcing without commensurate benefit.
- Other recommendations include the development and testing of preventive interventions, identification of biomarkers, and biosensor validation studies.



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