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Occup Environ Med. 2008 May;65(5):342-6. Epub 2007 Oct 10.

A meta-analysis for neurobehavioural effects due to electromagnetic field exposure emitted by GSM mobile phones.

Barth A, Winker R, Ponocny-Seliger E, Mayrhofer W, Ponocny I, Sauter C, Vana N.

Institute of Management Science, Division Ergonomics and Organization, Vienna University of Technology, Theresianumgasse 27, A-1040 Vienna, Austria. barth@imw.tuwien.ac.at

Abstract

BACKGROUND AND OBJECTIVE: Numerous studies have investigated the potential effects of electromagnetic fields (EMFs) emitted by GSM mobile phones (approximately 900 MHz to approximately 1800 MHz) on cognitive functioning, but results have been equivocal. In order to try and clarify this issue, the current study carried out a meta-analysis on 19 experimental studies.

DESIGN: Meta-analysis.

METHODS: Nineteen studies were taken into consideration. Ten of them were included in the meta-analysis as they fulfilled several minimum requirements; for example, single-blind or double-blind experimental study design and documentation of means and standard deviation of the dependent variables. The meta-analysis compared exposed with non-exposed subjects assuming that there is a common population effect so that one single effect size could be calculated. When homogeneity for single effect sizes was not given, an own population effect for each study and a distribution of population effects was assumed.

RESULTS: Attention measured by the subtraction task seems to be affected in regard to decreased reaction time. Working memory measured by the N-back test seems to be affected too: under condition 0-back target response time is lower under exposure, while under condition 2-back target response time increases. The number of errors under condition 2-back non-targets appears to be higher under exposure.

CONCLUSION: Results of the meta-analysis suggest that EMFs may have a small impact on human attention and working memory.

PMID: 17928386 [PubMed - indexed for MEDLINE]

Publication Types, MeSH Terms

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Seul article cité par Carpenter

Voir les 2 autres plus récents !!
+ celui sur les 50 Hz

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Bioelectromagnetics. 2011 Aug 18. doi: 10.1002/bem.20697. [Epub ahead of print]

No effects of short-term exposure to mobile phone electromagnetic fields on human cognitive performance: A meta-analysis.

Barth A, Ponocny I, Gnambs T, Winker R.

Institute of Working and Organisational Psychology, UMIT-University for Health Sciences, Medical Informatics and Technology, Linz, Austria. alfred.barth@umit.at.

Abstract

During recent years, a large number of studies on the effects of electromagnetic fields emitted by cellular mobile phones on human cognitive performance have been carried out. However, the results have been ambiguous. We carried out the current meta-analysis in order to investigate the impact of electromagnetic fields emitted by mobile phones on human cognition. Seventeen studies were included in the meta-analysis as they fulfill several requirements such as single- or double-blind experimental study design, and documentation of means and standard deviations of dependent variables. The meta-analysis was carried out as a group comparison between exposed and non-exposed subjects. No significant effects of electromagnetic fields emitted by Global System for Mobile Communications (GSM) and Universal Mobile Telecommunications System (UMTS) mobile phones were found. Cognitive abilities seem to be neither impaired nor facilitated. Results of the meta-analysis suggest that a substantial short-term impact of high frequency electromagnetic fields emitted by mobile phones on cognitive performance can essentially be ruled out. Bioelectromagnetics. © 2011 Wiley-Liss, Inc.

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Sci Total Environ. 2012 May 1;424:11-5. Epub 2012 Mar 14.

Acute effects of electromagnetic fields emitted by GSM mobile phones on subjective well-being and physiological reactions: A meta-analysis.

Augner C, Gnambs T, Winker R, Barth A.

IGGMB - Research Institute for Basic and Frontier Questions of Medicine and Biotechnology, Health Research Institute, University Clinics of the Paracelsus Medical University, Salzburg, Austria.

Abstract

The potential effects of radiofrequency electromagnetic fields (RF-EMF) emitted by GSM mobile phones on subjective symptoms, well-being and physiological parameters have been investigated in many studies. However, the results have been ambiguous. The current meta-analysis aims to clarify whether RF-EMF have an influence on well-being in self-reported sensitive persons, as well as in non-sensitive people. A literature search revealed 17 studies including 1174 participants. The single effects for various subjective and objective outcomes were meta-analytically combined to yield a single population parameter. Dependant variables were subjective (e.g. headaches) and objective parameters (e.g. heart rate variability) of well-being. The results show no significant impact of short-term RF-EMF exposure on any parameter. Future research should focus on the possible effects of long-term exposure.

PMID: 22421088 [PubMed - in process]

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50 Hz

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Bioelectromagnetics. 2010 Apr;31(3):173-9.

Effects of extremely low-frequency magnetic field exposure on cognitive functions: results of a meta-analysis.

Barth A, Ponocny I, Ponocny-Seliger E, Vana N, Winker R.

Department for Labor Science and Organization, Institute of Management Science, Vienna University of Technology, Theresianumgasse 27, Vienna, Austria. barth@imw.tuwien.ac.at

Abstract

There is extensive literature on possible effects of extremely low-frequency magnetic fields (ELF-MFs) on human cognitive functions. However, due to methodological deficits (e.g., low statistical power, small sample sizes) findings have been inconsistent. In the current study we try to overcome these problems by carrying out a meta-analysis. Literature research revealed 17 studies. Nine of these were included in the meta-analysis because they fulfilled minimum requirements (e.g., at least single-blind experimental study design and documentation of means and standard deviation of the dependent variables). All of the studies used a 50 Hz magnetic field exposure. Small but significant effect sizes could be detected in two cognitive dimensions: in the hard level of visual duration discrimination, task-exposed subjects performed better than controls; at the intermediate level however, exposed subjects performed worse. Additionally, a significant improvement of correct responses was observed in the dimension of "flexibility" under exposure. However, due to the small number of studies per performance dimensions and the resulting instability of estimates, these findings have to be treated with extreme caution. Taken together, the results of the meta-analysis provide little evidence that ELF-MFs have any effects on cognitive functions.

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