

## PH46: Human short-term exposure to electromagnetic fields emitted by mobile phones decreases computer-assisted visual reaction time

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### Abstract

The worldwide dramatic increase in mobile phone use has generated great concerns about the detrimental effects of microwave radiations emitted by these communication devices. Reaction time plays a critical role in performing tasks necessary to avoid hazards. As far as we know, this study is the first survey that reports decreased reaction time after exposure to electromagnetic fields generated by a high specific absorption rate mobile phone. It is also the first study in which previous history of mobile phone use is taken into account. The aim of this study was to assess both the acute and chronic effects of electromagnetic fields emitted by mobile phones on reaction time in university students. Visual reaction time (VRT) of young university students was recorded with a simple blind computer-assisted-VRT test, before and after a 10 min real/sham exposure to electromagnetic fields of mobile phones. Participants were 160 right-handed university students aged 18–31. To assess the effect of chronic exposures, the reaction time in sham-exposed phases were compared among low level, moderate and frequent users of mobile phones. The mean  $\pm$  SD reaction time after real exposure and sham exposure were  $286.78 \pm 31.35$  ms and  $295.86 \pm 32.17$  ms ( $P < 0.001$ ), respectively. The age of students did not significantly alter the reaction time either in talk or in standby mode. The reaction time either in talk or in standby mode was shorter in male students. The students' VRT was significantly affected by exposure to electromagnetic fields emitted by a mobile phone. It can be concluded that these exposures cause decreased reaction time, which may lead to a better response to different hazards. In this light, this phenomenon might decrease the chances of human errors and fatal accidents.

**Keywords:** Reaction time, Mobile phone, Electromagnetic field, University students.