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Are we able to detect the power frequency electromagnetic fields?

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Electric charge induced by electromagnetic fields (EMF) can be perceived through the vibration of body hair and tingling sensations at high but not at lower field intensities. It has been suggested recently, that electromagnetically hypersensitive (EHS) individuals may have an enhanced ability to perceive weak EMFs. In our blind randomized experiment, 43 control and 29 EHS participants (age: 28.6 ± 10.0) were asked to try to detect a 50 Hz EMF of 0.5 mT intensity. Subjects had to put their right hand between two electromagnetic coils and to decide about the presence or absence of the field in 20 successive one minute long sessions. During the experiment, subjects' cardiac activity had been recorded, then heart rate (HR) and heart rate variability (HRV, SDNN) were calculated for each session. Detection performance was calculated based on the methodology of signal detection theory. The parameter d' of control subjects did not differ from zero ($d'=0.14$; $SD=0.60$; $t=1.45$; $p>0.05$), while a significant difference ($d'=0.31$; $SD=0.64$; $t=2.52$; $p=0.02$) was found among EHS persons, which indicates the potential ability to detect the EMF of the latter group. In the case of correct judgments (hits and correct rejections), higher average HRV values were found than for false decisions (misses and false alarms) ($p=0.001$). HR values did not show significant differences. According to our results, sensitized persons might be able to detect weak power frequency EMF under optimal circumstances.