# Corrigendum: Complete electrode model in EEG: relationship and differences to the point electrode model



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# Corrigendum: Complete electrode model in EEG: relationship and differences to the point electrode model

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The length unit used in our computations was, due to a mistake by the first author, incorrectly a millimeter instead of a meter. Due to this error, *all* impedances with units presented in the paper must be divided by 1000 to get the correct value. This means that the effective contact impedances (ECIs) examined were, in fact, between $10^{-9}$ and $10^{3}$ $\Omega m^2$. The intervals of extremely low (maximal shunting), intermediate or extremely high (minimal shunting) impedance suggested in the paper correspond, respectively, to the intervals below, between and above ECIs of $10^{-5}$ and $10^{-1}$ $\Omega m^2$ or alternatively average contact impedances of 0.1 and 100 Ω, if the round value of 1 $cm^2$ is used as the electrode surface area.

The corrected results suggest that impedances over the guideline lower limit 100 Ω (American Clinical Neurophysiology Society 2006) will lead to very subtle differences between the complete electrode and point electrode models (CEM and PEM), as the forward simulation differences were found to be small in the minimal shunting interval: e.g. zero placement error $PE_k$ for all tested sources. Consequently, CEM and PEM should result in essentially the same forward simulation accuracy in traditional applications of EEG involving impedances higher than 100 Ω and electrode diameters up to 18 mm.

Based on the corrected results, shunting effects, e.g., a drop-off in the absolute value of electrode voltages indicated by the relative norm can be expected with impedances below 100 Ω, which is supported by American Clinical Neurophysiology Society (2006). Hence, it seems that differences between CEM and PEM in forward simulation can be relevant if, for some reason, the contact impedances are exceptionally low (<100 Ω) or electrodes are very large compared to the head diameter (e.g. infant head).

## Reference

American Clinical Neurophysiology Society 2006 Guideline 3: minimum technical standards for EEG recording in suspected cerebral death *J. Clin. Neurophysiol.* **23** 97–104

  