Erratum: Validating an iOS-based Rhythmic Auditory Cueing Evaluation (iRACE) for Parkinson's Disease

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This is the erratum for the paper "Validating an iOS-based Rhythmic Auditory Cueing Evaluation (iRACE) for Parkinson's Disease" originally published in the proceedings of the ACM International Conference on Multimedia 2014 (`http://dx.doi.org/10.1145/2647868.2654952`).

In our paper there was an error in the definition of the iRACE coordinate system: The anterior–posterior (A–P) acceleration should be defined as $a_{AP} = -a_z$, and left–right (L–R) acceleration as $a_{LR} = a_x$. Subsequently, the definition of the rotation rate around the A–P axis (i.e., roll) should be changed as $\omega_{AP} = -\omega_z$, and around the L–R axis (i.e., pitch) as $\omega_{LR} = \omega_x$.

Note: This correction does not affect the algorithms or conclusions of this paper, nor does it affect the resulting statistical analysis. However, some changes need to be made to the original paper which are detailed below.

The first paragraph in Section 5.1 should read:
During a Walking Evaluation, the iRACE device was oriented with its screen facing towards the subject and its audio jack facing up. iRACE simultaneously records 6 channels of IMU data in the iOS device xyz coordinate system: tri-axial acceleration (a_x, a_y and a_z) and tri-axial rotation rate (ω_x, ω_y and ω_z). For simplicity, from the subject's perspective, we define anterior–posterior (A–P) acceleration as $a_{AP} = -a_z$ (positive values for anterior acceleration), up–down (U–D) acceleration as $a_{UD} = -a_y$ (positive for upward acceleration), and left–right (L–R) acceleration as $a_{LR} = a_x$ (positive for leftward acceleration). Similarly, we define the rotation rate around the A–P axis (i.e., roll) as $\omega_{AP} = -\omega_z$, around the U–D axis (i.e., yaw) as $\omega_{UD} = -\omega_y$, and around the L–R axis (i.e., pitch) as $\omega_{LR} = \omega_x$.

In Section 5.3: Second sentence of second paragraph: "... the timestamps of a peak (t_P) and its preceding trough (t_T, i.e., local minimum)...". **The last two sentences of the section should read:**
A 2 (*Channel*: A–P or U–D) × 2 (*Event*: SD of $t_{\varepsilon,P}$ or $t_{\varepsilon,T}$) repeated-measures analysis of variance (ANOVA) was performed, revealing a significant effect for *Channel* ($F_{1,9} = 26.86$, $p = .0006$; i.e., A–P had lower SDs than U–D), *Event* ($F_{1,9} = 32.16$, $p = .0003$; i.e., HS peaks had lower SDs than HS troughs), and their interaction ($F_{1,9} = 15.96$, $p = .003$). Because A–P peaks ($t_{P,AP}$) had the smallest group-level mean and variance of SD_{t_ε}, they may be considered the most temporally stable analogue of HS events.

In Sections 5.4, 5.5, and 5.6: Any reference to "trough" should be replaced with "peak", and vice versa.

In Section 6.1: In the first sentence, "double trough" should read "double peak".

In Section 8.1: All references to "trough" should be replaced with "peak".

Figure 3 is also corrected (shown below).

A corrected version of the paper can be found on the authors' website: `http://www.smcnus.org/publications`.