Difficulties Choosing Control Points in Acupuncture Research. Response: Commentary: Differential Cerebral Response, Measured with Both an EEG and fMRI, to Somatosensory Stimulation of a Single Acupuncture Point vs. Two Non-Acupuncture Points

The Harvard community has made this article openly available. Please share how this access benefits you. Your story matters

Citation

Published Version
doi:10.3389/fnhum.2016.00404

Citable link
http://nrs.harvard.edu/urn-3:HUL.InstRepos:29002563
Difficulties Choosing Control Points in Acupuncture Research. Response: Commentary: Differential Cerebral Response, Measured with Both an EEG and fMRI, to Somatosensory Stimulation of a Single Acupuncture Point vs. Two Non-Acupuncture Points

Till Nierhaus, Daniel Pach, Wenjing Huang, Xiangyu Long, Vitaly Napadow, Stephanie Roll, Fanrong Liang, Burkhard Pleger, Arno Villringer and Claudia M. Witt

1 Mind-Brain Institute at Berlin School of Mind and Brain, Charité – Universitätsmedizin Berlin and Humboldt-University, Berlin, Germany, 2 Department for Neurology, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany, 3 Institute for Social Medicine, Epidemiology, and Health Economics, Charité – Universitätsmedizin Berlin, Berlin, Germany, 4 Acupuncture Moxibustion and Tuina School, Chengdu University of Traditional Chinese Medicine, Chengdu, China, 5 Department of Radiology, Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, USA, 6 Department of Radiology, Logan University, Chesterfield, MO, USA, 7 Institute for Complementary and Integrative Medicine, University Hospital Zurich, Zurich, Switzerland

Keywords: somatosensory stimulation, functional magnetic resonance imaging (fMRI), electroencephalography (EEG), acupuncture, background rhythm, functional connectivity

A commentary on


The existence of point specificity in acupuncture is still controversial (Choi et al., 2012). Therefore, a thoughtful choice of control points is very important when evaluating point specific effects in acupuncture research.

The standard method of choosing a control for an acupuncture point based on the theory of traditional Chinese medicine is to choose a location on the middle line between two meridians (Yang et al., 2009). However, it is still controversial whether an acupuncture point resembles a specific point (Li et al., 2015) on a meridian or a larger area on the skin surrounding the meridian (meridian skin area; Lin, 1991). Therefore, we think a control point should be located (1) between two meridians and (2) outside the meridian skin area of the acupuncture point under investigation.

However, biomedicine does not well support the existence of meridians (Litscher, 2014). Additional criteria for control point selection can be based on modern anatomy and physiology. This could take into account dermal, muscular, and neural components, as well as connective tissue and chemical aspects. Dermatome and myotome maps, which depict innervation of the skin or...
The skin region of ST36 and CP1 is innervated by the same peripheral nerve.

Thus, both the acupuncture and the control point might be more similar than desired.

Another critical point is the choice of the underlying dermatome map. Due to a lack of consensus on the location and size of individual dermatomes (Lee et al., 2008), specific locations might be attributed to different dermatomes depending on the chosen map. This might lead to different conclusions regarding the selection of a control point. Moreover, there is a high variance between individuals resulting in overlapping dermatomes. More evidence based dermatome maps such as presented by Lee et al. (2008) might be a way to limit these problems. However, these maps need further establishment.

Furthermore, acupuncture and control point can affect different tissues, which in turn might affect brain activity. However, the exact mechanisms involved in the local acupuncture effect [cutaneous, subcutaneous, muscular, chemical (adenosine), connective tissue] are still not clear. We suggest to evaluate needle sensation, e.g., MASS index (Kong et al., 2007), for the different interventions and include the results in the analysis of the data.

In sum, the location of control points in acupuncture research can be based on different alternative body maps (meridian, dermatome, myotome). However, accurate definition of these maps seems to be challenging and may differ between participants. Studies with a high sample size might limit the impact of intersubject variability. A combination of both the traditional concept of acupuncture and modern anatomy seems difficult to achieve when selecting proper control points. Therefore, the underlying concept when choosing control points for acupuncture should be described clearly and more research on acupuncture mechanisms is necessary.

**AUTHOR CONTRIBUTIONS**

All authors revised the Response letter to the Comment on our original paper by Dr. Wong.

**REFERENCES**


Lee et al., 2008

Kong et al., 2007

Wong (2016)

Wong (2016)


**Conflict of Interest Statement:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Copyright © 2016 Nierhaus, Pach, Huang, Long, Napadow, Roll, Liang, Pleger, Villringer and Witt. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) or licensor are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.