

Poster presentation

Acupuncture and fMRI – Preliminary Results of a Systematic Review.

Cristina Ventura^{1,2,*} , Anna Alvarenga^{1,2} , Joana Monte¹, António Silva¹ , Jorge Magalhães Rodrigues^{1,2} , and Rosa Vilares Santos³ .

¹ ABS – Health Level Atlântico Business School, Vila Nova de Gaia, Portugal;

² IPTC – Research Department in Complementary Medicine of the Portuguese Institute of Taiji and Qigong, Maia, Portugal;

³ FMUP – Faculty of Medicine, University of Porto, Portugal;

* Correspondence: cristina.ventura.10252@abs.pt

Abstract: Acupuncture, a traditional Chinese therapy involving needle insertion into specific body areas, remains biologically enigmatic despite its widespread global use, with potential mechanisms including the visceral-cutaneous reflex, axon bifurcation, viscerosomatic reflex, and intricate somatosensory stimulation, while neuroimaging studies, particularly functional magnetic resonance imaging (fMRI), have revealed a complex network of brain regions involved in acupuncture's effects encompassing somatosensory, affective, and cognitive processing. A comprehensive search for randomized clinical trials on the effects of acupuncture using fMRI as a measurement tool was conducted, covering multiple databases and applying specific inclusion and exclusion criteria, followed by independent review and quality assessment using the modified Downs and Black checklist, with data extraction performed by two investigators and discrepancies resolved through discussion with a third investigator. The initial search yielded 186 records, resulting in 27 included studies after the removal of duplicates, title and abstract screening, full-text review, and quality assessment, with the studies covering various conditions including pain, gastrointestinal conditions, miscellaneous conditions, cognitive impairment and stroke, and women's menstrual health. In the context of pain, the studies on contralateral and ipsilateral acupuncture for chronic shoulder pain demonstrated improvements in pain intensity and shoulder function, with distinct brain activation patterns observed. Contralateral acupuncture at ST38 showed better results, potentially involving the anterior cingulate cortex (ACC) and the regulation of functional connectivity density, while ipsilateral acupuncture affected the cerebellum, thalamus, and the reduction of functional connectivity. Acupuncture for low back pain revealed increased resting-state functional connectivity (rsFC) between the amygdala and ventral tegmental area (VTA) and periaqueductal gray (PAG), suggesting the involvement of the amygdala in pain modulation and emotion processing, while reduced rsFC was observed between the insula, precuneus, and VTA/PAG, indicating acupuncture's influence on pain perception and the default mode network..

Keywords: Acupuncture, Pain, Functional magnetic resonance imaging.

Citation: Ventura C, Alvarenga A, Monte J, Silva A, Rodrigues JM, Santos RV. Acupuncture and fMRI – Preliminary Results of a Systematic Review. *Journal of Complementary Therapies in Health*. 2023;1(1). doi:10.5281/zenodo.8170207

Academic Editor: Jorge Rodrigues

Received: 31 May 2023

Accepted: 2 June 2023

Published: 24 July 2023

Publisher's Note: IPTC stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: ©2023 by the authors. Submitted for open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).