Three English-language databases (PubMed, We of Science, and EBSCO) and two Chinese-language databases (China National Knowledge Infrastructure and Wanfang) were searched from inception until October 2020. To obtain a maximum of relevant studies, we used three groups of keywords: (1) (1) “anxiety” OR “depression” OR “stress” OR “emotion” OR “affect”; (2) “Tai Chi” OR “taiji”. A total of 400 articles were retrieved based on the searching result. We found that the number of publications is dramatically increasing, especially in the last decade (see supfigure 1). Finally, we added “functional MRI” OR “MRI” OR “EEG” OR “ERP” OR “fNIRS” to search the brain imaging studies relevant to this topic. Only 6 articles were retrieved including two reviews.

Figure 1S Topic related annual number of articles

Table 1S Study on the brain mechanism of Tai Chi regulating emotion

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Study | Sample size | Mean age  (SD) | Female | Brain region | Significant findings |
| (Yu et al., 2018) | \* | \* | \* | \* | the TCC favorable effects on alleviating anxiety, depression and mood disorder in different populations; Prefrontal lobe, insula and cingulate gyrus play a key role . |
| (Port et al., 2018) | 8 | 66.4±4.9 | 5 | superior frontal gyrus; frontal pole; lateral occipital cortex; intracalcarine cortex; occipital pole | Tai Chi group required less brain activation to perform the attention and memory tasks; TC had smaller anxiety. |
| 说明: 封面图片(Gamus, 2015) | \* | \* | \* | \* | Tai-chi may reduce balance impairment in mild-to-moderate Parkinson's disease and improve symptoms in patients with osteoarthritis. |
| (Liu, Wu, Li, & Guo, 2018) | 26 | 65.19 ± 2.30 | 18 | dorsolateral  prefrontal cortex；dorsolateral  prefrontal cortex | The impact of the meditative component of tai chi on emotion regulation was mediated by functional connectivity within the executive control network. |
| (Liu et al., 2020) | 31 | 64.94 ± 2.37 | 21 | Precuneus；Cerebelum；Rolandic operculum；Ventral striatum；Middle occipital gyrus；Middle temporal gyrus | long-term Tai Chi exercise may be effective in alleviating feelings of regret in elders by promoting reduced judgment of inner experience and enhanced emotion regulation through the strengthening of fronto-striatal functional connectivity. |
| (Xu et al., 2020) | 16 | 46.5 ± 18.5 | 10 | anterior insula；  posterior insula；  Caudate；  Superior Temporal Gyrus；  Superior Frontal Gyrus；  Superior Parietal Gyrus | differential changes in insula connectivity as neural correlates of symptom improvement in major depressive disorder. |

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