



# Calligraphy Therapy: The Cognitive Neuroscience Foundations

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Received: 📅 January 19, 2025

Published: 📅 March 18, 2025

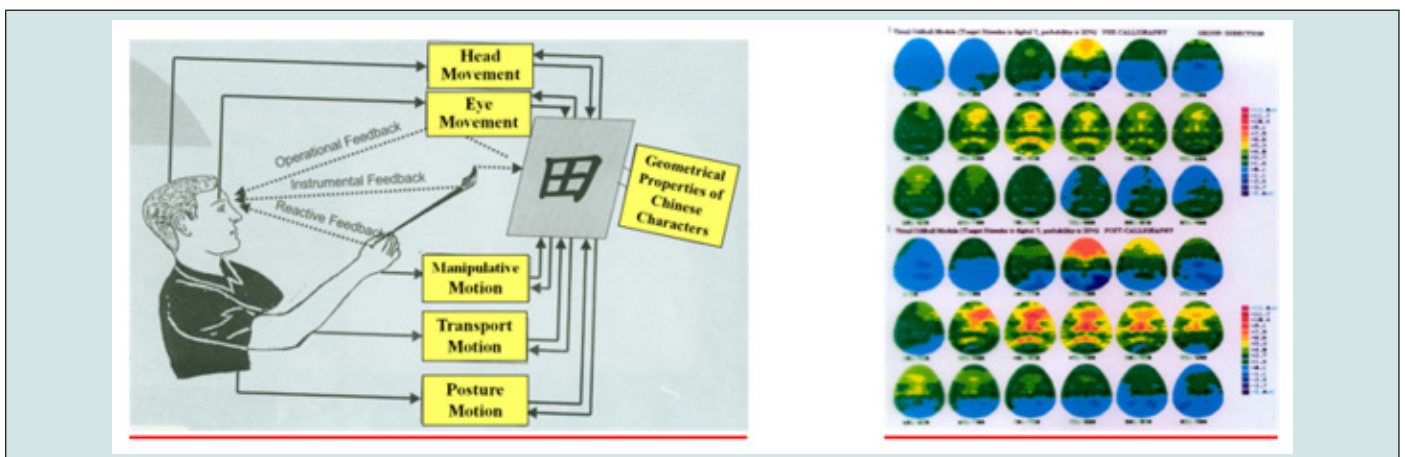
## A Review

Our research in the past 30 years have identified five dimensions of beneficial behavior arising from the practice of Chinese calligraphy. These are visual attention, cognitive activation, physiological slowdown, emotional relaxation and behavioral change. These findings have contributed to the promotion of psychological health of the practitioners as well as the development of calligraphy therapy as an effective treatment of a number of

illnesses and disorders through clinical validation and real-life empirical testing.

## The Brain, the Characters & the Writing Act

The 2 images show a theoretical framework (left) and the cortical states (right) before (top) and after (bottom) a 30-minute writing session.



### Cognitive Effects of Brush Character Writing

Some activating cognitive effects include visual-spatial ability, attention, mindfulness, abstract reasoning, mild cognitive

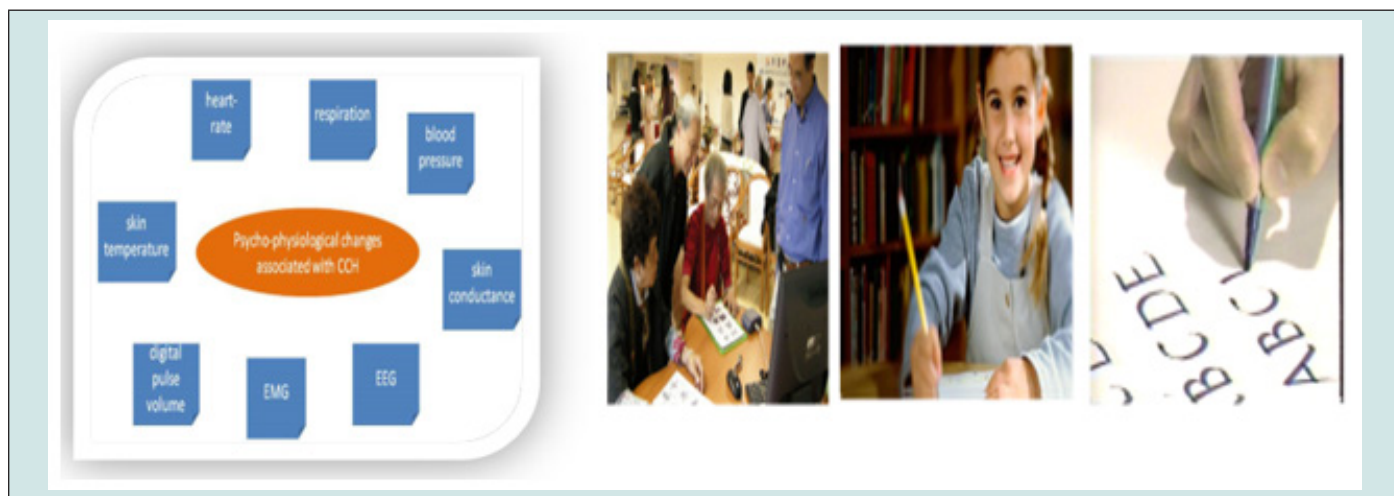
impairment, this treatment has been found effective in reducing the associated conditions. Above pictures depict the training process in children with autism, ADHD and mild mental deficiency, and the elderly with the Alzheimer’s Disease.



### Physiological Effects of Brush Character Writing

Some of the physiological effects include reduced heartrate, blood pressure, skin conductance, skin temperature, respiration,

muscular tension (middle), as well as heightened cognitive changes such as clerical speed, reasoning, spatial and picture memory and digit span.



### Affective-Emotional Effects

Brush writing has direct effects on the practitioner’s affective and emotional states in terms of a peace of mind, moods, emotions, felt stress and anxiety. The improved experiences include anxiety, depression, somatization, interpersonal relations, anger, sleep and general psychological health. These outcomes have been reported in mental patients, stressed executives, and the ordinary public seeking quiescence, relaxation. The following 3 pictures show a calligraphic training session for psychiatric patients and the Post-Traumatic Stress Disorder (PTSD) and mentally impaired children.

### Calligraphy Therapy: Successful Clinical Treatments

- a) Special children: Autism, ADHD, Mental Retardation
- b) Psychosomatic states: Hypertension & Diabetes II
- c) Mental Diseases: Schizophrenia, Depression, Neurosis, Anxiety Disorder
- d) Dementia: Alzheimer’s Disease, Mild Cognitive Disorder
- e) Strokes, Cancer & PTSD



## Summary

Chinese calligraphy has been scientifically investigated within the contexts and principles of behavioral cybernetics, cognitive science, and the cognitive neuroscience. On the basis of vast amount of research in the last 60 years, we have developed a cybernetic theory of handwriting and calligraphy to account for the intricate interactions of several psychological dimensions involved in the dynamic graphic production.

The overall results of our applications as well as clinical tests have given credence to the biological basis of calligraphy therapy as an evidence-based system of behavioral treatment and rehabilitation. Of several major dimensions of behavior benefits of the writing system, our professional applications in the areas of cognitive maintenance, cognitive treatment, and cognitive rehabilitation as well as general health promotion are especially noteworthy. Our second poster will illustrate the real-life experience with calligraphy interventions of two important scholars on the broad Chinese community.

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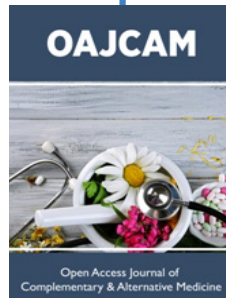
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DOI: [10.32474/OAJCAM.2025.05.000214](https://doi.org/10.32474/OAJCAM.2025.05.000214)



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