

# 太极拳改善老年人记忆力及相关海马体的结构和功能

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**目的:** 比较老年太极拳习练者(身心锻炼)与长期参与步行锻炼人群在认知行为表现、大脑结构及功能差异性。**方法:** 这项横断面研究招募了 42 名健康老年女性: 太极组( $n = 20$ ; 平均年龄 =  $62.90 \pm 2.38$  岁)和快走运动组( $n = 22$ ; 平均年龄 =  $63.27 \pm 3.58$  岁)。所有参与者都通过蒙特利尔认知评估量表和大脑结构及静息状态功能磁共振成像(rsfMRI)测试进行了认知评估。**结果:** 太极拳组的情景记忆表现显著性优于步行组; 太极拳组的颞下区和内侧颞区(包括海马体)灰质密度显著性高于快步锻炼组; 太极拳组的颞区(特别是梭状回和海马体)的局部一致性显著性高于快步组。此外, 基于整体样本量的偏相关分析揭示, 左侧海马体的灰质密度与情景记忆之间存在显著性相关; 左海马、左海马旁、左梭形和情节记忆表现的局部一致性之间存在显著性相关。**结论:** 本研究表明, 长期练习太极拳可以通过重塑海马体的结构和功能来提升情节记忆表现。

关键词: 太极; 延迟记忆; 灰质密度; 区域同质性; 步行

## Regular Tai Chi practice is associated with improved memory as well as structural and functional alterations of the hippocampus in the elderly

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**Abstract: Objective:** The current study aimed at comparing the effects of Tai Chi (a motor-cognitive exercise) with walking (an exercise without cognitive demands) on cognitive performance, brain structure, and brain function in the elderly. **Methods:** This cross-sectional study included 42 healthy elderly women within two groups: Tai Chi ( $n = 20$ ; mean age =  $62.90 \pm 2.38$  years) and brisk walking exercise ( $n = 22$ ; mean age =  $63.27 \pm 3.58$  years). All the participants underwent a cognitive assessment via the Montreal Cognitive Assessment and brain structural and resting state functional magnetic resonance imaging (rsfMRI) assessments. **Results:** Episodic memory in the Tai Chi group was superior to that of the walking group. Higher gray matter density in the inferior and medial temporal regions (including the hippocampus) and higher ReHo in temporal regions (specifically the fusiform gyrus and hippocampus) were found in the Tai Chi group. Significant partial

correlations were found between the gray matter density of the left hippocampus and episodic memory in the whole sample. Significant partial correlations were observed between the ReHo in left hippocampus, left parahippocampal, left fusiform, and delayed memory task, which was observed among all subjects.

**Conclusion:** The present study suggests that long-term Tai Chi practice may improve memory performance via remodeling the structure and function of the hippocampus.

**Keywords:** Tai Chi, Delayed memory, Gray Matter Density, Regional Homogeneity, Walking