

# ***Effects of Yang Family Tai Chi Chuan on cognitive function in Older Adults with Mild Cognitive Impairment (MCI)***

Scientific research made by the Yang Chengfu Tai Chi Chuan Center – São Paulo – Brazil with the resources from the Clinic Hospital of São Paulo

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# ***Introduction***

- ***The Mild Cognitive Impairment (MCI)*** is a state which **precedes the Alzheimer**, it's considered a high level risk situation for Dementia mostly Alzheimer.
- The number of older adults with Alzheimer Disease (AD) increases progressively. In accordance with The Alzheimer Institute in Brazil, ([http://www.alzheimermed.com.br/m3.asp?cod\\_pagina=1011](http://www.alzheimermed.com.br/m3.asp?cod_pagina=1011)) because of the global aging process the number of people with Alzheimer will increase dramatically and in 2025, there will be around 34 million all over the world, 2/3 in development countries.
- Therefore, attempts have been made to identify individuals with Mild Cognitive Impairment (MCI) who are at increased risk of AD **and to test interventions that might delay the progression of prodromal symptoms.**
- The **cognitive benefits of Tai Chi Chuan (TCC)**, an ancient physical activity originated from the Eastern world and now increasingly popular in the Western countries, remain unexplored.

# ***It's Important to know that...***

- There are some scientific studies relating **physical activities and memory improvement** but **relating tai chi chuan and memory we have only few references.**
- Some authors show evidences telling us that the physical activities may prevent the memory deficiency and some others demonstrate us that the physical activity practice can improve the cognition.

## **Some references:**

LAUTENSCHLAGER NT, ALMEIDA OP. Physical activity and cognition in old age. *Current Opinion in Psychiatry*. 2006; 19:190-193,  
LAUTENSCHLAGER NT, ALMEIDA OP, FLICKER L, JANCA A. Can physical activity improve the mental health of older adults? *Ann Gen Hosp Psychiatry*. 2004; 3:1-5.

## ***But we have to consider that...***

- Although physical exercises have very much defined effects on elders health, **the appropriated ways to practice** them are very few, having in mind that the process of aging comes together with organic decline, like the articulations problems, visual deficits, balances losses and muscular resistance losses, etc.

# *Tai Chi Chuan...*

- Which originally was developed as a Martial Art, has been practiced for centuries in China as an excellent physical activity and used as a health system by elders, because of its low speed and soft movements.
- A great variety of benefits related to Tai Chi Chuan practice has been described and numerous studies demonstrate a positive impact of Tai Chi Chuan practices in balance, muscular strength, flexibility, postural control and consequently falls prevention in elders.
- Tai Chi Chuan also has proved to be good for osteoarthritis and rheumatic arthritis, besides the evidences of the improvement in cardio respiratory and blood pressure control, etc.

## SOME REFERENCES

ZHANG JG, et al. The effects of Tai-Chi-Chuan on physiological function and fear of falling in the less robust elderly: an intervention study for preventing falls. Archives of Gerontology and Geriatrics. 2005; 42(2):107-116.

VERHAGENAP, IMMINK M, et al. The efficacy of Tai Chi Chuan in older adults: a systematic review. Family Practice. 2004; 21(1):107-113

# ***Methods of our research***

- In this pilot study, 26 elderly women with MCI were recruited (without criteria for dementia or depression, with cognitive complaint emanating from patient and/or family, reporting a decline in cognitive functioning relative to previous abilities during the past year and cognitive impairments evidenced by clinical evaluation)

# ***Instrumental***

- **The instrumental used were:**
- Subjective Scale of Memory Complaints - MCS
- Rivermead Memory Behavioral Test - RBMT
- Direct and Indirect Verbal amplitude Digital. DD AND DDI
- The first 13 patient received Tai Chi Chuan classes (60 minutes) twice a week and the other group of 13 patients made the control group (without any physical activities) for **24 consecutive weeks.**
- **The Yang Family Tai Chi was used in a method specially developed by the Yang Chengfu TCC Center**
- The sequence was based on **stances and first part of Yang Family Hand Form** using the **names of the movements** as references connected with their images, having in mind the memory issues.

# ***Frequency and Tai Chi method***

- Classes were given twice a week by one instructor of the Yang Chengfu Center – SP.
- The program was developed in a progressive system, beginning with exercises of fixed stances, emphasizing the inner attention on the postures, development of the physical ability for each stance, and recollection of the movements along the intervention. Respecting the difficulties in the beginning of the training we began with **sitting exercises**. In the end of the intervention everyone was able to practice in standing position.
- **The stances used were:**
  - **Qi Li**                      Standing position
  - **Ma Bu**                     Horse Stance
  - **Gung Bu**                 Bow stance
  - **Xu Bu**                     Empty stance
- **Isolated Movements applied:**
  - Legs changing weight movements using bow stances, Brush knees (right, left), Cloud hands. All movements of the the Yang Family system having in mind the 10 essentials of Master Yang Chengfu.
- **Yang Family sequence applied:**
  - **First part of Hand Form**, slowly and steady including concentration on the movements and giving emphasis in the motor coordination.
- **Evaluation of the Learning process:**
  - After **three months** of practice we did one evaluation to measure the learning process.

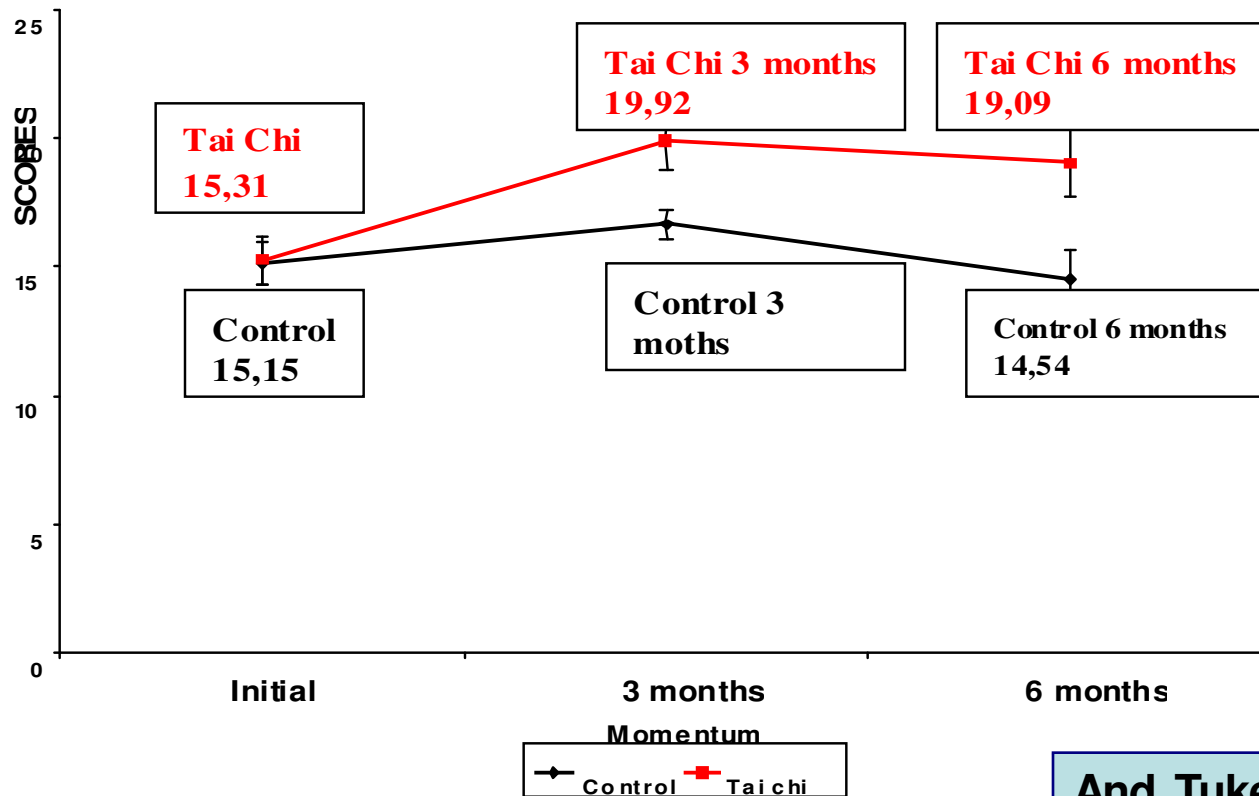


# ***The Results***

- The Standard Profile (RBMT) punctuation of the Yang Family Tai Chi group has increased significantly ( $p < 0,001$ ) indicating a better memory performance comparing with the control group.
- In the subjective scale of memory complains (MCS) the Yang Family Tai Chi group has demonstrated a diminution of complains about memory significantly higher comparing with the control group ( $p = 0,003$ ).

# The RBMT graphic shows

Average in Standard Score of the Behavioral Memory test of Rivermead. RBMT scale and respective Standard errors for each group



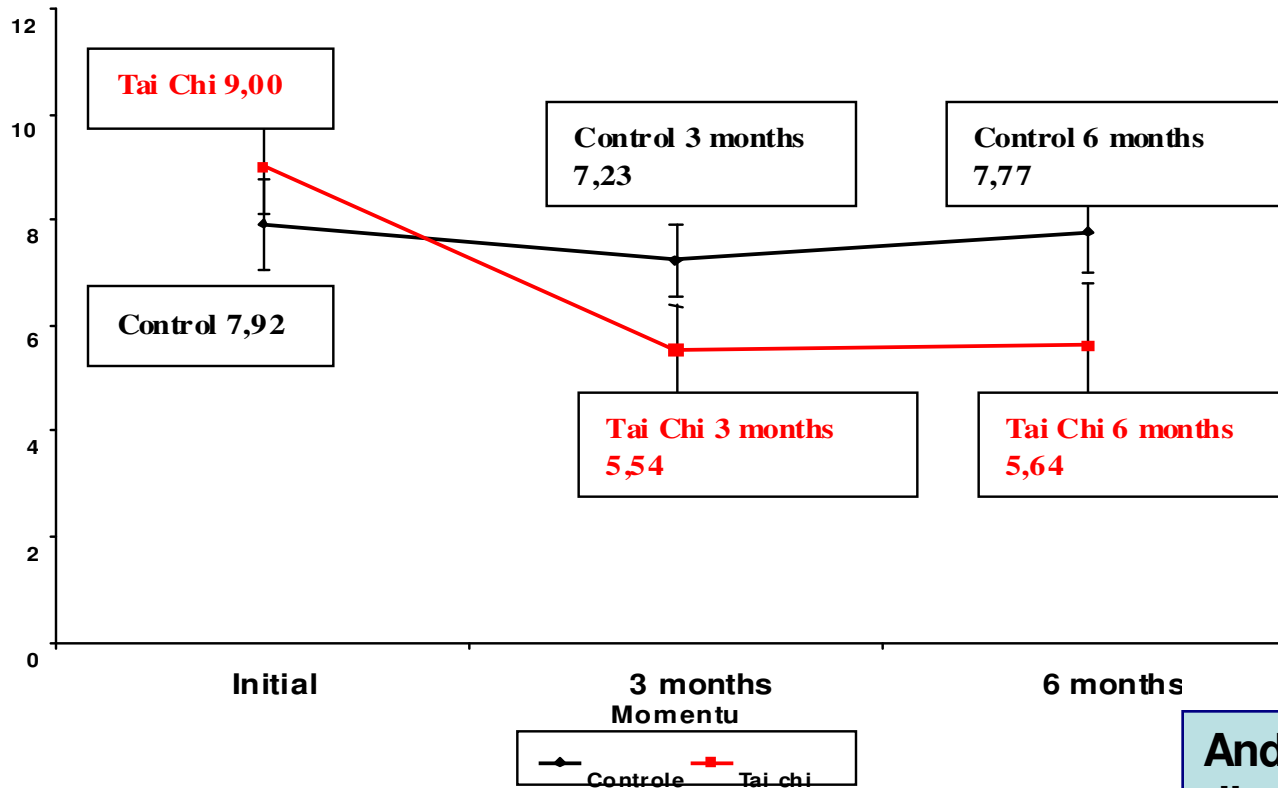
Observing the graphic it seems the RBMT scale raises only for the Yang Family Tai Chi patients.

And Tukey shows significant raises comparing

	p
tai chi initial - tai chi 3 months	<0,001-tai
chi 3 months- control 6 months	0,003
tai chi initial – tai chi 6 months	0,009

# The MCS graphic shows

Average in Subjective Scale of Memory Complains MCS scale and respective Standard errors for each group



Observing the graphic it seems the MCS scale diminishes only for the Yang Family Tai Chi patients

And Tukey shows significant diminution

comparing	p
tai chi initial - tai chi 3 months	0,001
tai chi initial - tai chi 6 months	0,010

***Interesting was to observe that “attention and concentration” is not the main factor for having good memory!***

- The Direct and Indirect Digit Span from Weschler Adult Intelligence Scale DD and DDI did not have much variations during the three moments of the intervention showing that the memory improvement was not directly connected with the improvement of attention and concentration.

**And Tukey shows not much difference comparing DDI Scale**

	<b>p</b>
control initial – control 6 months	<b>0,982</b>
tai chi initial – tai chi 6 months	<b>1,000</b>

- **It makes us infer that the practice of Tai Chi may have some direct effect on memory by itself.**

# ***We did a Tai Chi learning test in the third month and...***

We found out that the better Tai Chi learning test result, the better ***RBMT*** average, meaning that there is a directly relation between the learning Tai Chi process and the raise of the performance in the ***RBMT*** test.

It means that the Tai chi variable and it's improvement cognitive method has a stronger connection with the raise of the performance in the ***RBMT*** test.

# ***Discussion***

- The results demonstrate that after six months of Traditional Yang Family Tai Chi practices there was a statistically significant difference comparing both groups in the Standard Score of the Behavioral Memory test of Rivermead (**RBMT**) **P = 0,009** and in the Subjective Scale of Memory Complains (**MCS**). **P= 0,001**
- The data indicate that a significant **improvement of memory and perception of memory** was accomplished by the elders practicing Traditional Yang Family Tai Chi and also a diminution of the memory complains.
- **P= 0,001**
- **Our data suggested that Tai Chi improves cognitive abilities.**

- Also, the study has indicated that the improvement of the memory was not only related to the improvement of attention and concentration, which is also achieved by other kinds of physical activities.
- The group who practiced Tai Chi Chuan presents better **memory preservation** comparing with groups of no physical activities.
- These data suggest that Yang Family Tai Chi Chuan **may have** the “***protector effect***” for dementia although more studies are needed to confirm these results.

# Final comments

- **All the researched elders chose to follow practicing Yang Family Tai Chi after the intervention.**
- **This research is being presented in the International Geriatric Congress in Paris on July 3rd, 2009.**
- **This research was considered a success in the Clinical Hospital of São Paulo and because of it we got approved a new research on balance and falls and many others will come. Inclusive we are repeating this same on memory with a bigger group and other memory scales looking for more data.**
- **The doctors of the Clinical Hospital agreed that Yang Family Tai Chi is a very good alternative of not pharmacological prevention and treatment.**
- **We are pioneers in studying Tai Chi Chuan and cognition in elders in Brazil.**



# Our Group of elders practicing Yang Family Tai Chi in Clinical Hospital of São Paulo - Brazil



**We do want to thank all the elders who participated of this project.  
For further information and clarifications please write directly to**

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