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Benefit of Thai Hermit Exercise on MCI Patients': A Randomized Controlled Trial

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Abstract

Background: Mild Cognitive Impairment (MCI) is a recurrent brain disorder with the memory. It is caused by the degeneration of the brain cells that is different from an individual's age and that develops to dementia. One way to help reduce stress is by exercising. Thai hermit exerciseis a wisdom in Thai exercise, which improves psychological status for this condition.

Method: This study was evaluated for a period of 10 weeks in regards to the Thai hermit exercise on psychological status among patients with MCI. 84 participants were recruited and randomized into intervention (n=42) control (n=42). The intervention group practiced Thai hermit exercise for 10 weeks. Psychological effect was evaluated by measuring the psychological status which was futher determined by the psychological status indicator questionaire. The control group received standard treatment. Both study groups were assessed by the test at the baseline then at 6th week, 8th week and 10th week of the study. Results: At baseline there were no significantly difference statistically between the two groups ($p<0.05$). After the intervention there were statistically significantly improvement of psychological status ($p<0.05$).

Conclusion: The results strongly suggested the capability of Thai hermit exercise to be a psychological effect for patients with MCI.

Keywords: *Mild Cognitive Impairment (MCI), Psychological status,Thai hermit exercise (ruesidatton).*

Introduction

Mild cognitive impairment (MCI) is defined as cognitive decline greater than what is expected for an individual's age and education level, which does not interfere with daily life activities[(1)]. For the people with aged 60 years and above, the reported prevalence of MCI rangedfrom 14 to 18% and the progression rate of dementia is about 5-15% per year[(2)]. Mental component - MCI behavior at getting unwitting, where it is a major predictor of tendency to become dementia and futheridentified two clusters neuropsychiatric symptoms, namely:

(1) Cluster frontal (aberrant motor behavior, disinhibition, agitation and problems of appetite), was found to be associated with functional disability even after controlling the cognitive status and the mood cluster scores.

(2) Cluster mood (including stress, depression, anxiety, apathy, irritability and sleep problems), is more common than frontal cluster of symptoms (95% of subjects had at least 1 symptom mood: 53% of subjects had at least 1 symptom frontal)

Stress requires one to use physiological and psychological energy to respond and adapt to the stressor with increased tolerance to stress reflecting early symptoms of dementia[(3)]. According to[(4),(5)] and [(6)]stress

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that takes place within a short time frame will disrupt the short term memory which is basically the verbal memory. Whereas when stress occurs long term and repeatedly, will result in the exposure to the hormone cortisol which becomes more frequent maycause shrinkage in hipoccampus and also trigger a further decline in the cognitive function that leads to dementia. Epidemiological research looking at the role of stress in neurodegenerative disease is still relatively small.

MCI risk factor have many causes which includes increased age, diabetes mellitus, smoking, depression, hypertention, and lack of physical activity[7]. The positive effect of physical activity on brain vascularity includes pressure reduction, improvement of the lipoprotein profile, increased perfusion which is direct on the brain through the preservation of the neuronal structure and major changes in plasticity in the hippocampus[8]. Finally, it has been reported that an active lifestyle with regular physical exercise may prevent distress and reduce in the cortisol levels[9]. It is also a known fact that even the slightest amount of physical activity done outside can improve posture, reduce stress and loneliness, sleeping better at night, and even preventing depression[10].

Thai hermit exercise (RuesiDatTon)is a traditional Thai healing technique that mainly consists of breathing exercises, self-massage, acupressure, dynamic exercises, poses, mantras, visualization and meditation which is similar to the Hathayogic practices. In recent years, the Thai Ministry of Public Health has published several books on ReusiDat Ton. According to these modern texts, some of the benefits of ReusiDat Ton practices include; improved agility and muscle coordination, increased joint mobility, greater range of motion, better circulation, improved in respiration, improved in digestion, assimilation and elimination, detoxification, stronger immunity, reduced stress and anxiety, greater relaxation, improved concentration and meditation, oxygen therapy to the cells, pain relief, slowing of degenerative disease and greater longevity. However, there are very few studies in people that have compared the effects of RuesiDat Ton practice on psychological status. Since no previous evidences regarding these aspects of the exercise that have been investigated, thus, this study aims to measure the effect of stress in the aspect from practicing Thai hermit exercise among MCI patients.

Materials and Method

Design and Instruments: This study is a randomized controlled trial, 84 subjects will be elaborated at the multicenter. The target population of this study was participants who had been formally diagnosed with Mild Cognitive Impairment (MCI) and treated in King Chulalongkorn Hospital, Bangpli elderly club, Thai traditional medicine clinic at Ramkhamheang University. The participants were recruited following the eligibility criteria as follows.

Inclusion Criteria:

1. Patients who were diagnosed withMCI of age60 years and older.
2. Able to read speak and understand Thai with no severe hearing and blinding impairment.
3. Able to walk
4. Willingness to participate in the study and are able to provide the informed consent

Exclusion Criteria:

1. Regular practice of Thai hermit exercise (Ruesi dad ton)
2. Those that had been diagnosed with severe osteoporosis
3. Emergence of a new symptom
4. Does not have any previous cognitive impair by Medical illness
5. Does not have any sort of injury on the brain, skull, or scalp

Subject Allocation: The sample size for this study was calculated that a total sample size, based on a previous study[11], using power to detect 20% of effect size, with the power 80% and the alpha probability at 0.05. The G power computer application was applied to calculate the sample size. Participants were randomly assigned into one of the two parallel groups, either to an intervention group to receive the intervention or to a control group to receive usual care.The randomization list will be generated by using random number from the Excel program[12].Participants were provided with an information sheet as well as a consent form.

Ethical Consideration: In regards to the ethical principle, it has been approved by ethics committee of King Chulalongkorn Hospital.

Intervention: Thai hermit exercise (Ruesidat ton): This study was selected by some Thai traditional medicine experts for 3 postures from the original 80 postures that were involve with psychological status. For the intervention group about one hour a day and 3 times a week of Thai hermit exercise was arranged for 10 weeks. These exercises are indicated via Figures 1, 2 and 3.

Outcome Measurements: The Outcome will be assessed at the beginning of the exercise, week 6, and week 8 and again at week 10 in term of cognitive functions. Cognitive function used the standard test which are Verbal Fluency Test (Letters/categories), Trail making A-B Test and Digit Span. Each test has details as follows shown below

Psychological Indicators Questionnaire: This questionnaire will show how stress affects different parts of your life. Circle the response which best indicates how often you experience each stress indicator during a typical week, which apply to the international counseling team[13].

Figure 1: The posture to relieve face muscle, includes 7 postures numbered (a) - (g) and should be performed in sequential order

Figure 2: The posture to relieve laziness includes 7 postures numbered (a) - (g) and should be performed in sequential order

Figure 3: The posture to relieve headache, blur vision and general weakness includes 9 postures, numbered (a) – (i) and should be performed in sequential order.

Data Analyis: The demographic variables and the psychological status were analyzed using descriptive statistics such as: Chi-square test, frequencies, percentages, means, and standard deviations. The chi-squared tests were used to summarize the relationship of variables. Frequencies and percentages were used to summarize the categorical variables. Means and standard deviations were used to summarize the continuous variables.

Results

Demographics: From Table 1, the Chi-Square Tests results were not significantly correlated with the control and trial at 0.05 and it can be seen that the control group mainly consisted of female subjects which was about 36 people or up to 85.7% whereas there were only about 6 male subjects or about 14.3%. The age range of most participated subject were between 60-65 years old which consisted of 20 people or about 47.6%.The number of subjects between the age of 66- 70 years were about 18 people or about 42.9% and there were 4 people or about 9.5% in the age group of 70 years and older. The Marital status of most of the subjects were married which consisted of 36 people or about 85.8% while the subjects who were single consisted of 3 people or about 7.1%. Divorce, Widows/Separation subjects were also included in this research and there were also about 3 people or about 7.1% belonging to this category. The majority of the subjects which was about 29 people or 69.1% completed primary schools while about 8 subjects or only 19.0% completed their High school and there were few subjects about 5 people or 11.9% who completed their Bachelor degree. All of the 42 subjects (100%) worshipped Buddhist religion and are of Thai race.

The Intervention group mainly consists of 35 female subjects or about 83.3% and only about 7 male subjects or about 16.7%. More than half of the subjects were in the age group between 66-70 years old, which consisted of 23 people or about 54.8%.About 17 subjects or 40.5% of the subjects were in the age range between 60-65 years and there were only 2 subjects or 4.7% in the age range of 70 years and above. The Martial status of most of the subjects were married which consisted of 36 person or 85.7% and there were about 2 subjects or 4.8% whose status is single. Divorce, Widows/Separation subjects were also included in this research and there were also about 4 person or 9.5% of the subjects. More than half the subjects about 25 people or 59.5% completed their high school while about 10 subjects or 23.8% completed their Primary school. 7 subjects or 16.7% completed their bachelor degree. All of the 42 subjects (100%) worshipped Buddhist religion and are of Thai race.

Table 1: Comparisons of socio-demographic between the intervention group and the control group at pre-test

Characteristics	Control group		Experimental group		x^2	P value
	N	%	N	%		
Sex						
male	6	14.3	7	16.7	0.091	0.763
Female	36	85.7	35	83.3		
Age						
60 - 65 years	20	47.6	17	40.5	8.142	.087
66 – 70 years	18	42.9	23	54.8		
More than 70 years	4	9.5	2	4.7		
Status						
Single	3	7.1	2	4.8	2.657	.617
Marry	36	85.8	36	85.7		
Divorce/Widow/Separation	3	7.1	4	9.5		
Education						
Primary school	29	69.1	10	23.8	4.663	.324
High school	8	19.0	25	59.5		
Bachelors degree	5	11.9	7	16.7		

($p < 0.05$)

According to the result from the Table 2 (in the pre-test phase) it can be seen that there is no difference between control group and experimental group on psychological status (stress) at statistical difference of 0.05 ($p > 0.05$).

Table 2: Comparison between control group and experimental group on psycological statusin the pre-test

Variable	Control group		Experimental group		t	P value
	$\bar{x}$	S.D.	$\bar{x}$	S.D.		
Psychological Status						
Stress	3.76	0.32	3.63	0.34	1.81	0.074

($P< 0.05$)

According to the results from the Table 3 on Psychological Status, it can be seen that there were no differences in the control group at pre-test, after 6 weeks, after 8 weeks and after 10 weeks at statistical significance of 0.05 ($p > 0.05$). However, from Table 4, it can also be observed that a difference was found in the experimental group (for pre-test,6th week,8th week and 10th week) for the Psychological Status at a statistical significance of 0.05 ($p < 0.05$).

Table 3: Comparisons between the control group and experimental group on psychological status (stress) at pre-test, after 6 weeks, after 8 weeks and 10 weeks

Variable	Control Group		F	P value	Experimental Group		F	P value
	$\bar{x}$	S.D.			$\bar{x}$	S.D.		
Psychological Status								
Pre-test	3.76	0.32	0.659	0.543	3.63	0.34	306.233	0.00*
6 Weeks	3.66	0.52			2.38	0.37		
8 Weeks	3.75	0.51			2.25	0.39		
10 Weeks	3.67	0.33			1.84	0.15		

($P< 0.05$)

Table 4: Comparison of the differences observed in pre-test, 6 weeks, 8 weeks, and 10 weeks for Psychological Status in the experimental group

Variable	$\bar{x}$	pre-test	6 weeks	8 weeks	10 weeks
Psychological Status					
Pre-test	3.63	-	1.252 *	1.386 *	1.796 *
6 Weeks	2.38		-	.134 *	.544 *
8 Weeks	2.25			-	.410 *
10 Weeks	1.84				-

(P< 0.05)

Discussion

The present study determined to examine the condition of MCI patients by using a verbal influence test, a trail Maker B test and a Digit Span Test before and after the Thai Hermit exercise. Particularly, the aim was to examine the influence of psychological condition(stress) toward the advance of the Thai hermit exercise. In addition, this research aimed to compare the effect of Thai hermit exercise between the intervention and the control groups along the time period of observation. Two studies are in line with these findings, stating the fact that good physical performance seems to play a protective factor against cognitive decline whereby regular exercise promotes reduced risk of MCI and dementia[14, 15].Furthermore, the present study discovered that the observed psychological status at pre-test differed from that at the 6th, 8th and 10th weeks with a statistical significance ($p < 0.05$). Additionally, the results from the 6th week differed from the 8th and 10th week as well as the results from the 8th week differed from that of the 10th week at a statistical significance for the psychological status category ($p<0.05$). This is similar to results found in a study conducted by Lam *et al.*[16]whereby the authors reported a significant decrease in depressive symptoms after a 12-month group-based multi-modal exercise program compared with the pre-test level.

Conclusion

The psychological status showed that pre-test results differed from the 6th, 8th and 10th weeks at a statistical significance of 0.05 ($p < 0.05$) while the 6th week differed from the 8th and 10th weeks at statistical significance of 0.05 ($p< 0.05$). The 8th week was also seen to differ from the 10th week at a statistical significance of 0.05 ($p< 0.05$).

This study was successful in showing statistically significant results for the use of Thai hermit exercise as a tool for the improvement of psychological status in individuals with MCI. Future research should seek to identify population traits (such as age at which physical activity began, intervention duration, and baseline activity level) and intervention characteristics (such as type, frequency, duration, and intensity) that trend toward positive outcomes among these trials. Studies then could be designed appropriately to test the identified characteristics for research and knowledge purposes. In addition, long-term trials that enroll younger adults with interventions sustained for a longer periods would benefit the field and provide important insight on prevention. Although a physically active lifestyle often is proposed as a way to reduce stress and that cause of MCI and may be progress or leads to dementia. But some studies also indicate that there is not enough evidence to determine whether a single component like physical activity interventions actually offer or lead to the benefit of psychological effect. However, clinical practice largely encourages physical activity to prevent or dilute other chronic conditions, and this practice should continue, because it may offer benefits for improving psychological status as well.

Conflict of Interest: The authors declare that there are no conflicts of interest

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References

1. Petersen RC. Mild Cognitive Impairment. New England Journal of Medicine. 2011;364(23):2227-34.
2. Ganguli M, Snitz BE, Saxton JA, et al. Outcomes of mild cognitive impairment by definition: A population study. Archives of Neurology. 2011;68(6):761-7.

3. Johansson L, Guo X, Waern M, Ostling S, Gustafson D, Bengtsson C, et al. Midlife psychological stress and risk of dementia: A 35-year longitudinal population study2010. 2217-24 p.
4. Domes G, Heinrichs M, Rimmele U, Reichwald U, Hautzinger M. Acute Stress Impairs Recognition for Positive Words—Association with Stress-induced Cortisol Secretion. Stress. 2004;7(3):173-81.
5. Wolf OT, Kudielka BM. Stress, health and ageing: a focus on postmenopausal women. Menopause International. 2008;14(3):129-33.
6. R. D. My Health2014.
7. Mehta S, P H. Mild Cognitive Impairment2016.
8. Foster P, Rosenblatt K, Kuljiš R. Exercise-Induced Cognitive Plasticity, Implications for Mild Cognitive Impairment and Alzheimer's Disease. Frontiers in Neurology. 2011;2:28.
9. Kalmijn S, Launer LJ, Stolk RP, de Jong FH, Pols HAP, Hofman A, et al. A Prospective Study on Cortisol, Dehydroepiandrosterone Sulfate, and Cognitive Function in the Elderly. The Journal of Clinical Endocrinology & Metabolism. 1998;83(10):3487-92.
10. M S. Text book of Nursing Geriati. 2 ed. Jakarta : EGC2006.
11. Tanasugarn L, Natearpha P, Kongsakon R, Chaosaowapa M, Choatwongwachira W, Seanglaw D, et al. Physical effects and cognitive function after exercising "Rue-si-dad-ton" (Exercise using the posture of the hermit doing body contortion): A randomized controlled pilot trial2015. 306-13 p.
12. Glazerman S, M. Levy D, Myers D. Nonexperimental Replications of Social Experiments: A Systematic Review. Interim Report/Discussion Paper2002.
13. International TCT. Mental Health 2019 [
14. Gallucci M, Antuono P, Ongaro F, Forloni PL, Albani D, Amici GP, et al. Physical activity, socialization and reading in the elderly over the age of seventy: what is the relation with cognitive decline? Evidence from "The Treviso Longeva (TRELONG) study". Arch Gerontol Geriatr. 2009;48(3):284-6.
15. Ahlskog JE, Geda YE, Graff-Radford NR, Petersen RC. Physical exercise as a preventive or disease-modifying treatment of dementia and brain aging. Mayo Clin Proc. 2011;86(9):876-84.
16. Lam LC, Chan WC, Leung T, Fung AW, Leung EM. Would older adults with mild cognitive impairment adhere to and benefit from a structured lifestyle activity intervention to enhance cognition?: a cluster randomized controlled trial. PLoS One. 2015;10(3):e0118173.