THE EFFICACY OF COURT-TYPE THAI TRADITIONAL MASSAGE ON KNEE PAIN RELIEF IN OSTEOARTHRITIS PATIENTS

Piyaporn Sansila[1], Wichai Eungpinichpong[2], Luckchai Buakate[3], Nijsiri Ruangrungsi[1, 4, *]

[1] College of Public Health Sciences, Chulalongkorn University, Bangkok 10330, Thailand; [2] Back, Neck and Other Joint Pain Research Group, Faculty of Associated Medical Sciences, Khon Kaen University, Khon Kaen 40002, Thailand; [3] Phon Hospital, Khon Kaen 40120, Thailand; [4] Faculty of Pharmacy, Rangsit University, Pathumthani 12000, Thailand

ABSTRACT: Osteoarthritis (OA) is the most common degenerative joint disorder, resulting in significant mobility and health care expenses. It affects more than 60% of Western World adults over the age of 65 years. Moreover; it causes pain and dysfunction in 20 % of elderly persons. Objective: To assess the efficacy of the court-type Thai traditional massage on knee pain relief in patients with osteoarthritis. Materials and methods: This study was a phase II clinical research at Applied Thai Traditional Medical Service Center, Phon Hospital, Khon Kaen province. Thirty patients with osteoarthitis of the knee, aged 50-65 years, voluntary participated in the study. Each of them was treated with the court-type Thai traditional massage once a week for twelve weeks at the hospital. The treatment was assessed before the first week and after the twelfth week using VAS, timed up – and – go test, active knee range of motion. Dependent samples t-test was used as statistical analysis. The results showed that knee pain of the patients was reduced significantly after twelve weeks of the treatment. The patients were able to walk faster after the treatment with having better quality of life. There was no side effect found within the study period.

Keywords: Osteoarthritis, Court-type Traditional Thai massage

INTRODUCTION

Knee osteoarthritis is a chronic disease, which the symptom is firstly identified by joint pain and crepitation sound in the knee joint whenever the patients move the leg [1]. It is commonly found in both males and females whose age around 40-60 years [2]. In advance stage of the disease, serious symptom can be identified by the joint pain even though the patients are at rest. Consequently, the patients cannot sleep well at night and trend to take a rest during the day time. Therefore, quality of life of the patients with osteoarthritis is poor [3]. Accordance with current record of the patients, it shows that over six million elder, who are over 65 years old, have got osteoarthritis [4]. Fifty percent of the patients have been treated with analgesic, and Nonsteroidal anti-inflammatory drugs (NSAIDs). Since the nature of the disease is chronic, the use of medication in this population has to be very cautious because some of the patients have been suffered with side effects of the drugs such as gastro-intestinal ulcer, and renal disease [5].

Osteoarthritis can be caused by degenerative disease and it is frequently found in hip, knee and spinal joints [6]. Most of the patients have osteoarthritis in knee because the knees have to carry the whole body weight especially when the patients do physical activities and produce a lot of shear forces acting on the joints [7]. In addition, according to Thai culture, Thai people trend to to kneel on the floor, and sit on the heels during their daily works. These sitting gestures may accelerate the degenerative process of the knee and easily lead to knee osteoarthritis. Therefore, one of the recommended treatments for the knee osteoarthritis is to avoid such awkward activities of daily livings as well as strengthening exercise to the knees in non-weight bearing or partial weight bearing positions.

* *Correspondence to: Nijsiri Ruangrungsi*
E-mail: nijsiri.r@chula.ac.th

Cite this article as: Sansila P, Eungpinichpong W, Buakate L, Ruangrungsi N. The efficacy of court-type Thai traditional massage on knee pain relief in osteoarthritis patients. J Health Res. 2014; 28(2): 121-6.

Figure 1 Basic massage of the leg

In case of Thai traditional massage treatment, the court-type traditional Thai massage is claimed to be effective for knee pain [8]. In addition, it is suggested that it could reduce side effects resulting from taking NSAID [9]. The court-type traditional Thai massage is one of local wisdoms of Thai people. It is obvious that this type of Thai traditional massage has been practiced for treatment of joint and muscle pain for years [10]. It has been found to improve local blood circulation [11], increase pressure pain threshold, as well as relief muscle tension in patients with non-specific low back pain [12]. However, there is no research report on its therapuetic effect for treatment of patients with knee osteoarthritis. Therefore, the purpose of this study is to assess the efficacy of court-type Thai traditional massage on knee pain caused by osteoarthritis.

MATERIALS AND METHODS

Ethical considerations

This research project was approved by the Ethical Committee of the Traditional Thai and Alternative Medicine, the Department for the Development of the Traditional Thai and Alternative Medicine, the Ministry of Public Health. Signed informed consent was obtained from all participants.

Participants

The research design used was an experimental study phase II. where 30 patients volunteered to participate in the study. The research was conducted at the Applied Thai Traditional Medical Service Center, Phon Hospital, Khon Kaen province. The participants were thirty patients with knee pain who were screened by a physical therapist after which the patients were diagnosed by the Orthopedists based on a standard criteria for diagnosis for knee osteoarthritis (knee pain, joint crepitation on movement, and sign of degenerative changes of the joint shown on a radioghaph).

Study population

The study population were those who had knee pain due to osteoarthritis at the Applied Thai Traditional Medical Service Center, Phon Hospital, Khon Kaen province from May 1, 2012 to October 2013.

Inclusion criteria: 1) Participants who were diagnosed for having primary knee osteoarthritis by the orthopedists according to the criteria mentioned above. 2) Female out – patients whose aged between 50 – 65 years. 3) The symptoms of osteoarthritis were mild or moderate according to the index of severity for osteoarthritis of the knee. 4) The participants volunteered to participate and signed the informed consent.

Exclusion criteria: Participants who had one of the following conditions were excluded: 1) Fracture or injury that affect the knee joint. 2) Cancer, diabetes, paralysis, infectious disease 3) Using any pain killer or NSAID treatment. 4) Severe osteoarthritis. 5) Body mass index was more than 25.

Study intervention

After the patients underwent screening procedures by using medical history and physical examination from a physical therapist, each of them was asked to sign informed consent. Then the participants were treated with the court-type Thai traditional massage once a week for 12 weeks. There were four steps of the court-type Thai traditional massage for each session which took 60 minutes. They were summarized as follows:

Phase 1: This pahse consisted of four steps of the court - type Thai traditional massage which lasted 45 minutes.

Step 1: Basic thumb pressure massage along theThai meridian lines for the legs which cover tibialis anterior, peronei, quadriceps, and illiotibial band. This was aimed to stimulate the blood flow throughout the legs as well as release the tension of the muscles (Figure 1**).** The thumb

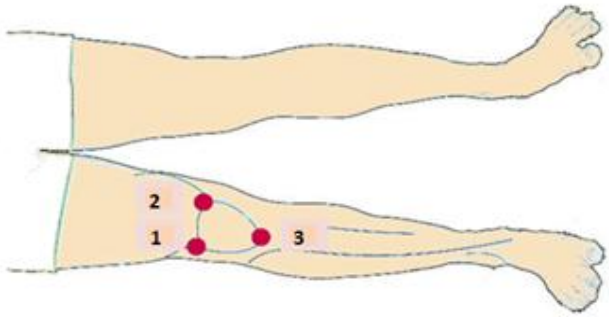

Figure 2 Three points of thumb pressure of the knee

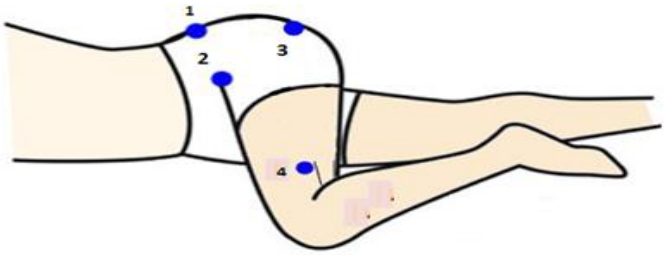

Figure 3 Four points of thumb pressure massage at the side of the thigh

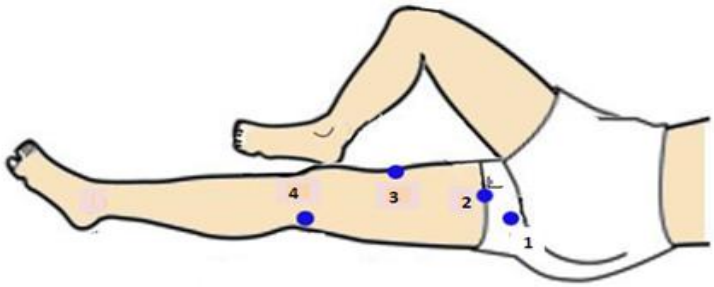

Figure 4 Four points of thumb pressure massage at the inner side of the thigh

pressure of massage was deep enough but not exceed the threshold of pain. Massage along each meridian line was repeated 3 rounds.

Step 2: Thumb pressure was applied on 3 points which were located on quadriceps tendon and patella ligament (Figure 2). This procedure was believed to stimulate blood circulation to the knee joint and relieve knee pain.

Step 3: Thumb pressure massage was applied on four points at the side of the thighs. These points were on gluteus medias, gluteus minimus, piriformis, and distal part of illio-tibial band respectively (Figure 3). This procedure was believed to release tension of quadriceps and gluteal muscles.

Step 4: Thumb pressure massage was applied on four points which were located on pectineus, adductor magnus, vastus medialis, popliteus muscles respectively (Figure 4).

Phase 2: Hot compress treatment which was refers to the treatment with warm and wet towel on the knee for 5-10 seconds after taking the pressure massage.

Phase 3: Semi squat exercise. Three repetitions of semi squat exercise were instructed. Each repetition, the patients stood and gradually bended their knee to 90 degrees and hold for ten seconds.

Phase 4: Dietary precaution. At the end of each session, the patients were suggested to refrain from having some kinds of food which were believed to cause more pain based on the practice guideline of Thai traditional medicine. These included poultry products, fermented food, and bamboo shoot.

Outcome measures and data collection

Outcome measures of this study consisted of a 10-cm Visual Analog Scale (VAS) [13], active knee

Table 1 Demographic Characteristics of the patients showing mean and standard deviation of age, body mass index, marital status, religion, educational background, symptom of pain and time period of knee pain

Characteristics		N = 30		
		Mean	SD	SEM
Age (years)		58.6	3.59	.655
Body mass index		23.99	1.14	.20845
Marital status	Number (n = 30)		% within group	
	Married (21)		70.0 %	
	Widowed (5)		16.7 %	
	Divorced (4)		13.33 %	
Occupation	Housewife (30)		100 %	
Religion	Buddhism (30)		100 %	
Education	Primary (24)		80.00 %	
	Secondary (5)		16.7 %	
	Bachelor's degree (1)		3.3 %	
Common symptoms	Pain in both sides (15)		50.0 %	
	Right knee pain (11)		36.7 %	
	Left knee pain (4)		13.3 %	

Table2 Outcomes of treatment on VAS from 1 week to 12 weeks after massage

Visual Analogue Scale	Mean ± SEM(n = 30)	Mean difference 95 % CI	
		Lower	Upper
Treatment 1 week	8.21 ± 0.94	7.90	8.55
Treatment 2 week	7.24 ± 1.09	6.83	7.59
Treatment 3 week	6.59 ± 0.98	6.21	6.93
Treatment 4 week	5.59 ± 1.01	5.21	5.93
Treatment 5 week	4.93 ± 0.92	4.59	5.24
Treatment 6 week	4.17 ± 0.71	3.93	4.41
Treatment 7 week	3.79 ± 0.72	3.55	4.03
Treatment 8 week	3.17 ± 0.06	2.97	3.38
Treatment 9 week	2.86 ± 0.69	2.62	3.10
Treatment 10 week	2.28 ± 0.52	2.07	2.45
Treatment 11 week	2.00 ± 0.65	1.76	2.24
Treatment 12 week	1.62 ± 0.56	1.41	1.83

SEM = Standard error of mean CI = Confidence interval

Table 3 Outcomes of treatment on active knee ROM from 1 week to 12 weeks after massage

Range of motion	Mean ± SEM(n = 30)	Mean difference 95 % CI	
		Lower	Upper
Treatment 1 week	75.00 ± 10.07	- 4.41	5.95
Treatment 2 week	79.30 ± 9.86	-5.02	5.65
Treatment 3 week	84.40 ± 10.90	-4.93	6.47
Treatment 4 week	90.07 ± 11.62	- 4.30	7.77
Treatment 5 week	95.83 ± 12.20	- 4.07	8.40
Treatment 6 week	101.87 ± 11.09	- 3.89	8.62
Treatment 7 week	107.40 ± 11.89	- 3.43	8.62
Treatment 8 week	113.97 ± 12.91	-1.92	10.72
Treatment 9 week	120.67 ± 12.08	-.395	12.21
Treatment 10 week	127.37 ± 11.95	.257	12.61
Treatment 11 week	135.10 ± 9.56	2.05	19.97
Treatment 12 week	142.53 ± 8.60	2.036	11.69

SEM = Standard error of mean CI = Confidence interval

range of motion (AROM) [14], Time up –and –go test [15], and Index of Severity for Osteoarthritis of the Knee (ISOA) [16]. The 10-cm refer to the patient's perception of knee pain where 0 = no pain, 5 = moderate and 10 = extremely pain. The knee ROM was measured in supine lying position by the physical therapist using a standard goniometry. The time up–and–go test was employed for measurement

Table 4 Outcomes of treatment on timed up–and–go test from 1 week to 12 weeks after massage

Time up –and –go test	Mean ± SEM(n = 30)	Mean difference 95 % CI	
		Lower	Upper
Treatment 1 week	8.07 ± 0.70	7.79	8.34
Treatment 2 week	7.93 ± 0.59	7.72	8.17
Treatment 3 week	7.62 ± 0.56	7.41	7.89
Treatment 4 week	7.07 ± 1.13	6.66	7.45
Treatment 5 week	6.66 ± 0.89	6.31	6.97
Treatment 6 week	6.45 ± 0.91	6.10	6.76
Treatment 7 week	6.10 ± 1.17	5.69	6.52
Treatment 8 week	5.34 ± 0.85	5.00	5.62
Treatment 9 week	5.31 ± 0.89	4.97	5.59
Treatment 10 week	4.93 ± 1.19	4.48	5.34
Treatment 11 week	4.28 ± 0.84	3.97	4.55
Treatment 12 week	4.21 ± 0.86	3.90	4.48

SEM = Standard error of mean CI = Confidence interval

Table 5 Outcomes of treatment on ISOA index from 1 week to 12 weeks after massage

ISOA	Mean ± SEM(n = 30)	Mean difference 95 % CI	
		Lower	Upper
Treatment 1 week	5.00 ± 0.26	4.92	5.06
Treatment 2 week	4.90 ± 0.40	4.82	4.96
Treatment 3 week	4.19 ± 0.57	4.12	4.13
Treatment 4 week	3.80 ± 0.71	3.75	3.84
Treatment 5 week	3.63 ± 0.72	3.58	3.67
Treatment 6 week	3.30 ± 0.70	3.30	3.07
Treatment 7 week	3.06 ± 0.82	3.06	3.07
Treatment 8 week	2.83 ± 0.74	2.80	2.90
Treatment 9 week	2.66 ± 0.75	0.75	0.76
Treatment 10 week	2.43 ± 0.72	2.43	2.44
Treatment 11 week	2.30 ± 0.70	2.25	2.34
Treatment 12 week	1.96 ± 0.76	1.89	2.03

SEM = Standard error of mean CI = Confidence interval

of the time while the patients walked with natural speed for three meters and back to the seat [17]. The ISOA is used to measure the severity of knee osteoarthritis and reflect the effectiveness of therapeutic interventions, developed by Lequesne et al. [18].

Data analysis

Although the study employed twelve recordings of reliable values once a week for 12 week, it focused on assessing the efficacy of the court-type Thai traditional massage by focussing on the twelfth week's data. Therefore, the research statistics used were descriptive statistics and a dependent samples t-test.

RESULTS

A total of 30 volunteers with knee osteoarthritis, the mean BMI was 23.0 kg/m^2 and the mean age was 58.6 years, participated. The study found 50% of subjects had pain in both sides (Table 1). Table 2 revealed that the VAS could be reduced from 8.21 in week1 to 1.62 in week12 after the massage indicating that the treatment could significantly reduce pain in knee. The averaged knee range of motion was significantly increased after the 12-week of treatments (from 75.00 to 142.53 degree), Table 3. Moreover, the treatment group had a reduction of 8.07 to 4.21 seconds on the Time Up and Go Test (Table 4) indicating a higher walking speed after the treatments. Outcomes of ISOA index treatment from week 1 to 12 (Table 5) showed a decrease in knee pain severity with a mean decrease ranged from 5.00 to 1.96. In summary, the study found overall improvements in all testing.

DISCUSSION

The results in this study demonstrated the efficacy of court-type Thai traditional massage in relieving knee pain in osteoarthritis patients. This could be seen in Table 2 which showed a decreased of pain level using VAS. Furthermore, the treatment could help increase range of movement and function of knee as in Table 3-4. According to the benefit of

court-type Thai traditional massage, this could be resulted from the effect of massage that enhance blood circulation to the affected knee. Furthermore, the relaxation effects to the muscles, joints and tendons may reduce the compressive forces acting on the knee joint and increase flexibility of the knee [19]. Once the patients had less pain and more flexibility, they trend to walk faster and thus increase the quality of life.

The research findings indicate that the court-type Thai traditional massage affects greatly on reducing pain and increase the quality of life of knee osteoarthritis patients. However, this study did not have a control group for comparison. For further research, this treatment should be compared with other different treatments to find the better treatment for the osteoarthritis patients. It is obvious that most of the osteoarthritis patients are currently treated with the Non-steroidal anti-inflammatory drugs: (NSAIDs), which such medicine could provides side effect on gastro-intestinal irritation. Therefore, the comparative study of two treatment methods identifies the better treatment for osteoarthritis patients, and the result may assert that the court-type Thai traditional massage is practical and useful for the osteoarthritis patients.

CONCLUSION

The court-type Thai traditional massage could be effective and useful for the treatment of the osteoarthritis patients. This method could be an effective alternative treatment for the osteoarthritis patients. Therefore, this local wisdom should be conserved for the next generation.

ACKNOWLEDGEMENTS

The authors wish to thank The 90th Anniversary of Chulalongkorn University Fund (Ratchadaphiseksomphot Endowment Fund) Herbal Remedies and Alternative Task Force of STAR: Special Task Force for Activating Research under 100 years Chulalongkorn University Fund and Thai Traditional Medical Knowledge Fund for their grants and support for this study.

REFERENCES

1. Lawrence JS, Bremner JM, Bier F. Osteo-arthrosis. Prevalence in the population and relationship between symptoms and x-ray changes. Ann Rheum Dis. 1966; 25(1): 1-24.
2. Goorman SD, Watanabe TK, Miller EH, Perry C. Functional outcome in knee osteoarthritis after treatment with hylan G-F 20: a prospective study. Arch Phys Med Rehabil. 2000; 81(4): 479-83.
3. Lawrence RC, Hochberg MC, Kelsey JL, McDuffie FC, Medsger TA, Jr., Felts WR, et al. Estimates of the prevalence of selected arthritis and musculoskeletal diseases in the United States. J Rheumatol. 1989; 16(4): 427-41.
4. Peat G, McCarney R, Croft P. Knee pain and osteoarthritis in older adults: a review of community burden and current use of primary health care. Ann Rheum Dis. 2001; 60(2): 91-7.
5. Felson DT, Naimark A, Anderson J, Kazis L, Castelli W, Meenan RF. The prevalence of knee osteoarthritis in the elderly: the framingham osteoarthritis study. Arthritis Rheum. 1987; 30(8): 914-8.
6. Felson DT. Epidemiology of osteoarthritis. In: Brankdt KD, Doherty M, Lohmander LS, editors. Osteoarthritis. Oxford, England: Oxford University Press; 2003. p. 9-16.
7. Hamerman D. Clinical implications of osteoarthritis and ageing. Ann Rheum Dis. 1995; 54(2): 82-5.
8. Pennapa CH. Thai massage for health: for teachers of Thai massage. The project to promote Thai massage health. [S.l: S.n]; 1995.
9. Altman R, Asch E, Bloch D, Bole G, Borenstein D, Brandt K, et al. Development of criteria for the classification and reporting of osteoarthritis: classification of osteoarthritis of the knee. Diagnostic and Therapeutic Criteria Committee of the American Rheumatism Association. Arthritis Rheum. 1986; 29(8): 1039-49.
10. Ayurved Thamrong School. Thai Traditional Medicine in the Faculty of Medicine Siriraj Hospital. Bangkok: Supavanich Press; 2009.
11. Eungpinichpong W, Kongnaka T. Effects of Thai massage using femoral artery occlusion technique on skin blood flow of the foot. JMT&PT. 2002; 14: 151-9.
12. Kuptniratsaikul V, Tosayanonda O, Nilganuwong S, Thamalikitkul V. The epidemiology of osteoarthritis of the knee in elderly patients living an urban area of Bangkok. J Med Assoc Thai. 2002; 85(2): 154-61.
13. Huskisson EC. Measurement of pain. Lancet. 1974 Nov 9; 2(7889): 1127-31.
14. Hazlel M. Musculoskeletal assessment joint range of motion and manual muscle strength. Bodywork and Movement Therapies. 2006; 10: 314 -7.
15. Podsiadlo D, Richardson S. The timed "Up & Go": a test of basic functional mobility for frail elderly persons. J Am Geriatr Soc. 1991 Feb; 39(2): 142-8Tapanya S. Traditional Thai massage. Bangkok: Editions Duang Kamol; 2000.
16. Hochberg MC, Altmen RD, Brandt KD, Clark BM, Dieppe PA, Griffin MR, et al. Guidelines for medical management for osteoarthritis. Arthritis Rheum 1995; 38: 1541-6.
17. Chatchawan U, Thinkhamrop B, Kharmwan S, Knowles J, Eungpinichpong W. Effectiveness of traditional Thai massage versus Swedish massage among patients with back pain associated with myofascial trigger points. Journal of Bodywork and Movement Therapies. 2005; 9(4): 298-309.
18. Lievense AM, Lievense AM, Bierma-Zeinstra SM, Verhagen AP, van Baar ME, Verhaar JA, Koes BW. Influence of obesity on the development of osteoarthritis of the hip: a systematic review. Rheumatology (Oxford). 2002; 41(10): 1155-62.
19. Kuptniratsaikul V, Tosayanonda O, Nilganuwong S, Thamalikitkul V. The epidemiology of osteoarthritis of the knee in elderly patients living an urban area of Bangkok. J Med Assoc Thai. 2002; 85(2): 154-61.