EFFECT OF THAI WISDOM EXERCISE "RUSIE DUTTON" ON QUALITY OF LIFE AND FLEXIBILITY FOR WORKING WOMEN

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Abstract— To examine the effect of Thai wisdom exercise "Rusie Dutton" (RD) on quality of life(QOL) and flexibility for working women. Working women (aged 45-59) were assigned to the RD group or control group. The RD group (n=24) attended the RD practice for 13 weeks developed by Wat Pho Thai Traditional Massage School. The control group (n=26) received no intervention. Quality of life (using WHOQOL-BREF-THAI questionnaire) and flexibility were measured at the beginning and the end. A paired sample t-test and independent sample t-test were used for statistical analysis. Significant improvement was found in all variables within group ($p < .05$) in RD group.They were QOL. including physical, psychological, social relationship and environment domain. And flexibility including both shoulders and spine. A significant difference between groups was found ($p < .05$) in all variables except QOL in psychological domain. Therefore, it is concluded that Thai wisdom exercise "Rusie Dutton" (RD) can promote health related QOL and flexibility for working women and it should be promoted as an alternative exercise. Moreover, the practice should be further studied with other groups of people.

Keywords— Rusie Dutton, working women, quality of life, flexibility.

I. INTRODUCTION

Working women distribute their time between working and family, living little time and energy for personal health. They are at risk of physical and mental health problems[1], [2] and encounter many health consequences due to inappropriate life styles and high stress level that lead to a decline in QOL. Therefore, it is important to facilitate healthy behaviors and lifestyles among working women to promote their health.

The recent studies indicated that mind-body exercises such as Yoga, Tai Chi and Qgong have been effective to reduce stress [3], [4], anxiety[5], [6], depression[5], [7], insomnia [6], [8], back pain[9], [10] and to increase flexibility[11] due to their incorporation of slowly paced-gentle movements, controlled breathing and meditation. Thai wisdom exercise "Rusie Dutton" is another mind-body exercise with a set of slowly and smoothly connected movements of all body part, paced respiration, diaphragmatic breathing and mind fullness respiration with breathing techniques. Therefore, Rusie Dutton might be an effective intervention for promoting quality of life and flexibility for working women.

Rusie Dutton initially developed for exercise by Wat Phra Chetuphon Vimolmangklaram (Wat Pho) and Thai Ministry of Public Health. It is well-known to Thai people for more than 200 years and widely spread in Asian. There are some reports have shown that the practice of Rusie Dutton can decrease stress[12]-[13]. muscle pain[13] and menopause symptoms[14]. As a result, this study was to examine the effect of Thai wisdom exercise "Rusie Dutton" on quality of life and flexibility for working women in Thailand.

II. METHODS

A. Study design

The study used a quasi-experimental randomized control group design with pre and post tests over 13 weeks and took place between June and October 2013.

B. Participants

Sixty female volunteers (aged 45-59 years) in a Thai community were recruited and screened via the Physical Activity Readiness Questionnaire (PAR-Q)[15] and basic physical examination which confirmed that taking part in Rusie Dutton practice was not contra indicated for any of the women. The screening assessment reported 54 women met the inclusion criteria that included the following : no obese (BMI < 30.0 kg/m^2), no spine or knee joint problems and no limited physical activity. They were randomized into an intervention group who participated in 13 weeks Rusie Dutton and a controlled group did not received any intervention but on a wait list.

Prior to participation in any of the study procedures, 27 participants from each group read and signed an informed consent form that approved by the Chulalongkorn University Research Ethics Committee, then all participants completed a baseline assessment to record flexibility measured using a shoulder girdle flexibility test[16], sit and reach test[16] and Quality of life assessment measured with the *WHOQOL-BREF-THAI questionnaire).* The participants were excluded if they attended the Rusie Dutton class less than 13 times(80% of 16 times), been unwilling to attend the group session.

The experimental group was requested to regularly attend a 13 week Rusie Dutton class of 16 postures conducted by Wat Po Thai Traditional Massage

School and approved by three sport science experts (IOC=0.92), while the control group was advised to maintain their normal habit, and not to begin any health promotion program during the study period and was offered the opportunity to take part in the Rusie Dutton practice after the post-test assessment was completed. Both groups received a Menopausal Health promotion handbook that consisted of a dietary and exercise guidelines for menopausal women.

C. Procedures

Thirteen weekly Rusie Dutton class were supervised by the researcher, a certified Rusie Dutton trainer from the Wat Po Thai Traditional Massage School in Bangkok. The practice procedure was the following :

Week 1 : The class began with a 10 minutes for Rusie Dutton exercise explanation; 10 minutes for training in diaphragmatic breathing and mind fullness with breathing techniques (inhalation for four count, retention of breath for three and exhalation for six); 60 minutes for muscle stretching of the neck, shoulders, back and legs and 10 minutes breathing techniques. The participants were requested to practice these techniques and stretching the body parts at home every day anytime they could.

Weeks 2-13 : Ninety minute Rusie Dutton class at the center of community performed 3 times in the second week, twice in class and once at home in the third week, once a week in class and at least 2 days/wk. at home by following positions on a poster or a DVD recommending Rusie Dutton for 20-30 min. each day over ten weeks. In addition, a daily record of Rusie Dutton practice was kept by participants.

Rusie Dutton class were offered on a weekly basis, on Friday from 7.30-9.00 a.m. in a center of community, consisted of a question-and-answer period about their Rusie Dutton practice and health problems (20 min.), followed by breathing and warm up technique (20 min.), muscle stretching (5 min), practice of the postures of Rusie Dutton (40 min.) and deep breathing and stretching (5 min.). The class session began with a simple postures and followed by more difficult ones until all 16 postures were covered. Participants were encouraged to extend, stretch or twist the limbs and body part as much as they could but no pain. During the movements, participants were instructed to focus on mindfulness meditation and breathing technique by inhalation while moving, retention of breathe while posing and exhalation while returning to the initial position. Finally, data on all variables were collected at the end of the experiment.

For example : Rusie Dutton practice 2 postures from 16 postures (each repeated 3 times)

Shoulder & leg trouble (Fig.1)

Position : place left foot in front of the right foot, left hand on the left thigh, right hand on the right waist.

Activity : slowly bend left leg forward, keeping right knee straight and open the heel, straight left arm press above left knee and press right hand on the waist (inhale for 4 count)- hold(for 3 count)-turn to the initial position(exhale for 6 count) , repeat in this side then do the same in the other side.

Functional muscles : increase extension of hamstring, gastrocnemius and soleus, hip flexor group muscle and improve strengthening of quadricep femoris muscle.



Fig.1. Shoulder & leg trouble

Knee & leg trouble (Fig.2)

Position : place right foot in front of the left foot, right hand on the right thigh, left hand on the left waist.

Activity: slowly bend right leg forward, keeping left knee straight and heel on the floor, straight right press above right knee while turn face and twist body to the left and press left hand on the waist (inhale for 4 count)- hold(for 3 count)- turn to the initial position(exhale for 6 count) , repeat in this side then do the same in the other side.

Functional muscles: increase extension of hamstring, sternocleidoastoid, gastrocnemius and soleus, hip flexor group muscle and improve strengthening of quadricep femoris muscle.



Fig.2. Knee & leg trouble

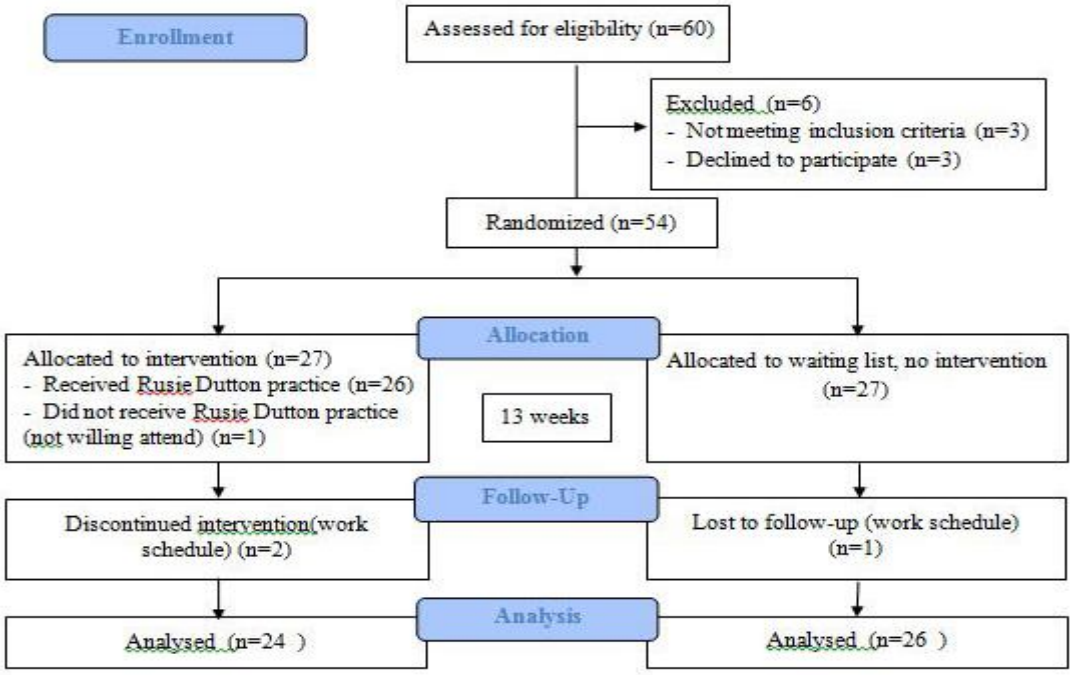


Fig.3 Working women RCT profile

III. MEASUREMENT

1. Quality of Life was measured with the WHOQOL- BREF- THAI questionnaire, which is a validated tool consisting of 26- items of self-reported information that covered 4 different domains: physical, psychological, social relationship and environment. It indicated whether the participants had experienced any feeling or had a fall over the past month.
2. Flexibility of the upper arm and shoulder were measured with a shoulder girdle flexibility test.
3. Flexibility of the lower back and hamstring muscles were measured by having participants do a sit and reach test twice from which the best result was selected.

IV. DATA ANALYSIS

Statistical analyses were carried out with the SPSS Version 20.0 program. Characteristics of both experimental and control group are given as mean+SD, frequency and percentages. The homogeneity of the values of the variables measured between the experimental and control group at baseline were tested using a two tailed independent sample t- test. At posttest the difference of means were compared using a one tailed paired t-test within groups and a one tailed independent sample t- test for between groups comparison. For all analyses, a p-value of < 0.05 was considered statistically significant.

V. RESULTS

Fig.3. shows the trial profile. Twenty four of 27 participants (88.9%) in the experimental group and 26 of 27(96.3%) in the control group met eligibility criteria and completed all assessments. The mean age of participants in the experimental group was 52.9+4.3 years and that of the control group was 50.7+ 3.6 years. (Table1). The analysis shows no significant differences in any variables were detected between the two groups at the beginning of the study (Tables 2 and 3).

Table 1 General Participant Characteristics

Characteristics	Exp.group (n=24)	Cont.group (n=26)
Mean age (years ±SD)	52.9 ± 4.3	50.7 ± 3.6
Marital status		
Single	8 (33.3%)	2 (7.7%)
Married	15 (62.5%)	22 (84.6%)
Separated /Divorced/Widow	1 (4.2%)	2 (7.7%)

Table 2 Flexibility of participants at baseline.

Outcome variable	Exp. Group (n=24)	Cont. group (n=26)	t	p
Rt.shoulder flex.(cm)	-4.5 ± 8.5	-2.7 ± 7.9	-.78	.438
Lt.shoulder flex.(cm)	-11.1 ± 10.7	-7.7 ± 9.7	-1.18	.245
S&R(cm)	7.9 ± 8.1	3.8 ± 11.1	1.49	.142

Data are mean ±SD.

Table 3 Quality of life of participants at baseline.

Outcome variable	Exp. group(n=24)	Cont. group(n=26)	t	p
physical	3.3 ± 1.9	3.0 ± 1.9	.47	.640
psychological	2.4 ± 1.3	2.9 ± 1.3	-1.35	.182
Social relationship	2.8 ± 1.1	3.4 ± 1.3	-1.85	.071
environment	2.7 ± 2.2	2.8 ± 1.7	-.08	.933

Data are mean ±SD.

After 13 weeks, a significant improvement was observed in the experiment group in all QOL domains; physical 2.9 (95% CI 1.8 to 4.0), psychological 2.1 (95% CI 1.4 to 2.8), social relationship 0.9 (95% CI 0.2 to 1.5), environment domain 2.1 (95% CI 1.0 to 3.2), and total QOL 9.5(95% CI 6.9 to 12).
In flexibility ; Rt.shoulder flex. 6.8 (95% CI 5 to 8.5), Lt. shoulder flex. 7.8 (95% CI 5.5 to 10.1) and sit&reach 6.6 (95% CI 5.3 to 8), but no significant difference was observed in the control group. There was also a significant difference in all QOL domains between the two groups indicated by increased values in the experiment group compared to the control group except psychological domain. And the result of the study shows that at post test, a significant increase in right and left shoulder flexibility, sit&reach test were observed only in the experiment group, but no significant differences were noted in the control group. There was a significant difference between groups in terms of an increase in right and left shoulder flexibility, and sit&reach test in the experimental group compared to the control group.(Table 4-5)

Table 4 Quality of life of participant at post test.

Variable/group	Baseline	12 weeks	t^w		Difference (post-pre)	t^b	P (one-tail)
Physical domain							
Exp.gr	26 ± 3.3	28.9 ± 3.6	**5.39**	.000	2.9 ± 2.6	3.26	.001
Cont.gr.	25.9 ± 3.2	25.7 ± 3.2	-0.27	.394	-0.1± 2.1		
Psychological domain							
Exp.gr	23.1 ± 3.1	25.2 ± 3.6	**6.21**	.000	2.1 ± 1.6	0.79	.217
Cont.gr.	22.8 ± 3.3	24.1 ± 5.9	1.07	.146	1.3 ± 6.4		
Social relationship domain							
Exp.gr	11.0 ± 1.6	11.9 ± 1.6	**2.73**	.006	0.9 ± 1.6	2.14	.000
Cont.gr.	10.6 ± 1.3	9.9 ± 1.7	-1.89	.032	-0.7 ± 1.9		
Environment domaim							
Exp.gr	29.9 ± 3.8	32.0 ± 3.8	**3.82**	.000	2.1 ± 2.7	4.12	..000
Cont.gr.	28.2± 4.0	28.4 ± 4.5	0.27	.031	0.2 ± 3.6		
QOL (total)							
Exp.gr	96.5 ± 10.9	105.9 ± 11.8	7.55	.000	9.5 ± 6.1	3.26	.002
Cont.gr.	93.7± 10.5	95.2 ± 11.4	0.85	..202	-1.5 ± 9.2		

Experimental group(n=24), Control group (n=26), Data are mean ± SD
tw : paired t-test within a group; tb : independent t-test between groups

Table 5 Flexibility of participant at post test.

Variable/group	Baseline	13 weeks	t^w		Difference (post-pre)	t^b	P (one-tail)
Rt.shoulder flex.(cm)							
Exp.gr	-4.5 ± 8.5	2.2 ± 7.3	7.79	.000	6.8 ± 4.2	2.74	.005
Cont.gr.	-2.7 ± 7.9	-4.2 ± 9.1	-1.63	.058	-1.5 ± 4.6		
Lt.shoulder flex.(cm)							
Exp.gr	-11.1 ± 10.7	-3.3 ± 9.8	6.93	.000	7.8 ± 5.5	2.14	.019
Cont.gr.	-7.7 ± 9.7	-9.0 ± 9.0	-1.04	.155	-1.3 ± 6.3		
S&R(cm)							
Exp.gr	7.9 ± 8.1	14.5 ± 7.5	9.98	.000	6.6 ± 3.3	5.12	.000
Cont.gr.	3.8 ± 11.1	0.4 ± 11.7	-1.95	.031	-3.4 ± 8.9		

Experimental group(n=24), Control group (n=26), Data are mean ± SD
tw : paired t-test within a group; tb : independent t-test between groups

DISCUSSION & CONCLUSION

This is the first study to examine the effect of Thai wisdom exercise " Rusie Dutton" on quality of life and flexibility of working women. The findings indicated a significant improvement in health in the experimental group as shown in increased QOL consisting of physical, psychological, social relationship and environment domains and increased muscle and joint flexibility after the period of Rusie Dutton training. These finding are consistent with a previous study which found that Rusie Dutton training increased flexibility [17], reduced stress in subjects who practiced it[12]. In addition, Rusie Dutton has similar benefits to other mind-body exercises as it incorporates slowly paced-gentle movements, controlled breathing and meditation as found in practitioners of Yoga which increased flexibility [8], [19], decreased physical symptom such as muscle pain[6], [18], [20], improved psychological problems such as anxiety and depression[5], [18] and insomnia [5], [8], [21]. Similarly, Tai Chi and Qigong exercises had the effect of reducing psychological problems such as sleep and anxiety[22], stress[3] in practitioners. In addition, Rusie Dutton practice no limited in area and place due to all in standing position, no limited in

busy people because they can find appropriated posture, apply in sitting position and take less than 10 minutes during working hours to practice this exercise for releasing muscle fatigue and stress.

In light of the aforementioned results, the researcher would like to recommend that Rusie Dutton should be promoted as an alternative exercise for working women. Moreover, the practice should be further studied with other groups of patients to discover if it might provide the same health benefits as Yoga, Tai Chi, or Qigong exercises. Such research may there by increase the popularity and recognition of Rusie Dutton which be disseminated by Wat Phra Chetuphon Vimolmangklaram (Wat Pho) Thai Traditional Massage School (visit tohttp://www.watpho.com/ contorted_ hermit_exercise.php)and Thai Ministry of Public Health. (visit to http://www.youtube. com/ watch?v=Wsvgr 35GXLs&list =PL5E6595E)

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REFERENCES

[1] Ponpun. V., Premwadee K. and Kanit. Ng. State of Health and Risk for Chronic Non-Communicable Disease among Staff of Suan Sunandha Rajabhat University. National Conference of Suan Sunandha Rajabhat University "Research for Sustainable Development". Sep. 3-5, 2015.

[2] Premwadee K., et al. Health Status of Suan Sunandha Rajabhat University Personal. National Conference of Suan Sunandha Rajabhat University "Research for Sustainable Development". Sep. 3-5, 2015.

[3] Skoglund L, Jansson E. Qigong reduces stress in computer operators. Complementary therapies in clinical practice. 2007;13(2):78-84.

[4] Palumbo MV, Wu G, Shaner-McRae H, Rambur B, McIntosh B. Tai Chi for older nurses: a workplace wellness pilot study. Applied nursing research : ANR. 2012;25(1):54-9.

[5] Satyapriya M, Nagarathna R, Padmalatha V, Nagendra HR. Effect of integrated yoga on anxiety, depression & well being in normal pregnancy. Complementary therapies in clinical practice. 2013;19(4):230-6.

[6] Field T. Yoga clinical research review. Complementary therapies in clinical practice. 2011;17(1):1-8.

[7] Field T, Diego M, Delgado J, Medina L. Tai chi/yoga reduces prenatal depression, anxiety and sleep disturbances. Complementary therapies in clinical practice. 2013;19(1):6-10.

[8] Taibi DM, Vitiello MV. A pilot study of gentle yoga for sleep disturbance in women with osteoarthritis. Sleep medicine. 2011;12(5):512-7.

[9] Sherman KJ, Cherkin DC, Erro J, Miglioretti DL, Deyo RA. Comparing yoga, exercise, and a self-care book for chronic low back pain: a randomized, controlled trial. Annals of internal medicine. 2005;143(12):849-56.

[10] Posadzki P, Ernst E, Terry R, Lee MS. Is yoga effective for pain? A systematic review of randomized clinical trials. Complementary therapies in medicine. 2011; 19(5): 281-7.

[11] Amin, D.J and Goodman, M. The effects of selected asanas inlyengar yoga on flexibility : Pilot study. Journal of Bodywork & Movement Therapies (2014) 18, 399e404

[12] Buranruk O. Effects of Thai Yoga on Metabolism, Cardiovascular and Autonomic Nervous Systems in Diabetes.: Khon Kaen; 2009.

[13] Damrongsak C. The Development of Thai Style Physical Exercise "Ruesidatton" of the People in Thawung Subdistrict Administrative Organization Area, Thawung District, Lop Buri Province: Thepsatri Rajabhat; 2006.

[14] Kanit. Ng., Suchitra, S. and Prasong. T. "Rusie Dutton" Traditional Thai Exercise Promote Health Related Physical Fitness and Quality of life in Menopausal Women on health.Complementary Therapies in Clinical Practice, 2014, pp.164-171

[15] Medicine ACoS. Preparticipation Health Screening and Risk Stratification. ACSM's Guidelines for Exercise Testing and Prescription. 7 ed2006. p. 26.

[16] Thailand So. Sports Authority of Thailand Simplified Physical Fitness Test, SATST. Sports authority of Thailand 2003.

[17] Peepathum P. The Effects of Applied Ascetics Exercise on Flexibility and Health: Srinakharinwirot 2005.

[18] Tekur P, Nagarathna R, Chametcha S, Hankey A, Nagendra HR. A comprehensive yoga programs improves pain, anxiety and depression in chronic low back pain patients more than exercise: an RCT. Complementary therapies in medicine. 2012;20(3):107-18.

[19] Galantino ML, Bzdewka TM, Eissler-Russo JL, Holbrook ML, Mogck EP, Geigle P, et al. The impact of modified Hatha yoga on chronic low back pain: a pilot study. Alternative therapies in health and medicine. 2004 ; 10(2):56-9.

[20] Cox H, Tilbrook H, Aplin J, Semlyen A, Torgerson D, Trewhela A, et al. A randomised controlled trial of yoga for the treatment of chronic low back pain: results of a pilot study. Complementary therapies in clinical practice. 2010;16(4):187-93.

[21] Vera FM, Manzaneque JM, Maldonado EF, Carranque GA, Rodriguez FM, Blanca MJ, et al. Subjective Sleep Quality and hormonal modulation in long-term yoga practitioners. Biological psychology. 2009;81(3):164-8.

[22] Field T. Tai Chi research review. Complementary therapies in clinical practice. 2011;17(3):141-6.

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