



ORIGINAL SCIENTIFIC ARTICLE

EFFECT OF PHYSICAL ACTIVITIES TRAINING AND MESSAGES ON THE PHYSICAL FITNESS OF ELDERLY PEOPLE

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Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection

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Abstract

Study purpose. The study aimed to investigate the effect of physical activities and massages on the physical fitness of elderly people.

Materials and methods. The participants were 32 females aged 62-75 who were willing to participate in the study. They were selected through a systematic random sampling. The participants were divided into two groups: the experimental and control groups. The experimental group performed physical activities such as Qi Gong and Ruesi Dadton (RSD), and received a massage for 90 minutes a day, 3 days a week, for a period of 8 weeks. The control group did not perform the physical activities in question. Quantitative data were gathered by measuring the elderly people's body potential such as balance, strength of the leg and arm muscles, flexibility, flexibility of the shoulders, cardiovascular and respiratory endurance before and after training in the fourth and eighth weeks. Qualitative data were collected by means of a semi-structured interview.

Results. The study found that following the training in the fourth and eighth weeks, the experimental group had a better mean of body balance, muscular strength in arms and legs, flexibility in shoulders, cardiovascular and respiratory endurance than before training and the control group at a statistical significance ($p < 0.05$).

Conclusions. As regards the benefits to the physical fitness, it was found that the subjects had a better body balance, strength and endurance, better mental health, and more socialization.

Keywords: physical activities, massage, physical fitness, elderly people.

Introduction

Aging is associated with a significant decline in the musculoskeletal system, which affects an individual's capacity to perform daily activities (Frontera, 2017; Minjoon et al., 2021). Both physical and mental health, finally contributing to a decrease in quality of life in the elderly (Murman, 2015; Shen et al., 2021). The elderly often suffers declining physical abilities such as reduced bodily strength, weakened bones or brittle bones (Mubashir et al., 2013). Which may affect daily functioning. To treat and manage this condition, Therefore

physical activity is necessary for the health and physical fitness of the elderly.

Encouraging older adults to exercise regularly is important and beneficial to physical fitness, including respiratory and circulatory tolerance, muscle strength, muscle strength, weakness, and proper body proportions or balance (Hoeger & Hoeger, 2006). The physical activities consume more energy than usual and a key component of maintaining health, is becoming alternative in reducing medical expenses for the old people (Suksom, 2018; Sang-Wan & Ji-Youn, 2020). Body balance helps in the development of proper body posture control (Vikas et al., 2022). It also strengthens the body and also helps to improve mental, social and intellectual health (Bushman, 2011; Rungney, 2016; Supaporn, 2018).

Massage can bring about a body balance. If muscles are excessively used or if there is imbalance in muscles, massage

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can increase the performance of muscles and keep muscles balanced (Silalertdetkun, 2005). The massage is a touch to feel comfortable and relax (Phungphai, 2007). Moreover massage control pain and it is treatment for prevention and recovery of muscle fatigue (Oh et al., 2003; Jun-Ho et al., 2014).

Physical activities and exercise in various forms suitable and useful to health and mind of the elderly. The activities in question were Qi Gong, Tai chi and Yoga (Pimboon, 2019). Qi Gong is a slow movement of body parts in conformity with one's breathing (Supaporn, 2003). Ruesi dadton (RSD) is a physical movement in varying positions. It requires one's muscular flexibility in line with a breathing exercise (Peepathum, 2004). Ruesi dadton (RSD) is a traditional Thai exercise that involves slow movement with breathing. RSD is also a type of mind-body exercise, just like yoga and Thi chi (Noradechanunt et al., 2017; Canli & Ozyurda, 2020; Phaksachphon et al., 2021). However, studies in Southeast Asia are lacking in data related to exercise training combined with massage. This information can be used as an alternative activity of the elderly. Therefore, the current knowledge on this topic must be summarized as a guideline. It focuses on the physical fitness of older adults and identifies possible approaches for future research.

Materials and methods

Study participants

The volunteers were females aged 62-75 years, selected by means of a systematic random sampling. The participant were divided into two groups. The experimental group did the physical activities by practicing Qi Gong and Ruesi Dadton (RSD) for a period of eight weeks. It was done three days of 90 minutes per week. The other group was the control one. Quantitative data were collected based on the elderly's physical fitness, that is, balance, strength of leg and hand muscles, flexibility, flexibility of the shoulders, cardiovascular and respiratory endurance. Qualitative data were derived by means of a semi-structured interview and a participatory observation. The criteria used to select the participants in the research. 1) Females aged 62-75 years, who could participate in the research throughout the data collecting period. 2) Had no diseases or chronic illness which could be impediment to physical activities. Criteria to exclude the participants from the research 1) The subjects got injured or sick, making them unable to participate in the physical activities or absent from the activities for more than three times. 2) The participant withdrew themselves or they did not want to participate in the activities in the specified time.

Human research ethics

The research had been approved by the committee for the research ethics of Buriram Rajabhat University. The certificate issued was BRU: -rdi006-006/2564.

Study organization

In the present research, data were collected by having the subjects do the physical activities, that is, Qi Gong, Ruesi Dadton (RSD) and body massage for 90 minutes a day, 3 days a week for the period of 8 weeks. Quantitative data were collected by verifying the physical fitness of the elderly, includ-

ing body balance, strength of leg and hand muscles, flexibility, flexibility of the shoulders, cardiovascular and respiratory endurance. The semi-structured interview and participatory observation were used to collect the qualitative data.

Statistical analysis

Quantitative data were analyzed by testing the difference of the average of the body balance, limb muscular strength, flexibility, flexibility of the shoulder and cardiovascular and respiratory endurance. Derived data were analyzed by testing the difference before and after the training, after the fourth and eighth weeks. Qualitative data were collected by means of a semi-structured interview.

Results

The research found that following the training in the fourth and eighth weeks, it was found that the experimental group had a better mean of body balance, muscular strength in arms and legs, flexibility in shoulders, cardiovascular and respiratory endurance than before training and the control group at a statistical significance $p < 0.05$. As regards the benefits to the physical fitness, it was found that the subjects had a better body balance, strength and endurance, better mental health, and more socialization.

Table 1. Characteristics of the samples

Given name	Age	Weight	Height	BMI	Health Problems
s.y.1	75	58	160	33.20	leg pain
s.y.2	70	40	150	17.77	backache
s.y.3	69	47	145	22.38	shoulder pain
s.y.4	66	46	149	20.72	leg pain
s.y.5	72	63	150	28.00	knee ache
s.y.6	69	56	155	23.33	shoulder pain
s.y.7	68	52	150	23.11	leg pain
s.y.8	69	50	150	22.22	back ache
s.y.9	64	66	150	29.33	waist pain
s.y.10	65	62	150	27.55	shoulder dislocation
s.y.11	74	57	156	23.45	knee pain
s.y.12	62	69	150	30.66	back ache
s.y.13	62	64	165	23.52	knee pain
s.y.14	75	45	145	21.42	shoulder pain
s.y.15	67	52	152	22.51	hip pain
s.y.16	66	54	150	24.00	shoulder dislocation
X	68.3	55.0	151.6	24.57	

Table 1, the participant with the given name s.y. were aged 62-75 years. Their average age was 68.3, their average weight was 55.0 kg, average height was 151.6 cm, and BMI was 24.47. They have got similar problems, that is, physical joint pains.

Table 2. Research results

Benefits of the physical activities and massages for the elderly
1. Good balance and good flexibility
2. Cardiovascular and respiratory endurance
3. Better mental health
4. Increased socialization

Table 2, the research results can be detailed as follows.

1. Good balance and flexibility: physical activities and massages are bodily movements of the main muscle parts. These took time to be effective and the body balance was important. As s.y.3 said: "Before training, I have no strength in my muscles. I can barely walk and balance myself. After I regularly do the physical activities, I can move comfortably, able to raise my hands and legs easily and walk with good balance."

2. More strength and better endurance: physical activities and massages kept the elderly physically stronger and better able to endure. As s.y.4 put it: "Before doing activities, I cannot walk for longer minutes, I always have bodily pains."

I have got tired even though I have a short walk. Now, I become stronger and I do not easily get tired." s.y.6 added. "Before doing the activities, I get exhausted if I have worked longer. As for now, I feel my muscles grow stronger, not feeling tired easily as before."

3. Improved mental health: the physical activities and massages improved the elderly's mental health. As s.y.10 said: "Before I do the activities, I am habitually sensitive and worried with many things. After doing the activities, I feel energetic, I rarely get worried."

4. Increased socialization and more friends: the elderly who took part in the physical activities got more opportunity to come to know more people. AS s.y.4 put it: "Mostly we meet one another on the important religious or cultural events. By doing more activities and massages, we have more often met more people. That is good as I do not feel lonely." s.y.11 commented: "I come for the activities and massages. I am happy to have met more friends and relatives." s.y.19 added: "The activities make me active and happy. We have been pleased to have participated in these."

Quantitative data were analyzed by testing the difference of the average of the body balance, limb muscular strength, flexibility, flexibility of the shoulder and cardiovascular and respiratory endurance. Derived data were analyzed by testing the difference before and after the training, after the fourth and eighth weeks. It was analyzed by one-way repeated measures ANOVA, comparison of differences in pairs of the mean of each repeated measures.

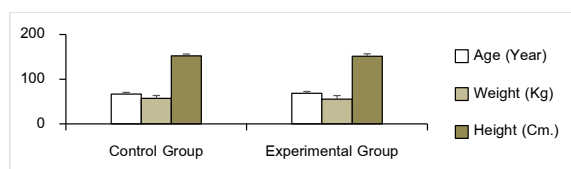


Figure 1 shows a comparison of the mean in age, weight and height of the control group and the experimental group. It was found that the mean and standard deviation between the groups were different with a statistical significance of $p < 0.05^*$.

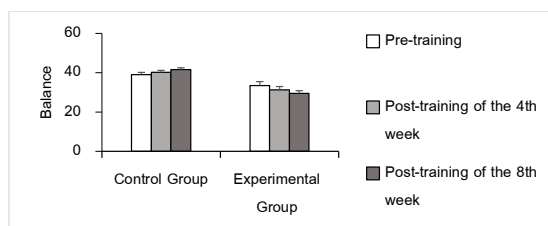


Figure 2 shows a comparison of the mean of the balance before and after training, in the fourth week and eighth

weeks of the control group and the experimental group. The mean between the groups was different with a statistical significance of $p < 0.05^*$. The mean was different within the group with a statistical significance of $p < 0.05$.

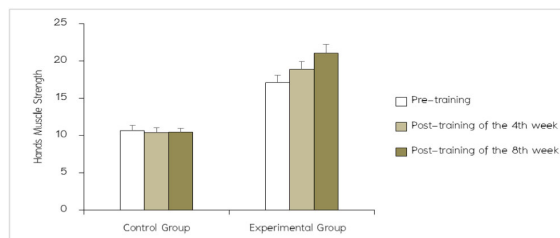


Figure 3 shows a comparison of the mean in the arms' muscular strength before and after training in the fourth and eighth weeks of the control group and the experimental group. The mean of the difference between the groups was statistically different with a significance of $p < 0.05^*$.

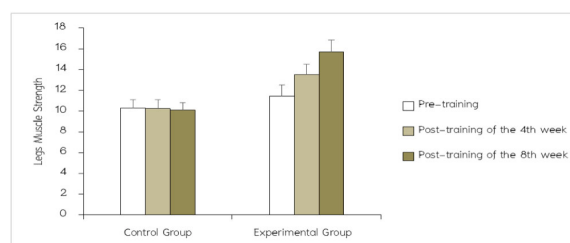


Figure 4 shows a result of the mean of the legs' muscular strength before and after training, in the fourth and eighth weeks of the control group and the experimental group. The mean between the groups was statistically different with a significance of $p < 0.05^*$.

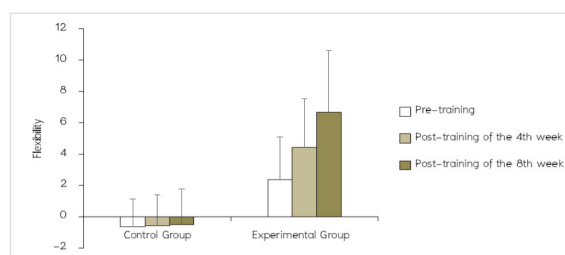


Figure 5 shows the result of the mean of flexibility before and after training, in the fourth and eighth weeks of the control group and the experimental group. The mean between the groups was different with a statistical difference with significance of $p < 0.05^*$. The mean within the group was different with significance of $p < 0.05$.

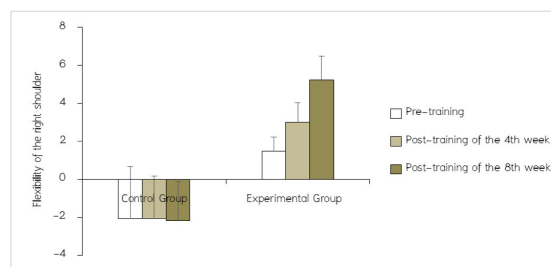


Figure 6 shows a result of the mean of the flexibility of the right shoulder before and after training, in the fourth

and eighth weeks of the control group and the experimental group. The mean is statistically different with significance of $p < 0.05^*$. And the mean within a group was different with a significance of $p < 0.05$.

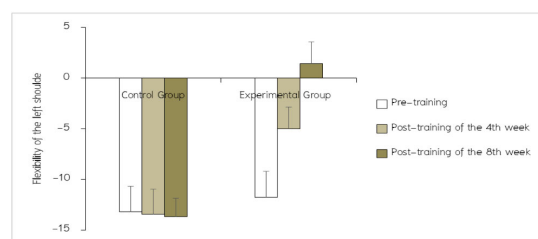


Figure 7 shows a result of the mean of the flexibility of the left shoulder before and after training, in the fourth and eighth weeks of the control group and the experimental group. The mean between the groups was statistically different with significance of $p < 0.05^*$. The mean within the group was statistically different with significance of $p < 0.05$.

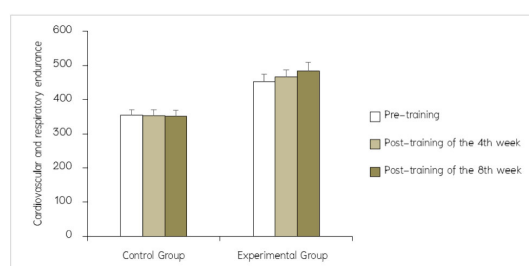


Figure 8 shows the result of the mean of cardiovascular and respiratory endurance before and after the training, in the fourth and eighth weeks of the two groups. It was found that the mean between the two groups was statistically different with significance of $p < 0.05^*$, and the mean in the group was statistically different with significance of $p < 0.05$.

Discussion

Based on the present research, it was found that after doing the physical activities and massages in the fourth and eighth weeks of training, the experimental group had a better average body balance, strength in the leg muscles, flexibility, flexibility of the shoulder, cardiovascular and respiratory endurance than before and they could perform better than the control group at a statistical significance of 0.05. In addition, the subjects had the following: improved balance and flexibility, heart and respiratory endurance and strength, better mental health, more socialization. The findings were consistent with the study by Nontakhod et al. (2021) who found that the physical activities such as Qi Gong, Yoga and stretching could have a positive impact on health. That is the person would have 1) good health including good balance, flexibility, improved breath, reduced arches; 2) good health; 3) more socialization and 4) better concentration. Likewise, Pimboon (2019) said that training oneself in Qi Gong, Tai Chi and Yoga proves beneficial to health of the old people. People who did the activities in question gained the following: proper physical balance, body strength, flexibility, better breathing, reduced pains, more mindfulness, calmness and

reduced stress. This find was in line with the study by Nontakhod et al., (2020). Studied the effects of doing Tai Chi and rubber stretching on the body balance and strength of the elderly, and found that the subjects had better body balance, better flexibility, more relaxation and better mental conditions, more socialization and friends. The findings were in accordance with the work by Saetae et al., (2018) that found that Qi Gong and Yoga could have a positive impact on health, making the person physically and mentally healthy. Consistent with the study balance and resistance training could reduce risk factor of fall by improving balance and lower limb strength among old adults with T2DM and balance impairment including effectiveness of band exercise in improving muscle strength (Kraiwong et al., 2021; Minjoon et al., 2021). The finding was also supported by the research of Thaiprasert et al. (2019) which found that yoga practice made the elderly healthier physically, mentally and socially. Past research has shown that Tha Chi, Qi Gong, and Applied Ruesi Dadton (RSD) can improve helpers with balance, strength, flexibility and health (Ching et al., 2013; Kim et al., 2014; Zou et al., 2017). Consistent with the study Qigong exercise improve the physical fitness of elderly females, and Pilates exercises aid in disease prevention and rehabilitation and the development of balance in the elderly (Ladawan et al., 2022; Samuel et al., 2021). In addition, Tai Chi and Qi Gong Training found that the elderly had better social interactions and had better mental health (Chan et al., 2017). The favorable of Qigong training on strengths are consistent with previous studies demonstrating significant improvements of knee extension strength after Tai Chi training in elderly subjects (Song et al., 2014; Klarod et al., 2020). Therefore that the elderly should be able to have the activities of their own choice, and they should not be too heavy or arduous, and they should be easy for them to practice (Khoo et al., 2014; Krabuanrat & Supaporn, 2014; Supaporn, 2018).

Conclusions

Physical activity involves using and combining different forms of activity, including Ruesi Dadton Qigong (RSD) and massage to improve body balance. Arm and leg muscle strength, flexibility, shoulder flexibility Cardiovascular system and respiratory system. The aim is to make the elderly have good physical fitness. Physical activity in this study the elderly should be careful to move appropriately and this is an alternative activity for the elderly.

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Conflict of interest

The author declares that there is no conflict of interest.

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ВПЛИВ ЗАНЯТЬ ФІЗИЧНИМИ ВПРАВАМИ ТА СЕАНСІВ МАСАЖУ НА ФІЗИЧНУ ФОРМУ ОСІБ ПОХИЛОГО ВІКУ

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Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; Е – збір коштів

Реферат. Стаття: 6 с., 2 табл., 8 рис., 40 джерел.

Мета дослідження. Метою дослідження було вивчення впливу фізичних вправ і сеансів масажу на фізичну форму осіб похилого віку.

Матеріали та методи. Учасницями цього дослідження були 32 жінки віком 62–75 років, які висловили бажання взяти участь у дослідженні. Вони були відібрані методом систематичного випадкового вибору. Їх розділили на дві групи: експериментальну та контрольну. Експериментальна група виконувала такі фізичні вправи, як китайська гімнастика цигун і тайська йога, та отримувала сеанси масажу тривалістю 90 хвилин на день, 3 дні на тиждень, протягом 8 тижнів. Контрольна група не виконувала зазначених фізичних вправ. Збір кількісних даних здійснювали шляхом виконання вимірювань таких показників потенціалу організму в осіб похилого віку, як рівновага тіла, сила м'язів ніг і рук, гнучкість, гнучкість плечей, серцево-судинна та дихальна витривалість, до та після занять на четвертий і восьмий тиждень. Збір якісних даних здійснювали шляхом проведення напівструктурованих інтерв'ю.

Результати. На підставі результатів аналізу даних було встановлено, що за підсумками занять на четвертий і восьмий тиждень експериментальна група мала кращий середній показник рівноваги тіла, сили м'язів рук і ніг, гнучкості плечей, серцево-судинної та дихальної витривалості, ніж до початку занять і порівняно з контрольною групою, на статистично значущому рівні ($p < 0,05$).

Висновки. Стосовно позитивного впливу на фізичну форму, було встановлено, що учасники дослідження в експериментальній групі мали кращі показники рівноваги тіла, сили та витривалості, кращі показники психічного здоров'я, а також вищий рівень соціалізації.

Ключові слова: фізичні вправи, масаж, фізична форма, особи похилого віку.

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