



The efficiency of thai folk performance exercise program on health-physical fitness and balance in older adults

La eficacia de un programa de ejercicios tradicionales tailandeses para la salud, la aptitud física y el equilibrio en adultos mayores

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Abstract

Introduction: As people age, physical fitness and balance decline, which can be prevented by engaging in various forms of movement exercise.

Objective: Investigated the efficacy of Thai Folk Performance Exercise Program on Health-Physical Fitness and Balance in Older Adults.

Methodology: Thirty volunteers aged 60-75 years participated in an 8-week intervention (3 sessions/week). Each session included warm-up (10 minutes), main exercise incorporating Thai Folk Performance Exercise Program at 55-65% HRmax (30 minutes), and cool-down (10 minutes). Assessments measured body composition, flexibility (back scratch, sit-and-reach test), muscle strength and endurance (30-second chair stand, 30-second arm curl tests), cardiorespiratory endurance (6-minute walk test), and balance (agility course test) were tested both pretest and posttest. We analyzed the data using pair t-test.

Results: The findings indicate that posttest, Significant improvements occurred in flexibility: right back scratch ($p = .001$), left back scratch ($p = .008$), and sit-and-reach ($p = .047$). Lower body strength increased significantly (30-second chair sit-to-stand, $p = .004$). Cardiorespiratory endurance improved (6-minute walk test, $p = .022$). Balance enhanced markedly (agility course test, $p < .001$). No significant changes occurred in body composition or upper body strength.

Conclusions: The findings indicate that the Thai Folk performance exercise program effectively improved flexibility, lower body strength and endurance, cardiorespiratory endurance, and balance in older adults. Integrating cultural elements with evidence-based exercise provides a culturally appropriate, engaging approach to healthy aging, offering an innovative alternative to conventional exercise programs.

Keywords

Thai folk performance; health-physical fitness; balance; older adults; exercise.

Resumen

Introducción: A medida que las personas envejecen, la aptitud física y el equilibrio disminuyen, lo cual se puede prevenir participando en varias formas de ejercicio de movimiento.

Objetivo: investigó la eficacia del Programa de Ejercicios de Rendimiento Folclórico Tailandés en la Salud, la Aptitud Física y el Equilibrio en Adultos Mayores.

Metodología: Treinta voluntarios de entre 60 y 75 años participaron en una intervención de 8 semanas (3 sesiones/semana). Cada sesión incluyó calentamiento (10 minutos), ejercicio principal que incorporaba el Programa de Ejercicios de Rendimiento Folclórico Tailandés al 55-65% de FCmáx (30 minutos) y enfriamiento (10 minutos). Las evaluaciones midieron la composición corporal, la flexibilidad (rascado de espalda, prueba de sentarse y alcanzar), la fuerza y resistencia muscular (pruebas de levantarse de una silla durante 30 segundos, pruebas de flexión de brazos durante 30 segundos), la resistencia cardiorrespiratoria (prueba de caminata de 6 minutos) y el equilibrio (prueba de recorrido de agilidad) se probaron tanto antes como después de la prueba. Analizamos los datos utilizando la prueba t de pares.

Resultados: Los hallazgos indican que después de la prueba, se produjeron mejoras significativas en la flexibilidad: rascado en la espalda derecha ($p = .001$), rascado en la espalda izquierda ($p = .008$) y sentarse y alcanzar ($p = .047$). La fuerza de la parte inferior del cuerpo aumentó significativamente (30 segundos de sentarse y levantarse en una silla, $p = .004$). La resistencia cardiorrespiratoria mejoró (prueba de caminata de 6 minutos, $p = .022$). El equilibrio mejoró notablemente (prueba de recorrido de agilidad, $p < .001$). No se produjeron cambios significativos en la composición corporal ni en la fuerza de la parte superior del cuerpo.

Conclusiones: los hallazgos indican que el programa de ejercicios de rendimiento Thai Folk mejoró eficazmente la flexibilidad, la fuerza y la resistencia de la parte inferior del cuerpo, la resistencia cardiorrespiratoria y el equilibrio en adultos mayores. La integración de elementos culturales con ejercicios basados en la evidencia proporciona un enfoque culturalmente apropiado y atractivo para el envejecimiento saludable, ofreciendo una alternativa innovadora a los programas de ejercicios convencionales.

Palabras clave

Actuación folclórica tailandesa; salud y aptitud física; equilibrio; adultos mayores; ejercicio.



Introduction

The global demographic transition toward an aging society has become one of the most significant socioeconomic challenges of the 21st century (United Nations, 2019). Thailand is facing a major change in the population structure, entering the era of the "aging society" in full form. In 2025, it was found that Thailand has 11.1 million elderly people, or 16.73% of the total population. The increasing prevalence of age-related physical decline, including body composition, flexibility (Lima et al., 2021), reduced muscle strength (Thaqi et al., 2023), impaired balance (Ferragut et al., 2023), and decreased cardiovascular fitness, has highlighted the urgent need for effective, culturally appropriate interventions that can promote healthy aging and maintain quality of life in this growing population.

Traditional folk and dance performances are a rich cultural heritage passed down through societies around the world. They serve not only as artistic expression but also as embodiments of historical narratives, social values, and community identities. In Asia, traditional dances such as Chinese tai chi (Li et al. 2024; Wang et al, 2020) and Indian classical dance (Siddharth & Mishra, 2022) have all shown therapeutic benefits, combining graceful movement with mindfulness and breathing techniques. European folk dances, such as Irish Set Dance, Folk Dance (Ruan & Zheng, 2020), emphasize rhythmic patterns and fluid footwork, which enhance cardiovascular fitness and coordination. African folk dances combine full-body movements with powerful rhythms, which promotes muscle strength and endurance (Xilidou et al. 2019). Similarly, Latin American folk dances, such as the Brazilian samba (Santini et al., 2024), incorporate complex movement patterns that challenge balance, flexibility, and cognitive function. Thailand's cultural landscape is equally rich in traditional performing arts, with Thai dances (Khon, Lakhon) and regional folk dances (Ramwong, Saeng) representing centuries of artistic evolution and cultural significance (Phanpheng & Buransri, 2021; Saksanit & Khongprasert, 2021). Traditional Thai dances are characterized by precise hand movements (mudra), graceful body movements, controlled breathing patterns, and an emphasis on balance and postural control. This is an element that is in good accordance with the principles of exercise therapy for the elderly (Fookloytanant, 2023; Niyomsat et al., 2022).

The evolution of traditional folk performances into structured aerobic exercise programs represents an innovative approach to addressing the exercise needs of older populations while preserving cultural identity and promoting social engagement (Hui et al., 2009). The adaptation of folk performances into aerobic exercise modalities offers several advantages over conventional exercise programs: cultural familiarity enhances adherence and motivation, the artistic nature provides cognitive stimulation and emotional engagement, group participation fosters social interaction and community building, and the moderate-intensity movements are appropriate for older adults with varying fitness levels (Kattentrost et al., 2013). The benefits of aerobic exercise for the older adults extend beyond cardiovascular changes and can reduce the inactivity-induced loss of strength, mobility, balance, and endurance that are vital for the safe performance of daily activities (Chodzko-Zajko et al., 2009). Furthermore, the incorporation of traditional music (Aguilar Bolivar et al., 2021), costumes, and cultural narratives can transform exercise from a clinical intervention into an enjoyable, meaningful activity that older adults are more likely to sustain over time (Jaques et al., 2013). Exercise programs are very important for the elderly. Exercise programs are one strategy to promote the vitality and health of the older adults in the community. This research will develop a folk performance exercise program based on the principles of sports science and participation to be consistent with the context of the community so that the elderly can have better health and live effectively in the aging society.

Method

Participants

The sample group consisted of older adults from Ban Non-Kok, Nongnakhon Subdistrict, Mueang District, Udon Thani Province, Thailand. This research set the participants in the Experimental Group to be a total 30 subjects (Thai Folk Performance Exercise Program). All participants met the following inclusion criteria: (a) older adults aged 60–75 years; (b) subjects voluntarily participated in the research; (c) no chronic diseases that interfere with exercise, such as heart disease and asthma in the exacerbation



phase and chronic joint injury; and (d) Passed the Physical Activity Readiness Questionnaire (PAR-Q). Exclusion criteria included: (a) attendance below 80% of the study sessions; (b) circumstances beyond their control that prevented continued participation, such as health issues or injuries occurring during the exercise intervention.

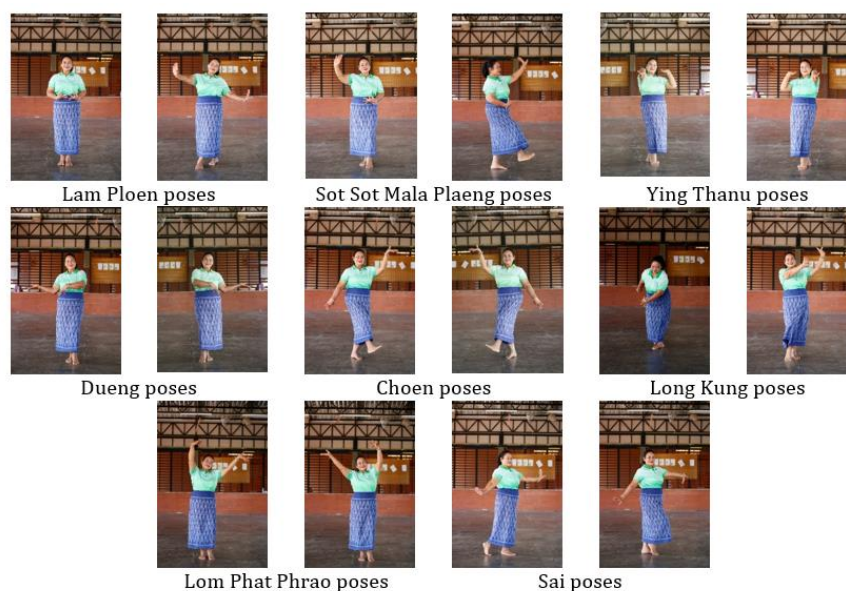
Ethic approved

Ethical approval for this study was obtained from the Research Ethics Review Committee at Burapha University on November 21, 2024 [approval number: G-HS112/2567]. Participants were informed about the voluntary basis of their involvement and provided written informed consent for both study participation and the collection of their personal data.

Procedures

The researchers designed both patterns of the Thai Folk Performance Exercise Program. The duration of the exercise for 50-minute, 3 day a week, total 8 weeks. All participants put on heart rate monitors (Polar Team Pro, Finland), intensity was controlled of 55 – 65 %HRmax throughout the duration of exercise, a warm-up (10 minutes), exercise workout (30 minutes). There were 8 poses included Lam Ploen poses, Sot Sot Mala Plaeng poses, Ying Thanu poses, Dueng poses, Choen poses, Long Kung poses, Lom Phat Phrao poses and Sai poses (Figure 1), and a cool-down (10 minutes).

Figure 1. Thai Folk Performance Exercise Program



Assessment protocol

Health-related fitness and balance parameters were measured in participants both pre- and post-training. The specific assessment protocols included: Body composition evaluation through bioelectrical impedance analysis (Accuniq BC300, Germany) measuring fat percentage and BMI. Upper body flexibility assessment via bilateral back scratch testing (Signorile, 2011) and lower body flexibility measurement using the sit-and-reach protocol (American College of Sports Medicine, 2014). Lower extremity muscular strength and endurance evaluation through 30-second chair stand testing, and upper extremity assessment using 30-second arm curl tests with gender-specific weights (2.3 kg for females, 3.6 kg for males) (Signorile, 2011). Cardiovascular endurance was determined using the 6-Minute Walk Test (Burr et al, 2011). Agility and balance were measured through agility course testing (Signorile, 2011).

Data analysis

The mean and standard deviation are used to present the characteristics of the participants. They compare health - physical fitness and balance measures pretest and posttest using the pair t-Test, respectively. Statistical significance was set at p value <0.05 . The data were analyzed using IBM SPSS Statistics for Windows, version 21.0. [IBM Corp. Released 2012].

Results

The general characteristics and baseline measured of the 30 subjects in the older adults with Thai Folk Performance Exercise Program are presented in Table 1.

Table 1. Characteristics of the older adults with Thai Folk Performance Exercise Program.

Characteristics	$\bar{x}$	S.D.
Age (years)	65.83	4.79
Weight (kg)	60.13	8.81
Height (cm)	152.73	5.72
Resting heart rate (beats per minute)	83.03	14.94
Systolic blood pressure (mmHg)	139.87	19.05
Diastolic blood pressure (mmHg)	80.93	9.93

The comparison of means and standard deviations pretest and posttest of health-physical fitness within the experimental group showed that there were changes in many aspects. It can be concluded that in terms of body composition, including body mass index (kg/m^2) and percentage of fat, there were no statistically significant differences ($p = .826$ and $p = .502$, respectively). In terms of flexibility, there were statistically significant changes in all items. The left and right back scratch test improved significantly ($p = .001$ and $p = .008$, respectively), with decreasing negative values indicating better development. In addition, sit and reach test improved significantly ($p = .047$). In terms of muscle strength and endurance, the training results showed a significant improvement in the 30-second chair sit-to-stand test ($p = .004$), but no significant difference was found in the 30-second arm curl test ($p = .178$). In terms of cardiovascular endurance, the training results showed a significant improvement in the six-Minute Walk Test ($p = .022$). In terms of balance, the time taken to agility course Test down was significantly reduced ($p < .001$). This reduction in test time indicates improved agility and balance. In table 2.

Table 2. Results of comparison of means and standard deviations of health-physical fitness within the experimental group.

Characteristics	Pretest		Posttest		95% CI		t	P - value
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	Lower	Upper		
Body Composition								
Body Mass Index)Kg/m²(	25.65	3.28	25.60	3.40	-0.439	0.546	0.222	.826
Percent Fat)%(	33.35	3.97	33.10	3.97	-0.509	1.016	0.679	.502
Flexibility								
Right back Scratch Test)Centimeter(	-7.23	10.12	-3.07	6.45	-6.550	-1.783	-3.574	.001*
Left back Scratch Test)Centimeter(	-11.23	7.77	-7.97	8.40	-5.606	-0.928	-2.856	.008*
Sit and Reach Test)Centimeter(	9.05	7.98	11.92	6.34	-5.702	-0.038	-2.073	.047*
Muscle strength and endurance								
30-Second Chair Stand Test (Reps)	14.03	3.97	16.20	3.08	-3.564	-0.769	-3.171	.004*
30-Second Arm Curl Test (Reps)	21.13	4.80	22.10	4.54	-2.399	0.466	-1.380	.178
Cardiorespiratory endurance								
Six-Minute Walk Test)ml/kg/min.(	32.03	3.78	33.65	2.38	-2.987	-0.251	-2.420	.022*
Balance								
Agility Course Test)Sec.(	16.19	3.01	13.95	2.23	1.255	3.223	4.653	<.001*

*Significant differences, $p < 0.05$

Discussion

Dancing is a Thai folk performance form that is the foundation of a new exercise program. This program combines the movements of folk performances with folk music, starting with slow movements and gradually increasing speed to the rhythm of the music. This study found that after 8 weeks of training, body



composition, including body mass index and body fat percentage, tended to decrease compared to the pretest of the experimental group, but no statistically significant difference was found posttest. This may be because the training period was not sufficient to change body composition clearly. This is consistent with Schoenfeld et al. (2014), who found that after 4 weeks of aerobic exercise, there was only a tendency to decrease, without statistically significant difference. The change in body composition after dancing exercise requires at least 3 months (12 weeks) of exercise to have a significant effect on body composition (Zhang, 2024). In addition, other factors, especially diet control and resistance training, must be controlled. This is consistent with Eglseer et al. (2024), who found that effective fat mass reduction and muscle mass increase require a combined exercise program (aerobic and resistance training) along with energy control and adequate food intake.

Folk performances have many benefits for older adults. Rhythmic arm movements, such as swinging forward, back, and overhead, engage the shoulder and arm muscles, while bending, tilting, and twisting movements engage the core muscles that maintain balance. This study confirmed that the exercise program improved shoulder flexibility, as measured by the back scratch test, and lower back and hamstring flexibility, as tested by the sit and reach test. This is supported by previous research, which has shown that improved shoulder, back and leg muscle flexibility (Fookloytanan, 2023; Saksanit & Khongprasert, 2021; Supwirapakorn et al, 2024) lead to greater stability during dynamic body movements (Brandao-Loureiro et al., 2024; Bailey et al., 2023). Although flexibility decreases with age, older adults can still increase their range of motion with exercise programs (Matos-Duarte et al., 2022). The foot movements in the exercise program, particularly kneeling, leg raising, and frequent body position changes, engage the core muscles to maintain balance between the hips (Li et al. 2024; Wang et al, 2020). These postures have a positive effect on activating the leg muscles to be stronger, which in turn affects movement efficiency (Smuntavekin et al, 2021; Supwirapakorn et al, 2024; Li et al. 2023). This study found that participants had improved leg muscle development posttest of training. As can be seen from the 30-Second Chair Stand Test, however, no significant difference was found in the 30-second arm curl test, but there was an increasing trend. This may be because most of the folk performances emphasize lower body movements rather than using arm strength against gravity, and the intensity level was not sufficient. In addition, the exercise program incorporated various types of movement, such as standing on one leg, which requires balance skills; changing movement directions (Chen et al, 2024; Zhang et al, 2025) and coordination of different body parts, which helps train balance control and movement efficiency (Phanpheng, 2021; Fookloytanan, 2023). It also reduced the risk of falls in older adults (Li et al. 2025; Chalapud & Molano, 2023; Sooktho et al, 2024; Siddharth & Mishra, 2022; Supwirapakorn et al, 2024). This can be seen from the reduction of the time in the agility course test. In addition, the exercise program was an aerobic exercise at an intensity of 55-65 percent of the maximum heart rate for 50 minutes, with continuous body movements to the rhythm of the music that stimulates the heart and lungs. Regular training makes the cardiovascular system more efficient. This resulted in improved endurance in sustained energy activities. This study found that participants had improved cardiovascular endurance (Supwirapakorn et al, 2024; Sriya et al, 2024; Sooktho et al, 2024; Niyomsat et al, 2022; Phanpheng et al, 2024), as evidenced by their performance on a 6-minute walk test, suggesting that that combining aerobic exercise with folk dance movements can effectively promote health, wellbeing and physical fitness for older adults.

Conclusions

Thai folk performances are an effective form of exercise for the elderly, which can simultaneously develop physical fitness in many dimensions, including flexibility, muscle strength and endurance, cardiovascular endurance, and balance. The combination of exercise and cultural elements makes traditional performances an interesting and sustainable activity for improving the health and quality of life of the elderly.

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