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Taichi Designing Training Program to Reduce Falling Risk in Elderly

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Abstract

Background and Aim: The research goals of this paper tai chi training program on reducing falling risk in the elderly. This study aimed to design a tai chi training program to reduce the risk of falls in older adults.

Materials and Methods: The study involved a sample group of 286 people, including a 10-question interview outline (IOC0.89) focus group outline. The Interview Outline Assessment Scale used the mean and standard deviation to screen out the 15 tai chi moves most suitable for balance in older adults. Questionnaires used percentage interviews, and focus groups used content analysis. Connoisseurs used content analysis and mean, X, standard deviation, SD

Results: The results of this study are: The results showed, After practicing Tai Chi, which consists of 15 movements, 7 for the upper limbs and 8 for the lower limbs, they further improved their balance and physiology, which could improve their stability and self-care ability in life to improve their concept learning ability

Conclusion: Enhance muscle strength: Through continuous posture and movement practice, Tai Chi can enhance core and leg muscle strength and improve overall physical fitness. Improve balance: Tai Chi's slow, controlled movements can help enhance the elderly's sense of balance and reduce the risk of falls.

Keyword : Tai Chi; Women; Elderly; Training Program

Introduction

Tai Chi, a traditional Chinese martial art form, originated in the 17th century in Chenjiagou, Henan Province, China, and is credited with being founded by Chen Wangting It is not only a kind of martial arts, but also a combination of Yin and Yang five elements, Taoist philosophy, and traditional Chinese medicine meridian theory, all of which contribute to its unique form of physical and mental exercise. Tai Chi is renowned for its soft, slow, continuous movements that emphasize the use of internal forces and the harmonious unity of body and mind, reflecting its status as an integral part of China's cultural heritage.

With the progression of societal development and the increasing intensity of population aging, the demographic of elderly individuals between 60 and 70 years old has seen a gradual expansion (Smith, 2019). During their retirement, this age group not only enjoys leisure time but also confronts a myriad of health challenges such as physical degradation, cognitive decline, a rise in chronic diseases, and diminished social engagement (Johnson, 2020). These issues impact not only the elderly's ability to carry out daily activities but may also compromise their quality of life and overall life satisfaction, highlighting a significant concern that demands attention and resolution from both society and families.

Objectives

Main objective:

To design a Tai Chi training program to reduce falling risk in the elderly

Subsidiary objectives:

1. To investigate for body balance of the elderly
2. To draft a tai chi training program for the elderly
3. To confirm a taichi training program for the elderly

Literature review

This study used female elderly people aged 60-70 years old in Zhoukou City, China as the research subjects. Related papers and articles are as follows:

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Guo, X., Siriphan, C., & Ariyasaiskul, S. (2025). Taichi Designing Training Program to Reduce Falling Risk in Elderly. International Journal of Sociologies and Anthropologies Science Reviews, 5 (3), 225-232;
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1. Tai Chi for Fall Prevention and Balance Improvement: A systematic review and meta-analysis of randomized controlled trials showed that Tai Chi can effectively reduce the risk of falls and improve balance in older adults.

2. Prospective Studies: A review of Tai Chi's protective effects on cognitive ability in healthy adults suggested potential benefits, though large randomized controlled trials are needed for confirmation.

3. Deepening Research of 24 Forms of Tai Chi: The Ten Essentials of Tai Chi Chuan, as taught by Yang Family Tai Chi, emphasize principles like using intent rather than force and matching inner and outer movements, which are crucial for the practice of Tai Chi.

4. Principles of Training for Elderly: A concept for balance training in elderly individuals has been proposed, incorporating voluntary exercises, perturbation, and dual-task exercises to improve balance control.

5. Related Research: A comprehensive meta-analysis evaluated Tai Chi's effectiveness on balance and strength in the elderly across different intervention durations, finding significant improvements, especially with medium-term interventions of 8 to 16 weeks.

Summarize the literature and research review.

Prospective Studies

Targeted Training of Technology and Physical Fitness

A prospective study on the physical health of women aged 60 to 70, assisted by medical equipment, is crucial as technology advances and medical equipment becomes increasingly integral to geriatric health management (Huston et al., 2016). This study aims to explore how to optimize the 24 forms of Tai Chi exercises in conjunction with medical equipment to guide practice, monitor body data, and health indicators, thereby better meeting the individual health needs of women in this age group (Li & Zhang, 2015). This personalized training program can assist the elderly in achieving more effective exercise outcomes, enhancing their physical condition and health status, and also offers new insights for the integration of medical practices with Tai Chi in health management.

Deepening Research of 24 Forms of Tai Chi

Tai Chi Action Name: Commencement Posture

Action analysis: The "Commencement Posture" is the foundational movement in Tai Chi Chuan. The practitioner stands with feet shoulder-width apart, relaxes the entire body, allowing the arms to hang naturally. Then, they take a deep breath, slowly lifting the hands to the chest with palms facing down, as if lifting a heavy object, followed by a slow exhale (Yang, 2019).

Principles of Training for the Elderly

Personalized Adaptability and Physiological Considerations

When developing a Tai Chi training program for the elderly, the foremost principle is to ensure that the training content is personalized and adaptable. Li and Zhang (2015) have demonstrated that Tai Chi practice significantly enhances the psychological health and life satisfaction of the elderly. Therefore, the training program should be tailored to the specific health conditions and physical capabilities of each senior participant. For instance, seniors with a history of arthritis should avoid strenuous joint movements and instead practice gentle Tai Chi postures that exert minimal pressure on the joints, such as the slow and flowing "Cloud Hands" and "Single Whip" movements, which strengthen the body without causing joint strain. Concurrently, research by Chen (2021) indicates that Tai Chi effectively improves lower limb strength and balance capabilities, crucial for preventing falls. Hence, the training should incorporate specific movements like "Brush Knee and Twist Step" and "Part the Wild Horse's Mane" to enhance the elderly's lower limb muscles and balance.

Related Research

localize research

Citation
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Domestic and foreign studies have conducted a comprehensive literature review of the health benefits of Tai Chi in a population of women aged 60 to 70 years. Domestic research mainly focuses on the cultural connotation of Taichi, the effects on the physical function of the elderly, the potential improvement of diabetes, the improvement of static balance ability, and the positive effects on the metabolic function of blood lipids (Fang, 2021). Studies have shown that Tai Chi, as a mild aerobic exercise, can effectively improve cardiopulmonary function, enhance muscle strength, improve joint flexibility, and help reduce the risk of falls (Hirano & Yanai, 2001). Moreover, Tai Chi has significant effects on improving insulin sensitivity and blood glucose control in diabetic patients, and also has positive effects on blood lipid levels in the elderly (Ji, 2020).

Summaries

The review begins by emphasizing the cultural significance of Tai Chi as a traditional Chinese martial art, discussing the various forms of Tai Chi, its historical development, and its integration into modern society (Jia, 2018). The chapter highlights the importance of Tai Chi in enhancing the physical health, mental well-being, and social participation of the elderly (Keskinen & Komi, 1993). It also points out the positive effects of Tai Chi on cardiovascular health, muscle strength, joint flexibility, and balance, as well as its role in reducing the risk of falls and improving blood lipid metabolism (Liu et al, 2022).

Moving on, the chapter has investigated the effects of Tai Chi on rheumatic immune diseases, ankylosing spondylitis, and cognitive function in older adults. These studies suggest that Tai Chi can improve lower limb strength, enhance immunity, and contribute to better sleep quality and mental health (Liu & Jinag, 2020). The chapter acknowledges the need for more long-term and foundational research to fully understand the profound impact of Tai Chi on these conditions (Ma, 2022).

Conceptual Framework

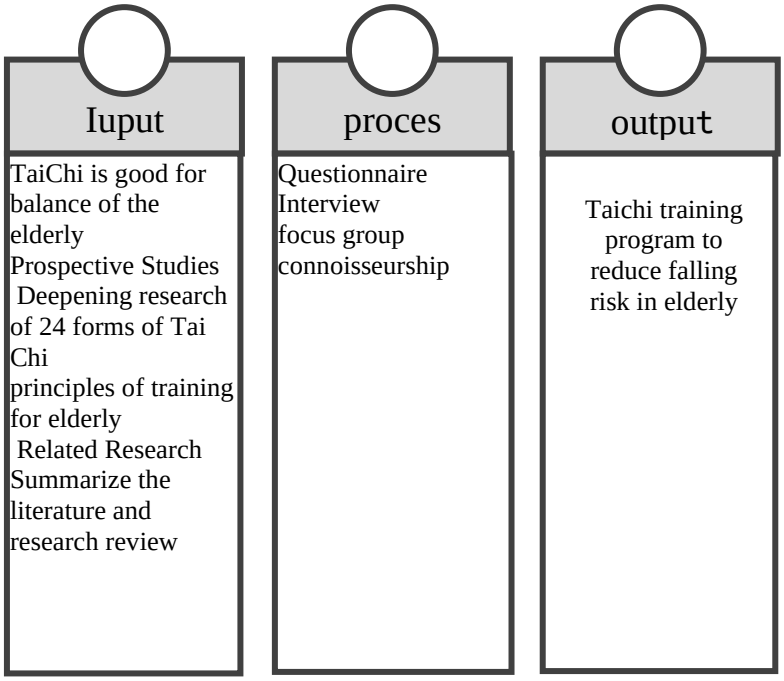

Figure 1 Conceptual Framework

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Methodology

Methodology： Questionnaire (Youdao Life Recovery Official Account Berg Balance Sheet (Scoring criteria and clinical significance) \ Interview outline 10 questions (IOC 0.89), Focus group outline, Interview outline, Evaluate scale, Use the mean and standard deviation to screen out the 15

Tai Chi movements that are most suitable for balancing the elderly.

The main content of this paper is to design a tai chi training program to reduce falling risk in the elderly.

For the questionnaire, use the percentage

For the interview and focus group used content analysis was used

Connoisseurship used content analysis and mean X, standard deviation SD

Research tools： Questionnaire (Youdao Life Recovery Official Account Berg Balance Sheet (Scoring criteria and clinical significance)

Data collection：

1. Literature review is searched by Google Scholar references and professional journals, and conferences for reference
2. Send questionnaire (Berg Balance Sheet) to 286 elderly women aged between 60 to 70, in Zhoukou City, Fu Xi Park, send to the park
3. Create a questionnaire, give it to the experts, and let the IOC evaluate it.
4. A total of 7 experts were interviewed by email and telephone.
5. Do focusgroup outline
6. Invited 10 experts to design a taichi training program to reduce falling risk in elderly women
7. Summary of Tai Chi 15 postures from the focus group
8. Invite 5 experts to evaluate and confirm the design of a taichi training program to reduce falling risk in elderly women
9. Summary and report

Sample

This study opens Taro Yamane table of 286 elderly women aged between 60 to 70, in Zhoukou City, Fu Xi Park, providing valuable data for the research..

Results

Average Level	Meaning
1.00-1.79	Lowest
1.80-2.59	Low
2.60-3.39	Moderate
3.40-4.19	High
4.20-5.00	Highest

After collecting data, it was analyzed as follows:

For the questionnaire, use the percentage

For the interview and focus group used content analysis was used

Connoisseurship used content analysis and mean, $\bar{X}$, standard deviation, SD

Part1: Questionnaire (Berg Balance Sheet) to 286 elderly women aged between 60 to 70, in Zhoukou City, Fu Xi Park

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Table 1 Summary elderly women questionnaire
Table reference author: Berg Balance Scale

Item Description	Score				
	5	4	3	2	1
1. Sitting to standing	5%	8%	12%	10%	70%
2. Standing unsupported	7%	6%	13%	9%	71%
3. Sitting unsupported	6%	10%	11%	8%	72%
4. Standing to sitting	8%	7%	12%	8%	75%
5. Transfers	6%	9%	11%	8%	76%
6. Standing with eyes closed	5%	8%	12%	9%	77%
7. Standing with feet together	4%	10%	11%	8%	78%
8. Reaching forward with an outstretched arm	7%	9%	10%	8%	79%
9. Retrieving the object from the floor	5%	8%	12%	9%	65%
10. Turning to look behind	6%	10%	11%	8%	66%
11. Turning 360 degrees	7%	9%	10%	7%	67%
12. Placing the alternate foot on a stool	5%	10%	11%	9%	68%
13. Standing with one foot in front	6%	8%	12%	10%	69%
14. Standing on one foot	4%	9%	11%	8%	70%
Total Score:					

Table 2 Interview 7 experts design a taichi training program to reduce falling risk in elderly women.
Focus group 7 experts design a tai chi training program to reduce falling risk in elderly women

name	Time/set	benefit
Upper limbs		
1. Starting Posture	2 sets (5 times/per set)	Regulate breathing, relax the body, and enter the practice state.
2. Cloud Hands	2 sets (5 times/per set)	Enhanced shoulder and arm flexibility, improved posture, and balance
3. Grasp the Bird's Tail-Left Side and Grasp the Bird's Tail-Right Side	2 sets (5 times/per set)	Improved hand-eye coordination, improved upper limb flexibility and flexibility
4. Forearm Rollings on Both Sides	2 sets (5 times/per set)	Increases arm and waist strength, improves overall body coordination.
5. Turning body, Pulling, Blocking, and Pounding	2 sets (5 times/per set)	Promotes arm and wrist flexibility, relaxes the shoulder and neck position.
6. Work at Shuttles on Both Sides	2 sets (5 times/per set)	The stretching and shifting help increase flexibility in the arms, shoulders, and torso. Helps in developing the ability
7. Cross Hands	2 sets (5 times/per set)	Shoulder, arm, and wrist muscles

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name	Time/set	benefit
Upper limbs		
Lower limbs		
8. Part the Wild Horse's Mane on Both Sides	2 sets (5 times/per set)	Enhance leg and waist strength, improve coordination, and flexibility.
9. Push Down and Stand on One Leg- Left Style and Right	2 sets (5 times/per set)	Improves knee and ankle stability and strengthens leg muscles.
10. Work at Shuttles on Both Sides	2 sets (5 times/per set)	Especially thighs and knees, to improve balance.
11. Needle at the Sea Bottom	2 sets (5 times/per set)	Improves arm strength and flexibility, and promotes overall body coordination
12. Kick with right heel and turn, and kick with left heel	2 sets (5 times/per set)	Thigh, calf, and buttock muscles, as well as improving leg strength and balance.
13. Single whip	2 sets (5 times/per set)	Thigh, calf, and buttock muscles, as well as improving leg strength and balance.
14. Turn and kick with Left Heel and right Build leg	2 sets (5 times/per set)	Strengthen leg strength and flexibility, improve balance and coordination.
15. Closing Form.	2 sets (5 times/per set)	End the practice, relax the whole body, and return to the natural state.

Table 3 Connoisseurship used content analysis and mean, $\bar{X}$, standard deviation, SD.

Name	**$\bar{X}$**	**S.D**	**RESULT**
	Upper limbs		
1. Starting posture	4.57	0.80	strongly agree
2. Cloud hands	4.73	0.56	strongly agree

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Name	$\bar{X}$	S.D	RESULT
Upper limbs			
3. Grasp the Bird's Tail-Left Side and Grasp the Bird's Tail-Right Side	5	0.00	strongly agree
4. Forearm Rollings on Both Sides	5	0.00	strongly agree
5. Turning body, Pulling, Blocking, and Pounding	4.57	0.80	strongly agree
6. Cross Hands	4.57	0.80	strongly agree
7. White Crane Spreads Wings	4.57	0.80	strongly agree
Lower limbs			
8. Part the Wild Horse's Mane on Both Sides	5	0.00	strongly agree
9. Push Down and Stand on One Leg- Left Style and Right	4.73	0.56	strongly agree
10. Needle at the Sea Bottom	5	0.00	strongly agree
11. High pat on the Horse	4.73	0.56	strongly agree
12. Kick with right heel and turn, and kick with left heel	4.57	0.80	strongly agree
13. Single whip	4.57	0.80	strongly agree
14. Turn and kick with Left Heel and right Build leg	4.57	0.80	strongly agree
15. Closing Form.	5	0.00	strongly agree

Mean and standard deviation range to confirm the Design Tai chi training program to reduce the risk of falling in elderly women

Discussion

Research method and content influence

1. Research method and content influence
2. Literature foundation and theoretical support
3. Expert discussion and practice feedback
4. Exploring Tai Chi: A Comprehensive Impact on Health and Cultural Heritage for Middle-Aged and Elderly Populations
5. Study on the Effect of Tai Chi on Body Balance of the Elderly

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Conclusion

Based on the deepening Tai Chi study, 15 Tai Chi movements were used as narration to investigate the influence of physical balance between women aged 60 and 70 years in Zhoukou city. This paper has three research objectives: to investigate for body balance of the elderly, to draft a taichi training program for the elderly.

To confirm a taichi training program for the elderly

The results showed that after practicing 15 Tai chi-related movements, they further improved their balance and physiology, which could improve their stability and self-care ability in life, to improve their concept learning ability.

2. Summary of the full text

The core of this study aims to design a Tai Chi training procedure to reduce the risk of falls in older elderly. The purpose of the study is to explore the effectiveness of Tai Chi training in improving the physical balance ability and reducing the risk of falls among elderly women aged from 60 to 70 years, and to develop a corresponding Tai Chi training plan.

Recommendation

Suggestions for the Application of Research Findings

1. it is recommended to combine it with other forms of exercise to create a comprehensive health promotion plan for the elderly.

2. Through systematic tai chi exercises, combined with balance training, the aim is to help the elderly strengthen their muscle strength and coordination

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