

Precision Exercise Guidelines to Improve the Muscle Strength of the Elderly

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Abstract

WHO believes that aging is inevitable and is affected by the environment; how to create a healthy aging community space has become a trend in various countries. Taiwan's elderly population exceeded 7% in 1993. In 2022, 21.69% of Chiayi County will enter the "super-aged (>20%)" society. The government department proposed the "Precision Sports Instructor Training Program", through the assistance of academia to train instructors, and introduce instructors to the community to interact with the elderly (12 weeks). The purpose of this project: to develop precision sports courses, train teachers, and send communities to carry out teaching. Plan implementation: through joint research and development with academic units: 12-week sports course development, teacher training, personnel deployment, course implementation to assessment. After the course, it was found that the grip strength, static balance, and lower limb muscle strength of the elders in the community have significantly improved after sitting and standing for 30 seconds. Summary: Add precise exercise programs to implement community elders: healthy exercise, happy learning, and happy aging.

Keywords: Precision Sports, Training Program, Healthy Exercise

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Introduction: Background

The World Health Organization (WHO) believes that aging is inevitable and is affected by the environment. Creating healthy aging community spaces has become a trend in various countries. In 1993, Taiwan's elderly population exceeded 7%. It was projected that in 2022, 21.69% of Chiayi County would become a "super-aged (>20%)" society. The appropriate government department proposed the "Precision Sports Instructor Training Program" with the assistance of the academe, to train and introduce instructors to the community. These instructors interact with the elderly (12 weeks), promoting healthy lifestyle and aging within the community.

Literature Review

The theory of andragogy was proposed by Knowles, the father of American andragogy, in 1970. Andragogy refers to the art and science of helping adults learn. Knowles defines andragogy as: the art and science of helping adults learn, thereby showing the difference between pedagogy and andragogy. Knowles (1980) believes that.

The goal of human education should be to promote adult self-realization. Therefore, the adult learning process should promote the participation of the whole person (including emotion, psychology, and intelligence). Adult education teachers are positioned as facilitators, in other words, to help adults become self-directed learners.

The theory of andragogy is widely used in adult teaching, activity design, and human resource development in the United States, and there are many related studies (Henschke, 2012).

In Taiwan, the trend of an aging society makes lifelong learning more necessary and promotes the vigorous development of adult education. How to apply the model of andragogy in education and training is even more important.

The main difference between senior learning and traditional activities for the elderly is the different courses. Traditional learning for the elderly focuses on personal interest courses, such as singing, dancing, calligraphy and painting, etc. Elderly learning emphasizes active aging learning (WHO, 2002). From the perspective of needs hierarchy (McClusky, 1971), the theoretical basis of training teaching design is the application of andragogy theory, based on current learning and current application, and creating attractive The learning atmosphere, training outcome assessment using Kirkpatrick (2006).

Four-level model, including: training satisfaction, learning, behavior change and learning transfer. The implementation of Taiwan's senior learning plan is mainly based on the establishment of a general guidance group by the National Chung Cheng University Senior Education Research Center, which is responsible for planning, training, visit evaluation and other research and development work and the design of practical models. The overall implementation of senior education has mastered the concept of system integration of research, training, assistance, research and training. The general guidance team designs talent training courses and effectiveness evaluation indicators based on this spirit, including: volunteer team, management team, and curriculum planning and Training for instructional designers.

Basically, the central government is responsible for policy formulation, and universities are responsible for the development of operating mechanisms, research and development of relevant materials, research of methods, establishment of resource networks, and provision of consultation and guidance by each center. The senior learning centers set up by the Ministry of Education in various townships and urban areas act as learning bases, and form partnerships with various district counseling groups. The non-government, government and academic circles jointly promote senior learning courses and activities.

Andragogical theory includes 6 presuppositions for adult learners. First, adults have self-directed learning abilities; second, adults have rich learning experiences; third, adults' learning readiness is related to their It is related to social role development tasks; fourth, adult learning tends to be problem-centered; fifth, adults need to know why they want to learn; sixth, adult learning motivation must be intrinsic rather than extrinsic.

Purpose

To develop precision sports courses, train instructors, and mobilize communities to carry out teaching activities. Share a personal athletic background and passion for seniors athletics. Explore the importance of active aging and the physical health benefits of exercise. Conduct a group discussion where participants share their expectations and goals for the exercise program. Guide participants in developing a personal exercise plan, encouraging them to set achievable goals and schedules. Provide encouragement and positive feedback to ensure participants understand and participate in the exercise program.

Methods and Materials

The training design adopts unit modular courses. In order to implement the application after the learning, we ask each center director to bring two volunteers to assist and sign up to participate in the training together to form a team.

Research and development collaborations with academic institutions: 12-week sports course development, teacher training, personnel deployment, course implementation and assessment.

- * Community Physical Activity Intervention Strategy
- * Exercise monitoring (fitness testing, recording of usual exercise behaviors)
- * Increased self-efficacy (introduction to physical fitness and knowledge of behavior change methods)
- * Social support (support from participants and relevant people in the community)
Reward and exercise (introduction to daily lifestyle and implementation of Festival campaign)
- * Daily dynamic life plan
Exercise at least 3 days a week, no less than 30 minutes a day, with heart rate reaching 130 beats per minute

Enhance Physical Fitness Program.

- * Strategies such as exercise intervention, nutrition consultation and safety assessment.

Results

The pioneer results showed that the grip strength, static balance, and lower limb muscle strength before activity of the elderly in the community, failed to meet standards. After 12 weeks of activities led by the "Precision Exercise Instructor," the post-test data showed significant improvement and progress.

In Taiwan, the majority of participants in elderly activities are women, with 5 males (19.2%) and 21 females (80.8%). The age range is 70-97(Table 1).

Table 1: Analysis of basic information of participants

Item	Data	Min	Max	%
Sex				
Male	5			19.2
Female	21			80.8
Age				
	26	70	97	
	Quartile: 25	75.75		
	50	82.50		
	70	24.97		

Pre-intervention test results: males greater than females. Grip strength: Male: 25.90>Female 18.21, 30 second sit-ups: Male: 13.00>Female 11.95, Stand on right: Male: 13,60>Female: 5.08, Stand on left: Male: 7.40>Female: 5.73 (Table 2).

Table 2: Pre-intervention data analysis

		Pre-activity			
		Grip	30-second sit-ups	Stand on right	Stand on left
Male	Average	25.90	13.00	13.60	7.40
	Normal count	1	4	3	2
	Normal Average		12.25	20.67	13.00
	Abnormal count	4	1	2	3
	Abnormal Average	20.60		3.00	3.67
Female	Average	18.21	11.95	5.08	5.73
	Normal count	8	11	3	3
	Normal Average	26.94	15.09	18.00	21.33
	Abnormal count	13	8	17	17
	Abnormal Average	12.25	7.50	2.29	2.88
Space		2	1	1	1

Post-intervention test results: males were greater than females. Grip strength: Male: 29.18> Female: 18.29, 30 second sit-ups: Male: 16.40> Female: 13.12, Stand on right: Male: 12.8> Female: 4.51, Stand on left: Male: 9.40> Female: 5.64 (Table 3).

Table3: Post-intervention data analysis

		Post-activity			
		Grip	30-second sit-ups	Stand on right	Stand on left
Male	Average	29.18	16.40	12.80	9.40
	Normal count	1	5	4	2
	Normal Average			15.25	16.50
	Abnormal count	4	0	1	3
	Abnormal Average	21.73			4.67
Female	Average	18.29	13.12	4.51	5.64
	Normal count	11	13	3	3
	Normal Average	22.55	14.85	9.00	14.67
	Abnormal count	10	6	17	17
	Abnormal Average	12.51	8.83	3.24	3.82
Space		2	1	1	

Post-intervention test results: Most of the men improved more than women. Grip strength: Male: 3.28>Female 0.08, 30 second sit-ups: Male: 3.4>Female 1.17, Stand on right: Male: -0.8>Female: -0.57, Stand on left: Male: 2>Female: -0.09.

This study also found that women's physical function data has not improved much, but the overall physical function has improved from the abnormal 13th place to the 10th place. In the future, more collection items should be added and analysis capabilities should be strengthened to understand more in-depth factors and propose more appropriate measures.

This data collection found that data collection items should be added: factors such as inability to participate in activities, long-term and short-term diseases, etc., to understand the factors that change the physical functions of the elderly during their activities.

Conclusion

The study found that women are more sexually active than men, but their physical performance feedback is not significant. In the future, we should explore the reasons for the slow growth of women's physical functions and propose more appropriate exercise intervention measures based on these factors to improve women's physical functions. In addition, it is necessary to understand the factors that prevent men from participating in

activities and increase men's participation in activities outside the home, so as to increase the participation of elderly people in the community and improve their physical functions.

Finally, guide participants to think about their health goals, including improving physical condition, controlling weight, or increasing activity. New precise sports items are added to help the elderly exercise healthily, study happily, and age happily.

References

- Henschake, J. A. (2012, April). Modeling the preparation of adult educators. Paper presented at the meeting of Taiwan andragogy workshop. National Chung Cheng University, Chiayi, Taiwan.
- Huang, C. Y., Chang, L. Y. & Cheng, L. L. (2017). Situated learning and cooperative learning strategies for active ageing. Annual global report on Innovation in Active, Healthy and Smart Ageing Sector. Beijing Science & Technology Publishing Press.
- Kirkpatrick, D. L. & Kirkpatrick, J. D. (2006). Evaluating Training Programs: The Four Levels. San Francisco, CA: Berrett-Koehler.
- McClusky, H. Y. (1971). Education : Background issues. White House Conference on Aging, Washington, D.C.
- WHO (2002). Active Ageing: A Policy Framework. Madrid, Spain: Ageing and Life Course Program, Second United Nations World Assembly on Ageing Press.