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South Sulawesi's Padduppa Dance: Improving Physical Fitness for the Elderly

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Abstract The existence of the aging process causes a decline in work performance and a decrease in physical capacity in the elderly, and to prove the effectiveness of traditional dance gymnastics at the social services of South Sulawesi was a research goal. The subjects in this study were 50 elderly people divided into 25 pare pare (n = 01) people and 25 tendri abbeang (n = 02). The experimental method with pretest-posttest control group design was used. The experimental group (01) performed traditional gymnastic exercises with a frequency of 6 times a week for 1 month. The control group (02) did daily activities without regular (conventional) treatment with the same frequency as the experimental group. The first instrument in this study was body composition/BMI with the ATmega16 microcontroller, the second instrument was the pulmonary endurance fitness test with ROCPORT and the third instrument was the pulse test describing arterial frequency, with a frequency of exercise 6 times per week with an intensity of 60%-90% of HRR or 50%-85%voMAX with a duration of 30 minutes. The results of data analysis showed that there was an increase (n = 01) higher than (n = 02), which obtained an average pre-test of 3.06 and a post-test of 4.02 with a standard deviation of 9,272 and 9,129. The mean pre and post test showed 0.962, and the mean of both was positive, meaning that there was a tendency to increase the fitness level after and before treatment with the mean showing the number 0.962. In the t-test with a significance level of 0.05, Sig. (2-tailed) was 0.000. This value has indicated that H0 is rejected because the p-value Sig. (2-tailed) < 0.05. It can be said that Padduppa traditional dance-based physical fitness exercises are effective and significant in increasing the level of physical fitness of the elderly.

Keywords Gymnastics, Paddupa Dance, Physical Fitness

1. Introduction

The first gymnastics introduced was the German system of gymnastics. This system emphasizes the rich possibilities of movement as an educational tool. Then in 1916, the system was replaced by the Swedish system which emphasized more on the benefits of motion. This system was brought and introduced by a health officer from the Dutch royal navy named Dr. H.F. Minkema. It was through Minkema that gymnastics in Indonesia began to spread and the Indonesian morning gymnastics (SPI) began

as mass sports [1].Then Indonesian morning gymnastics series D [2] and continued SKJ physical fitness gymnastics [3], then Yangko Rambe (PAPUA) [4] above that physical fitness exercises in Indonesia starting from 1970 to 2019 in general had movements only based on the movements of Pencak Silat which continued to be modified as time went on, basically not elevating regional culture and movement art, as culture is a form of activity with a systematic pattern of movement starting from regional music and calculations on regional instrumentals that create human initiative in fulfilling their complex life needs and contain elements of joy and happiness for the elderly. Learning from the overall research above, it has not given very maximum results that meet all aspects of physical fitness. For more details, previous research was carried out in line with the development of the research era from several researchers regarding gymnastics which continued to be carried out as by [5]. Her research revealed that gymnastics can improve physical fitness in children who have aerobic elements and better breathing, and continuing research on gymnastics has a very significant effect on increasing physical fitness [6]. Therefore, the aging process for the elderly causes a decrease in work performance and a decrease in the physical abilities of the elderly [7], then to maintain physical fitness conditions, sports are needed. Types of sports that are suitable for the elderly are types of aerobic sports such as walking, swimming, and gymnastics to improve the physical fitness of the elderly [8].

Gymnastics is a sport that utilizes limb movements such as hands, feet, head and other limbs by stretching them which has benefits such as increasing lung endurance, muscle endurance, muscle strength, coordination, and IMT [9]. A good gymnastics is observed through the stages and specific ways for the functional abilities of the organs and basic systems of the body [10] while sports dancing is direction that involves the use of movements and elements in a rhythm and sequence according to predetermined music [11]. The sport of dancing is to perfectly develop the body and contribute to the development of a harmonious personality while being considered one of the less traumatic directions of sports [12]. Types of sports dance are constantly changing and transforming according to the emergence of new musical directions, rhythms and movements, therefore modern dances based on fresh and bright melodies, such as strip dance, tectonic breakdance [13]. Physical activity in Indonesia from 1970 to 2019 had movements that were basically based on movements that continued to be modified along with the times based on research from [14], physical activity is an integral part of a person's lifestyle and behaviours [8]. Fundamentally it does not prioritize regional culture and the art of movement which of course culture is a form of activity with a systematic pattern of movement starting from regional music and calculations on regional instrumentals that are created, human initiative in fulfilling their complex life needs and contains elements of joy for the elderly [15].

Added to the development of the research era, several researches of traditional dance and gymnastics continue to be done as by [16]. His research revealed that the treatment of legong dance can improve aerobic physical fitness and the breathing element is better than simple gymnastic treatment. Traditional dance has a very significant influence on increasing physical fitness [6]. The results [5] note that there are differences in the physical fitness level of elderly men and women who participate in dance studio activities and who do not participate in dance studio activities. Dance studio activities are influenced by differences in the physical activities they do in their daily lives. One of the main activities aimed at improving the performance of the elderly is constant maintenance of the body in a state of optimal physical fitness [17]. The results of several studies form the basis that increasing fitness can be linked to traditional arts and culture through gymnastics for the elderly that is fun and in accordance with the characteristics of the physical condition of the elderly while at the same time elevating local culture [18]. Dance can also develop the physical, motor, social, emotional aspects, and personality of the elderly [19]. The application of physical fitness exercises can not only increase the activities of the elderly but also be used to preserve culture [20]. Thus, in the process of implementing physical fitness exercises, especially for the elderly, we must pay attention to several aspects before carrying out activities so that unwanted things do not occur, such as body components that are not ready to accept resulting in death for the elderly. The thing that must be considered is measuring the pulse of the elderly. The frequency of arteries (clean blood vessels) that expand and contract in one minute is in response to a heartbeat. The pulse measurement method proposed by Cladius Galen realized that important information about health could be known by measuring the pulse rate. Through the pulse, you can also find out your heart rate, heart rhythm, and heart strength. Thus, checking the pulse can be a sign of whether the heart is working properly or not. Everyone's pulse rate will vary. This depends on several factors that can influence it, such as age, physical activity, fitness level, temperature, body position, emotions, body size, and consumption of certain drugs. In brief, the following is the normal number of pulses per minute according to age.

Table 1. Normal pulse rate criteria

NO	Age (year)	Denyut nadi normal/minute
1	Baby 0-1	100-160 times/minute
2	Children 1-10	70-120 times/minute
3	Teenager 11-17	60-100 times/minute
4	Adult	60-100 times/minute

The pulse can be measured by a few points in the body, such as the wrist, the inside of the elbow, and the side of the lower neck. Among all measurement points, it can be easier to find the pulse on the wrist. Here's how to measure pulse on the wrist; turn the wrist, so that the palm faces

upwards, then place the index finger and middle finger on the inside of the wrist where the arteries pass, press that part until you feel the pulse and count the pulse for 60 seconds with the help of a stopwatch. If the measurement is taken on the inside of the elbow or neck; place both fingers and press until you find your pulse and count your pulse for 60 seconds with the help of a stopwatch.

Based on previous research, it does not answer the predictions from WHO which states that the death rate for the elderly in 2025 will increase due to the elderly's fitness factor, so research is needed to pay attention to aspects of overall physical fitness. and according to the characteristics of the elderly.

Physical fitness is the ability to do daily activities or work and adapt to physical loads without causing excessive fatigue and still have reserves to enjoy free time or work that is sudden and free from stress. Disease [21]. Regulation of the Minister of Social Affairs of the Republic of Indonesia Number 5 of 2018 concerning National Standards for Elderly Social Rehabilitation is a person who has reached the age of 60 (sixty) years and over in article 6 Article 6 Elderly Social Rehabilitation aims to be able to carry out the social functions of the elderly which includes the ability to carry out the role , meeting needs, solving problems, and self-actualization; and the creation of a social environment that supports the social functioning of the elderly, whereas in Article 7 the targets of social rehabilitation for the elderly in families, communities or social institutions include neglected elderly, poor elderly families, elderly with impaired social functioning and elderly physical impairments/cheat [3].

Physical fitness gymnastics based on Traditional South Sulawesi Padduppa Dance for Elderly, on the other hand, aims to help physical fitness instructors, Traditional South Sulawesi Padduppa Dance gymnastics is made based on the level of needs of the elderly, as in the core movements in gymnastics there are 2 movements that are specifically designed to train the left and right brain like a cross all movement such as opening your feet shoulder-width apart then lifting your right knee until it touches your elbow then changing to the other side, the second hook up movement crosses the left ankle in front of the right ankle, raises your arms that have crossed towards your chin. Through this exercise movement, unconsciously the elderly can train the left and right brain to increase concentration, reduce stress, improve memory, be able to think faster, increase self-confidence and increase feelings of happiness in exercise. Thus they will be healthy, happy and productive.

2. Method

The method used was to determine groups of elderly research subjects and carry out a pretest (01) Applying padduppa dance gymnastics to the control group and conducting a post test (02). The subjects in this study were 50 elderly consisting of two orphanages, 25 from pare pare orphanages and 25 from the tendri abbeang orphanage divided into 2 groups. 01 (n=25) and 02 (n=25). The instruments in this study were body composition/BMI using the ATmega16 microcontroller, the second instrument was the pulmonary endurance fitness test with ROCPORT and the third instrument was the pulse test describing arterial frequency. With the frequency of the control group exercising 4 times per week with an intensity of 60%-90% of HRR or 50%-85%voMAX with a duration of 30 minutes, the formula for implementing BBI BMI = ((TB - 100) ±10% (TB - 100)) / (BMI) = BB (Kg) / TB (m) then the rockport test begins with warming up and stretching the whole body, especially the leg muscles and followed by walking. It was done for 10-15 minutes. At the start of the test, the timer was firstly activated. The test was carried out by brisk walking or jogging at a constant speed for 1.6 km with the age category 60-75, very poor <16, poor 16-22, sufficient 23-30, good 31-40, very good> 4. Measurement of pulse on the wrist; rotate the wrist, so that the palm faces upwards, then place the index finger and middle finger on the inside of the wrist through which the arteries pass, press that part until you feel the pulse and count the pulse for 60 seconds assisted by a stopwatch. Perform it on the inside of the elbow or neck; place both fingers and press until you find your pulse and count your pulse for 60 seconds with the help of a stopwatch. Normal number of pulses per minute according to age: infants 0-1 years normal pulse rate 100-160 beats per minute, for children aged 1-10 years 70-120 beats per minute and children aged 11-17 years 60-100 beats per minute and for adults 60 -100 times per minute.

3. Result and Discussion

3.1. Result

To find out the effectiveness of the Padduppa dance gymnastics in South Sulawesi, we tested the normality of both types of data, from the data that showed the pre-test and post-test at 0.125 and 0.091. The test is through the Shapiro Wilk test which shows a value of more than α = 0.05, meaning that the data is normally distributed. With this distribution, the average value of all data in a population so that biased or unbalanced judgments can be avoided. This can help in determining the level of normality and the occurrence of a central tendency which is crucial and should not be ignored.

Table 2. Normality test

	Fitness	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Result	*Pre-test*	.192	25	.200	.923	25	.125
	Post-test	.244	25	.200	.854	25	.091

Based on the data above the normality test are shown in table 2. The value of Lcount was obtained from the pretest and posttest data of elderly fitness gymnastics with Sig. 0.200. Therefore, it can be concluded that all pretest and posttest data of elderly fitness gymnastics are normally distributed. To test it empirically, we used the calculation using the homogeneity test with SPSS 22.0 which appears in table 3.

Table 3. Test of Homogeneity of Variances

Data			
Levene Statistic	df1	df2	Sig.
3415.500	60	51	.000

According to the analysis of the table above, it is obtained F = 3415.500; db1 = 5; db2 = 51, and p-value = 0.000 <0.05 or Ho is rejected. Then, the physical fitness data for the post-test *Treatment* and control groups were not homogeneous. To find out the comparison of the effectiveness of the 2 groups of non-homogeneous data, a non-homogeneous sample t-test was used with the name of the test in the form of *Independent Samples Tes*t using SPSS 22.0, the test results are shown in table 4.

Table 4. Test Group Statistics

	Data	N	Mean	Std. Deviation	Std. Error Mean
Group	Treatment	50	1.68	12.126	1.807
	Control	50	.75	7.999	1.192

Table 5. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Group	Equal variances assumed	.007	.007	10.744	49	.000	23.266	2.165	18.963	27.570
	Equal variances not assumed			10.744	47.4	.000	23.266	2.165	18.953	27.579

Table 4 shows that the average value of the treatment group is 1.68, the control group is 0.75 and the standard deviation is 12.126 for the treatment and 7.999 for the control. Descriptively, the fitness of the treatment group was higher and more consistent than the control group. Because the data is not homogeneous, in table 4.16 in the column *equal variances not assumed* and, in the *t-test for equality* means the numbers are 0.007, db=47.199 and sig. (2-tailed) or the p-value shows 0.000/2 = 0 <0.05 or Ho is rejected. This means that Hi is accepted so that the fitness in the treatment group given the exercise that has been applied is higher than the control group. Existing data shows that the experimental group has a significant change compared to the results of the control group so the Padduppa South Sulawesi Traditional Dance-Based Elderly Fitness Gymnastics is effective and successful for increasing the initial ability of gymnastics in the elderly.

In conducting further data analysis, it is first necessary to test the effectiveness of the padduppa dance-based elderly fitness gymnastics using the t-test with SPSS ver. 25 in the summary table below:

Table 6. Effectiveness Test

		t	df	Say. (2-tails)
Match	Pretest – Posttest	8.974	24	.000

Through the table above, it can be seen that the results obtained are t-count = 8.974, df = 24, and p-value 0.000 <0.05. Therefore, it can be concluded that there are significant differences in the results of padduppa dance-based elderly fitness exercises in the pretest and posttest data. Thus, it can be stated that the Padduppa dance-based fitness gymnastics for the elderly is very effective in improving physical fitness.

3.2. Discussion

According to the output tables above, the findings of this study show that the results obtained are t-count = 8.974, df = 24, and p-value 0.000 <0.05. As it can be concluded that there are significant differences in the results of padduppa dance-based elderly fitness exercises in the pretest and posttest data. Thus, it can be stated that the padduppa dance-based fitness gymnastics for the elderly is very effective in increasing physical fitness and can train the left brain for the elderly. In general, the elderly will also experience a decrease in cognitive and psychomotor functions if they do not do physical activity [22]. So that without maintaining fitness cognitive function includes the process of learning, perception, understanding, understanding, attention and so on, causing the reaction and behavior of the elderly to slow down. Meanwhile, cognitive function includes things related to volitional drives such as decreased movement, action, coordination, which results in the elderly becoming less agile [23]. Furthermore, proper repetition will further assist the elderly in mastering movement for the survival of the elderly. Therefore, it is necessary to repeat elderly gymnastic movements to improve physical fitness. In development [24]. As said in his research [21] successful elderly are those who are active and take part in lots of physical activities.

4. Conclusions

The elderly really needs some movements to be healthy and fit. Physical fitness gymnastics based on the traditional Padduppa dance applied in this study has proven effective and significant in increasing the level of physical fitness for the elderly.

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