



The Effect of Brisk Walking Exercise on Changes in Rheumatoid Arthritis Factor in Older Women with Rheumatoid Arthritis Symptoms

Original Article

Muhammad Faisal Majid^{1*}

¹Departement Sport Science,
Faculty of Sports Science,
Universitas Negeri Semarang

Correspondence:

Muhammad Faisal Majid,
Kabupaten Pati, Phone:
088221768721, E-mail:
faisalmajid97@gmail.com.

Abstract

Rheumatoid arthritis (RA) is an autoimmune disease in which the joints become inflamed causing swelling, pain and often eventually causing damage to the inside of the joint. Hence, physical exercise is believed could gives healing effects on health issues. The research design used by researchers is quasi-experimental designs with a pre-test – post-test group design without a control group. The results showed that there was a significant effect of brisk walking exercise on rheumatoid factor levels (IU/ml) in elderly women with rheumatoid arthritis symptoms with a significant value (Sig) <0.05. It means giving Brisk Walking Exercise to changes in Rheumatoid factor levels (RF) has a significant effect on elderly women with rheumatoid arthritis symptoms.

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INTRODUCTION

Rheumatoid arthritis (RA) is an autoimmune disease in which the joints become inflamed causing swelling, pain and often eventually causing damage to the inside of the joint [1]. Patients with Rheumatoid Arthritis (RA) worldwide have reached 355 million people, meaning that 1 in 6 people in the world suffer from RA. It is estimated that this figure will continue to increase to more than 25% by 2025 with indications of paralysis. The World Health Organization (WHO) in 2016 reported that 20% of the world's population is affected by RA. RA disease is dominated by the age group ≥ 55 years, namely 20%, while around 5-10% RA disease affects the age group 5-20 years.

RA disease also occurs in Indonesia, where it shows a high prevalence. This is proven based on the 2018 Basic Health Research (RIKESDAS) data, that the proportion of elderly aged 60 years and over with a disease suffering from RA is 67.4% independent elderly, 28.4% mildly dependent elderly, 1.5% moderately dependent elderly, 1.1% of the elderly are heavily dependent, and 1.5% of the elderly are totally dependent [2].

According to Arthritis Care and Research, exercise can stimulate increased release of endorphins. Endorphins play a role in reducing the sensation of pain by blocking the process of releasing substance p from sensory neurons so that the process of transmitting pain impulses in the spinal cord is hampered and the sensation of pain is reduced [3].

For those over 64 years of age it is more advisable to exercise muscle strength and balance. The function of exercise at that age is to improve work capacity, muscle strength, and balance and maintain stable levels in the body. Suitable exercise to do at home is aerobics, for example

walking indoors, strength training, stretching and balance training. Stationary bicycles, combination exercises, or leisurely walks outside the home are still permitted while maintaining a safe distance [4].

Brisk walking is a form of moderate activity aerobic exercise using fast walking techniques for 20-30 minutes with an average speed of 4-6 km/hour. The advantages of this exercise are quite effective in increasing the maximum capacity of the heart rate, stimulating muscle contraction, breaking down glycogen and increasing tissue oxygen, this exercise can also reduce plaque formation through increasing the use of fat and increasing the use of glucose [5]. Brisk walking exercises can be combined with muscle strengthening exercises (limited or generalized region), and exercises for flexibility, coordination, and hand dexterity as well as body fitness. Physical therapy with brisk walking exercises is effective in stabilizing RF levels [6]. In addition, the American College of Rheumatology and the American Pain Society recommend aerobic exercise and physical exercise that includes flexibility and physical endurance as well as the use of orthotics or splints.

MATERIAL AND METHODS

Based on the problems that have been formulated previously, this study aims to examine the effect of Brisk Walking exercise on Rheumatoid Factor (RF) Levels in women with old age rheumatoid arthritis. The research design uses a quantitative method that uses quasi-experimental designs with a pre-test – post-test group design without a control group which has only one group, namely the experimental group, so that this study does not require a control group [7]. In this study using instruments consisting of, 1) Brisk walking exercise tools: - SOP brisk walking exercise and stretching active which contains procedures for carrying out brisk walking exercise. - Stopwatch is used to calculate the duration of training. 2) Tools, materials and reagents for examination of Rheumatoid Factor (RF) levels.

Table 1. Instruments of the Study

Alat	Bahan	Reagensia
- Sduit 3 ml	Serum	- Latex Reagen
- Tourniquet		- Kontrol serum negatif
- Alcohol swab		- Kontrol serum positif
- Plesterin		
- Tabung Reaksi		
- Micropipet		
- Sentrifuge		
- Tangkai Pengaduk		
- Slide glass - Pinti		

RESULTS

Based on table data regarding Rheumatoid Factor (RF) Pre-Test Results in Menopausal Women with a frequency of 25 where obtained values based on the age of menopausal women with an age range of 46-55 years have negative results with a total frequency of 18 people (72%) see table 2. Based on table 3 data regarding the results of the Rheumatoid Factor (RF) Post-test in Menopausal Women with a frequency of 25 where the values obtained are based on the age of menopausal women with an age range of 46-55 years having negative results with a total frequency of 10 people (40%).

Table 2. Rheumatoid Factor (RF) Pre-Test Test Result

NO	Usia (Tahun)	Hasil					
		Positif		Negatif		Total	
		F	%	F	%	F	%
1	46-55	-	-	18	72	18	72
2	56-64	2	8	3	12	5	20
3	>64	1	4	1	4	2	8
TOTAL		3	12	22	88	25	100

Table 3. Rheumatoid Factor (RF) Post-Test Results

NO	Usia (Tahun)	Hasil					
		Positif		Negatif		Total	
		F	%	F	%	F	%
1	46-55	-	-	10	68	10	40
2	55-63	8	32	2	8	10	40
3	>64	2	8	3	12	5	20
TOTAL		10	40	15	88	25	100

Table 4 shows the data distribution in the pre-test and post-test RF groups having a significance value of ≥ 0.05 so that the data is normally distributed. Table 5 shows that the results of the homogeneity test for age are homogeneous (p value > 0.05).

Table 4. Normality test results

	Kelompok	Statistic	P
RF	Pre test	0,872	0,1
		0,898	0,1
RF	Post test	0,920	0,1
		0,952	0,1

Table 5. Homogeneity test results

Umur	f	%	P Value
46-55	20	70	0,683
56-63	3	20	0,381
>64	2	10	0,123

Table 6. Hypothesis test results

Komponen	Pre Test		Pos Test		P Value
	Mean	St Deviasi	Mean	St Deviasi	
RF	5562,40	3841,06	7412,60	4088,38	0,008
	2423,50	3195,80	2852,10	3575,27	0,008

The table 6 results show that the distance travelled in the RF group has a p value of 0.008 < 0.05 , which means that there is a significant difference before and after being given the brisk walking exercise treatment. The results showed that there was a significant difference before and after being given Brisk Walking on the levels of rheumatoid factor (IU/ml) in elderly women with symptoms of Rheumatoid Arthritis with the t -test results that the price of p 0.008 < 0.05 , which

means that there is a significant difference before and after being given the brisk walking exercise treatment. This can also be seen from the age range of menopausal women with an age range of 46-64 years having a percentage ratio of positive RF to negative RF, namely 40% and 88%. Where the positive frequency is 10 people while the negative frequency is 15 people. If the proportion of positive RF is taken from 25 samples, it will be divided by 40%.

The results of RF examinations in the elderly were almost the same as the theory which was found in a small percentage of healthy subjects and up to 20% in subjects over 65 years of age. A common finding in RA is the presence of IgM antibodies which react with the Fc IgG moiety, causing the formation of immune complexes. Antibodies against anti-IgG are referred to as RF. Immune complex deposition in joints activates the classic complement pathway [8].

DISCUSSION

The results of this study are also in line, it was found that 66.7% of rheumatoid arthritis sufferers were postmenopausal women [9]. However, furthermore, even though the positive Rheumatoid Factor (RF) test results in menopausal women were fewer than previous studies, when compared with the results of a survey. it was found that the prevalence of joint/rheumatic diseases was only 8.4%, so the results of this study are high, namely 40%. In the elderly, there is a decrease in the function of the body's systems, as we get older, the body's strength to carry out physical activities decreases. Even though there is a decrease in body strength, the elderly can still be active and productive by exercising, such as doing light basic physical activities according to their abilities and moving regularly or continuously to keep the body healthy and to prevent disease. If you don't do any physical activity in the elderly who are still healthy, it can cause various diseases due to the lack of movement of the body. Brisk walking exercise is a type of moderate aerobic exercise, which keeps muscles and joints flexible, reduces muscle stiffness, cleanses the blood by increasing lung efficiency, promotes blood circulation, reduces stress, and eases the mind, activates, and rejuvenates the skin.

CONCLUSION

The results of this study showed that there was a significant effect between brisk walking exercise and rheumatoid factor levels (IU/ml) in elderly women with symptoms of rheumatoid arthritis with a significance value (Sig) of $0.008 < 0.05$. This can also be seen from the age range of menopausal women with an age range of 46-64 years having a percentage ratio of positive RF to negative RF, namely 40% and 88%. Where the positive frequency is 10 people while the negative frequency is 15 people. If the percentage of positive RF is taken from 25 samples, it will be divided by 40%.

ACKNOWLEDGMENT

Advice that can be given to the elderly is that it is recommended that the elderly do the brisk walking routine 3 times a week on a regular basis and that health practitioners can provide education about brisk walking to the elderly, especially older women with rheumatoid arthritis symptoms.

CONFLICTS OF INTEREST

Conflict of interest : Authors state no conflict of interest.

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