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THE EFFECT OF ARAMIS EXERCISE (LOW IMPACT AEROBICS AND ERGONOMIC EXERCISE) ON PERIMENOPAUSAL COMPLAINTS IN BANDUNG CITY

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Abstract Background: The perimenopause period is a time encompassing two phases: premenopause and postmenopause. This period marks the peak experience of climacteric complaints, which can last for about 4-5 years before menopause and 3 years after menopause. Aramis Exercise (Low Impact Aerobic and Ergonomic Exercise) is a physical activity that can reduce perimenopausal complaints.
Objectives: This study was to determine the effect of Aramis Exercise on perimenopausal complaints in Bandung City.
Method: This research is an analytical study with a pre-experimental design using a one-group pretest-posttest approach. Sampling was conducted using the multistage random sampling technique, involving 38 respondents. The sample for this study consisted of women aged 45-58 years in Antapani Sub-district. Menopausal complaints were measured using the MRS (Menopause Rating Scale) questionnaire.
Results: The results showed a reduction in every type of complaint and the overall total average of perimenopausal complaints before and after the Aramis Exercise was administered. Furthermore, there was an effect of Aramis Exercise on vasomotor, psychological, urogenital, and overall perimenopausal complaints.
Conclusion: There is a significant effect before and after the Aramis Exercise, thus Aramis Exercise can be used as an alternative to reduce perimenopausal complaints.

Keywords: Premenopause, Perimenopause, Menopause, Climacterium

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BACKGROUND

A woman experiences many changes in her life, and perimenopause is one of the important phases she will go through. This period, which encompasses the premenopausal and postmenopausal stages, often marks the peak of various symptoms known as perimenopausal symptoms. These symptoms can be felt approximately 4–5 years before menopause and may persist for up to 3 years afterward. Over 80% of women experience physical and psychological symptoms during menopause, which can lead to a decline in quality of life.[1]

A total of 82.7% of postmenopausal women experience a decrease in quality of life which affects their physical function and physical role. Other research also reveals that 58.3% of women entering menopause face physical and psychological disturbances. The symptoms that arise, such as quick fatigue, dizziness, sweating, difficulty sleeping, irritability, difficulty concentrating, feelings of low self-esteem, and feelings of being unappreciated, all negatively impact the quality of life of postmenopausal women.[2] During this phase, the production of estrogen, progesterone, and other sex hormones begins to decline.

The decrease in estrogen levels can have a significant impact on a woman's body. This condition can lead to reduced function of the reproductive organs. Furthermore, the strength and elasticity of the vagina and vulvar tissues will also decline, and even all estrogen-dependent tissues can experience shrinkage (atrophy). Over time, various problems due to estrogen deficiency may emerge, such as increased levels of cholesterol and triglycerides, bone loss that can lead to osteoporosis, as well as emotional disturbances like fatigue and depression. Therefore, in order for women to live comfortably and happily, it is very important to prepare themselves by seeking treatment options that can help alleviate these complaints.[3]

There are proactive steps as an effort to address this issue to improve health and prevent negative impacts on perimenopausal women. Physical activity has proven to be a powerful approach. One such activity is Low Impact Aerobic Exercise. This exercise is safe for all ages and beginners, and it does not carry the risk of causing knee or back injuries. In addition to Low Impact Aerobic Exercise, Ergonomic Exercise can also help reduce complaints. This exercise focuses on basic movements that align with the body's structure and physiology, helping the body maintain homeostasis and stay fit. Ergonomic exercise therapy can reduce complaints often experienced by premenopausal women, such as infections, metabolic disorders, and kidney disorders related to genital organ atrophy.[4]

The perimenopause phase is the stage where the most complaints are encountered. Therefore, it is important to anticipate these potential complaints by preparing from various aspects, such as mental, economic, social, and especially physical and mental health. The goal is for women in the perimenopausal age to remain healthy, active, independent, and productive both socially and economically. Hence, both women and healthcare professionals must pay serious attention to the problems that arise in old age, starting from perimenopause, menopause, up to postmenopause.

The research by Evalina (2019) shows that approximately 80% of respondents felt a reduction in complaints after performing aerobic exercise movements. This proves that aerobic exercise movements have a significant influence on reducing climacteric complaints, and with the decrease in these complaints, the quality of life of women in their old age can substantially improve. [5] [6]

Several previous studies have highlighted the effect of aerobic exercise on psychological complaints, sleep quality, bone density, and estrogen hormone reduction, with studies conducted in various regions such as Bogor and Lombok. However, similar research is still rare in Bandung City itself. Therefore, this study will focus on vasomotor, psychological, and urogenital complaints in perimenopausal women in Bandung City. The

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author is very interested in conducting this research to provide a real contribution to improving the quality of life for women in their productive age in Bandung City. [7]

METHODS

S*tudy setting and design*

This study is a quantitative research with a pre-experimental design, specifically a one-group pretest-posttest design.

Study population and sampling procedure

The population in this study is all women in Bandung City aged 45-58 years (perimenopausal age). The sample for this study are women aged 45-58 years in Antapani Sub-district. The sampling technique used in this research is multistage random sampling.

Data Collection and Variable measurement

This study is using the MRS (Menopause Rating Scale) questionnaire to measure menopausal symptoms in respondents before the intervention (pretest). Subsequently, the respondents were given the intervention, which is Aramis Exercise, once a week for 4 consecutive weeks, after which the MRS (Menopause Rating Scale) questionnaire was given again to re-measure the menopausal symptoms experienced by the respondents (posttest). Data analysis used the Wilcoxon Test.

Ethic Consideration

The studies involving human participants were reviewed and approved by the Research Ethic Committee from Poltekkes Kemenkes Bandung (No.25/KEPK/EC/II/2024). The participants provided their written informed consent to participate in this study.

RESULT AND DISCUSSION

Respondent Characteristics

Table 1.1 Respondent Characteristics

Characteristics	n	%
Mother's Employment Status		
Employed	2	5,2
Unemployed	36	94,8
Total	38	100
Education		
Completed Primary School/Equivalent	9	23,6
Completed Junior High School/Equivalent	13	34,2
Completed Senior High School/Equivalent	15	39,5
Completed Higher Education / Completed University	1	2,7
Total	38	100
Marital status		
Married	37	97,3
Divorced/Widowed	1	2,7
Total	38	100

Based on Table 1.1, the respondent characteristics show that the majority of mothers' employment status (94.8%) is unemployed/not working, the majority of mothers' marital status (97.3%) is married, and (39.5%) of respondents' highest educational attainment is Senior High School/equivalent.

The respondents studied were women aged 45-58 years in Antapani Sub-district. The majority of respondents were unemployed/not working. Most respondents' educational backgrounds were Junior High School and Senior High School graduates. The majority of respondents' marital status was married (still having a partner). Based

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on research by Maita et al., employment, education, and marital status do not affect menopausal complaints.[8]

Education does not directly affect menopausal complaints, however, women with a higher level of education generally have a better understanding of health because they find it easier to process and absorb information. Higher education generally broadens a person's insight. Nevertheless, individuals with low levels of education do not always have low knowledge, as knowledge can also be obtained through non-formal education. Women who can receive information well will be more health-conscious, thus being more accepting of their body changes and preparing what is necessary to deal with those body changes, including changes during the climacteric phase.

Percentage of vasomotor, urogenital, and psychological complaints before and after the Aramis exercise intervention

Table 1.2 Percentage of Complaints Before and After Intervention

Complaint	Before		After	
	n	%	n	%
Vasomotor:				
Mild	20	52,6	33	86,8
Moderate	13	34,2	5	13,2
Severe	5	13,2	0	0
Very severe	0	0	0	0
Psychological				
Mild	23	60,5	35	92,1
Moderate	13	34,2	3	7,9
Severe	2	5,3	0	0
Very severe	0	0	0	0
Urogenital				
Mild	24	63,1	37	97,3
Moderate	13	34,2	1	2,7
Severe	1	2,7	0	0
Very severe	0	0	0	0

Based on Table 1.2, the results show that severe complaints became non-existent, moderate complaints decreased, and mild complaints increased for vasomotor, psychological, and urogenital complaints.

The Effect of Aramis Exercise on All Perimenopausal Complaints

Table 1.3 The Effect of Aramis Exercise on Total Perimenopausal Complaints

Type of Complaint	n	Complaint Score Before Aramis Exercise				Complaint Score After Aramis Exercise				Mean rank	*p-value*
		Mean	Median	SD	Min-Max	Mean	Median	SD	Min-Max		
Total	38	14.58	13.00	4.464	9-30	5.92	4.50	3.686	3-19	19.50	0.000

Based on Table 1.3, the effect of Aramis exercise on all perimenopausal complaints is shown with a p-value of 0.000, which indicates a significant influence of Aramis exercise on perimenopausal complaints.

Based on the research findings, there is an effect of Aramis Exercise on all complaints, with statistical calculation using the Wilcoxon Test yielding a p-value of

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0.000, meaning there is a significant effect of Aramis Exercise on all perimenopausal complaints. This is in line with Rosita's research, which states that properly performed Aramis Exercise can benefit physical fitness. Regularly performing Aramis Exercise can provide benefits including: physical benefits (improving blood circulation), psychological benefits (reducing stress), and social benefits (making a person more confident and expanding communication networks).[9] The reduction in perimenopausal symptoms felt by respondents after performing Aramis Exercise is due to the increased production of beta-endorphins by the pituitary gland, which can raise beta-endorphin levels in the blood and flow to the brain, there by reducing pain due to decreased anxiety, depression, and fatigue.[9] These findings align with the research by Rini and Hanum (2016), which found a significant effect in reducing urogenital complaints, and the research by Sasnitiari and Mulyati (2018), which found an effect of Low Impact Aerobic Exercise on reducing perimenopausal complaints. Physical activity can increase bone mass, help counteract the decrease in bone mineral density, prevent osteoporosis, reduce lower back pain, and physical activity is also proven to help reduce stress, enhance mood, and decrease hot flashes.[10] The combination of all movements can reduce the perimenopausal complaints commonly experienced during the climacteric phase.

The Effect of Aramis Exercise on Types of Perimenopausal Complaints

Table 1.4 The Influence of Aramis Exercise on Types of Perimenopausal Complaints

Type of Complaint	N	Complaint Score Before Aramis Exercise				Complaint Score After Aramis Exercise				Mean rank	*p-value*
		Mean	Median	SD	Min-Max	Mean	Median	SD	Min-Max		
Vasomotor	38	5.29	4.00	2.381	2-12	2.39	2.00	1.764	1-8	18.50	0.000
Psychological	38	5.03	4.00	1.924	2-10	2.03	1.00	1.479	1-6	19.50	0.000
Urogenital	38	4.26	4.00	1.554	2-9	1.53	1.00	1.006	1-6	18.50	0.000

Based on Table 1.4, there is an effect of Aramis exercise on vasomotor, psychological, and urogenital complaints with a p-value of 0.000

There are 3 types of perimenopausal complaints experienced by women, which include vasomotor complaints, psychological complaints, and urogenital complaints.

The Effect of Aramis Exercise on Vasomotor Complaints

Vasomotor symptoms are the most common symptoms seen during the menopausal transition years. Hot flashes begin with a sensation of flushing that spreads to the upper body, resulting from changes in the central nervous system specific to thermoregulation. Hot flashes can affect the daily quality of life as well as the sleep of some women.[11] This condition may be exacerbated by alcohol, smoking, obesity, lack of physical activity, and emotional stress.[12] Hot flashes are caused by the resetting and narrowing of the thermoregulatory system in response to the variability of estrogen and FSH levels.[13] Decreased serotonin levels and increased norepinephrine levels are also suspected to play a role in the onset of these symptoms. [14] [15]

Based on the research findings, for vasomotor complaints, the average result before intervention was 5.29 (moderate category) which decreased to 2.39 (mild

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category) after the Aramis exercise intervention, meaning there was a reduction in vasomotor complaints. This aligns with the theory that Aramis exercise can increase endorphin production in the hypothalamus. Studies show that active individuals have higher basal endorphin levels compared to inactive individuals. Through this mechanism, exercise can help stabilize the thermoregulation center and reduce the risk of hot flashes. These results are consistent with the research by Sasnitiari and Mulyati (2018), where 73.9% of respondents experienced a reduction in vasomotor complaints.[16]

The results of the statistical test for vasomotor complaints yielded a p-value of 0.000, meaning there is an effect of Aramis exercise on vasomotor complaints. This finding is consistent with other research showing a significant difference in the mean scores of vasomotor disturbance (p-value = 0.00) between before and after aerobic exercise. This indicates that low impact aerobic exercise influences vasomotor symptoms. Physical exercise is associated with a reduction in osteoporosis, osteopenia, falls, and fractures. Physical activity is beneficial for improving cardiovascular fitness (aerobic), muscle strength (endurance), flexibility (stretching), and balance.[17]

In this regard, exercise, especially aerobic exercise, causes changes in capillary supply that allow for the exchange of heat, gases, and metabolic waste, activating the function of enzymes and hormones, particularly the estrogen hormone or female hormones. Similarly, other research confirms that regular exercise or physical activity affects the neurotransmitters that regulate central thermoregulation and leads to a decrease in vasomotor symptoms in women entering the premenopausal period.[18]

After aerobic exercise, the number and size of mitochondria become larger for the formation of the phosphate compound Adenosine Tri Phosphate (ATP). ATP is a high-energy phosphate compound that stores energy in the body and prevents the body from becoming easily fatigued. This research also shares similarities with other theories stating that aerobic training can decrease symptoms of easy fatigue or exhaustion, night sweats, hot flashes, and increase muscle mass.[18]

Aerobic exercise reduces hot flashes because a group of hormones or catecholamines with a catechol group is released by the adrenal gland in response to stress on the central nervous system involved in temperature regulation in the hypothalamus, and the impact of estrogen deficiency or reduction on adrenergic nerve function plays a role in this complaint. A significant reduction or deficiency of estrogen causes vasodilation within the hypothalamus. This vasodilation causes an increase in temperature within the hypothalamus and a response that leads to a decrease in core body temperature.[18]

This low-impact aerobic exercise requires body coordination and a lot of energy, which affects the improvement of physical fitness and the functional capacity of two body systems: the cardiovascular system and the respiratory system. The increased work of these two systems boosts metabolism and enhances aminergic synaptic transmission in the brain in the form of serotonin and dopamine hormones produced during aerobic exercise, thereby influencing the mind and body and increasing a feeling of relaxation. Another effect of low-impact aerobic exercise is on the Nucleus Supra Chiasmatic (NSC) part of the brain, located in the anterior hypothalamus, which forms a sleeping rhythm pattern. The NSC stimulates the release of the melatonin hormone, which causes people to feel sleepy and eventually fall asleep.[18]

The occurrence of increased body metabolism due to the burning of body calories while performing Low Impact Aerobic Exercise. The burning process causes the body to warm up, but afterward, when resting, the body will experience a decrease in temperature. From this process of moving from hot to cool, the body will produce the hormone melatonin, which functions to help us get quality sleep and regulate sleep time.[18]

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When performing ergonomic exercise, a sense of calm will arise in the mind. This tranquility is beneficial for the body to relax and rest all organ activities and organ systems after a day of activity. This tranquility causes the adrenaline hormone to relax, thereby relieving fatigue and muscle pain.[19]

The Effect of Aramis Exercise on Psychological Complaints

Estrogen receptors are located in various regions of the brain that regulate mood and cognition, and the decline in estrogen levels affects mood. Furthermore, estrogen has a mediating effect on serotonin and noradrenaline transmission, both of which can benefit mood.[20] Some mood changes may be due to changes in personal life and social circumstances, rather than hormonal changes.[11] A higher risk of depressive symptoms and greater severity of depressive symptoms occur during perimenopause compared to premenopausal women.[21]

The result of the statistical test for psychological complaints yielded a p-value of 0.000, meaning there is an effect of Aramis exercise on psychological complaints. Other research explains that the statistical analysis result has a significant value of p = 0.00. Low impact aerobic exercise can reduce psychological complaints. For psychological complaints, the average result before the intervention was 5.03 (moderate category), which decreased to 2.03 (mild category) after the intervention, meaning psychological complaints also showed a reduction after the Aramis exercise intervention. This aligns with the theory that the physical activity of Aramis exercise causes the pituitary gland to increase the production of beta-endorphins; the concentration of beta-endorphins rises in the blood which is also delivered to the brain, thereby reducing pain, anxiety, depression, and feelings of fatigue.[9] This research is consistent with other studies that show a reduction in psychological complaints in 91.3% of respondents.[16]

Based on Grindler's theory, mood changes might be caused by alterations in personal life and social circumstances, rather than hormonal changes. This Aramis exercise was conducted in an open field accompanied by upbeat music, and the respondents also met each other, establishing interaction among them; therefore, Aramis exercise is effective in improving mood. Routine physical exercise is associated with improvements in poor mood and anxiety.[17]

Exercise with moderate and low-impact intensity is highly recommended to physiologically support premenopausal women's reproductive health. Exercise can stimulate all body systems to function well; furthermore, exercise also acts as a stimulant for the production of the endorphin hormone or body morphine, which provides a feeling of freshness, comfort, and joy, provided it is performed appropriately and according to the body's needs.[18]

The Effect of Aramis Exercise on Urogenital Complaints

The vaginal mucosa thins, and vaginal elasticity decreases. These changes can lead to vaginal dryness, burning, pruritus, and irritation. Symptoms of urinary frequency and urgency are common, as there are estrogen receptors in the bladder and urethra. Urethral atrophy can cause frequency, urgency, and dysuria.[11] The reduced effect of estrogen during menopause can also lead to recurrent urinary tract infections due to increased bacterial colonization in the vagina with bladder pathogens, resulting from an increase in vaginal pH during menopause.[22]

The result of the statistical test for urogenital complaints yielded a p-value of 0.000, meaning there is an effect of Aramis exercise on urogenital complaints. Other research showed a significant value of p=0.03. This indicates that the results of this study are consistent with previous research. For urogenital complaints, the average result before the intervention was 4.26 (mild category), which decreased to 1.53 (mild category) after the intervention. Although the scale remained in the mild category, the average complaint

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score decreased, which means psychological complaints showed a reduction after the Aramis exercise intervention. According to Rini and Hanum's research, ergonomic exercise can induce a relaxation response. The release of endorphins inhibits trigger cell activity, thus closing the substantia gelatinosa gate and reducing or slightly transmitting pain impulses or complaints to the brain, a condition that can help the client achieve a state of calm. This state of relaxation is felt because relaxation exercises can provide gentle massage to various glands in the body, reduce cortisol production in the blood, and restore adequate hormone release, thereby bringing emotional balance and peace of mind. Consistent with previous research, 73.9% of respondents showed a reduction in urogenital complaints after being given ergonomic exercise.[4]

The 'burning sitting' movement is a movement to strengthen the waist muscles and strengthen the kidneys; performing prostration while in the burning sitting position or with the instep of the feet touching the floor will burn fat and toxins in the body.[23] It is this movement that affects the reduction of urogenital complaints experienced by women.

CONCLUSION

Based on the results of the research on the effect of Aramis Exercise (Low Impact Aerobic and Ergonomic Exercise) on perimenopausal complaints in Bandung City, it can be concluded that there was a reduction in every type of complaint and the overall total average of perimenopausal complaints before and after the Aramis Exercise was given, meaning that the Aramis exercise had an influence on perimenopausal complaints.

COMPETING INTERESTS

All authors had none to declare

AUTHOR'S CONTRIBUTION

Wulan Ayu Lestari conceived of the presented idea, data analysis, writing manuscript, of data collection and analysis; and drafting the manuscript. Chris Sriyanti, Wiwin Widayani and Neneng Widaningsih as an academic supervisor and advisor. All authors contributed to the final manuscript.

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