



## NON-PHARMACOLOGICAL INTERVENTION OF PAIN LEVELS IN RHEUMATOID ARTHRITIS PATIENTS: LITERATURE REVIEW

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### ABSTRACT

Rheumatoid Arthritis is an inflammatory disease in the joints that causes the immune system to attack its own tissues. Complaints are caused by swelling, pain, and stiff joints. The main problem in patients with Rheumatoid Arthritis that causes physical activity becomes disrupted. It may be necessary to administer pharmacological or non-pharmacological management to reduce pain in patients with Rheumatoid Arthritis. This literature aimed to improve non-pharmacological therapies to reduce the source of the scientific research literature related. The method used begins with selecting topics. The keywords were determined: rheumatoid arthritis, recovery, non-pharmacological treatment to search Indonesian or English journals through databases, including the National Library, Garuda portal, and Google Scholar. This search was published for journals from 2016 to 2020. Journals that have been found are then selected based on criteria based on predetermined PICO. Non-pharmacological interventions from journals that were found to involve a decrease in Rheumatoid Arthritis patients' intensity were evident from an average decrease in the recovery scale before and given non-pharmacological interventions.

**Keywords:** Pain, Rheumatoid Arthritis, Non-Pharmacological Treatment

### Introduction

Rheumatoid Arthritis is an autoimmune disease that occurs when its own immune system attacks the body. This causes inflammation that causes pain and stiffness in the joints and limbs. Rheumatoid Arthritis can attack all joints in the human body, especially joints in the wrists, knuckles, knees, ankles<sup>1</sup>.

In the world, people with Rheumatoid arthritis have reached 335 inhabitants. This number will continue to grow, and by 2025 it is estimated that more than 25% will experience paralysis, bone damage, and joint disease (Andriana, 2016).<sup>2</sup>

According to Riskesdas (2018), the prevalence of joint disease at age  $\geq 15$  years

has decreased. Namely, in 2013, it may be 11.9%, and in 2018, it is likely to be 7.3%. Joint disease is mostly found at the age of 75 years and over, namely 18.9%, the joint disease occurs mostly in women, namely 8.5% and occurs in rural areas, namely 7.8%<sup>3</sup>.

Rheumatoid Arthritis can cause several health problems, including medical problems (pain), psychological (anxiety due to pain, difficulty sleeping and restlessness), economy (decreased family income due to the side effects of Rheumatoid Arthritis and drug use. synthesis), and social (disruption of environmental interactions). This is due to the effects of Rheumatoid Arthritis.

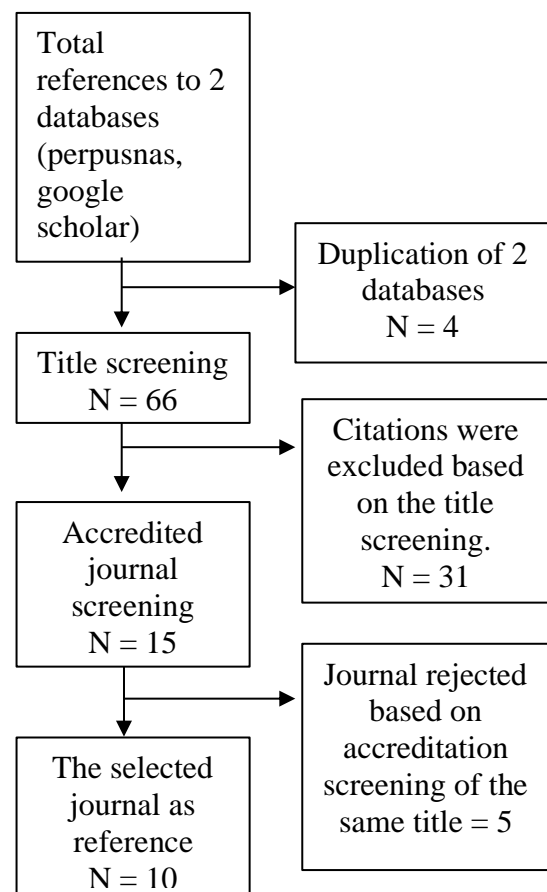
Rheumatoid Arthritis is characterized by pain and deformity. This is due to inflammation of the lining of the synovial joint. Pain in people with Rheumatoid Arthritis must get serious treatment because it disrupts daily activities. After all, the pain that arises can cause the patient to feel uncomfortable, decreased productivity due to fear of severity when used to moving, and the patient is at risk of falling. There can be disruption of stable body balance so that the sufferer becomes dependent on others.

There are 2 treatments for pain, namely pharmacological management and non-pharmacological management. In pharmacological management or the management of drugs used to reduce pain in people with Rheumatoid Arthritis, namely non-steroidal drugs with one of the serious side effects, namely gastrointestinal bleeding<sup>2</sup>. Other types of drugs that are commonly used are DMARD, corticosteroids, and anti-depressant drugs. In providing therapy, the doctor will provide a drug with the mildest side effects, but it is still not effective, so that the doctor will give a drug with heavier side effects. Non-pharmacological or alternative management can be used to reduce pain, including physiotherapy, occupational therapy, hand exercises, podiatry, diet, and complementary therapy.

## Methods

The purpose of this literature review is to identify non-pharmacological therapies to reduce pain in Rheumatoid Arthritis patients. Articles or journals are collected through the Google Scholar database, National Library, and Garuda Portal using keywords: rheumatoid arthritis, pain, non-pharmacological management. Articles or journals are selected based on PICO criteria, published in the period 2016-2020 and in Indonesian or English. Subsequent articles were evaluated using the PRISMA guide. From the evaluation results, 11 article journals were reviewed. The PRISMA

diagram for determining literature is as follows



## Results and Discussion

Table 1. Summary of Selected Journal Results

Author	Purpose	Design and Population	Intervention	Outcome
Fitra Pringgayuda, Idayati, Purwati Indiaresti (2020)	To determine the effect of wet cupping therapy on pain changes in patients with Rheumatoid Arthritis.	The research used Quasy Experimental with one group pretest-posttest design without a control group. The population consisted of Rheumatoid Arthritis patients aged 30-50 who went to the Sukoharjo Community Health Center. The number of samples is 16 people.	Measure blood pressure and interview about pain scale in Rheumatoid Arthritis patients using a numerical pain scale. Then performed wet cupping therapy (Kangzhu Cupping Kit) After being given wet cupping therapy, then after 15 minutes, the pain scale was measured again in the Rheumatoid Arthritis patient.	The average pain scale before being given cupping therapy was 5.31 with a standard deviation of 0.793. After being given cupping therapy, the average pain scale decreased, namely 4.0, with a standard deviation of 0.89. The statistical value is 0.001, which means that there is an effect of giving wet cupping therapy on the pain scale in patients with Rheumatoid Arthritis.
Oop Ropei, Suharjiman, Ismi Dara (2018)	To know the difference between Benson relaxation and warm compresses' effectiveness in reducing the pain of Rheumatoid Arthritis in the elderly.	This study used a quasi-experimental pretest-posttest design. The sampling technique used non-probability sampling with a consecutive sampling method. Statistical analysis using the dependent T-test. This study's population was elderly, amounting to 22 respondents divided into 2 groups, namely 11 respondents with the Benson relaxation intervention and 11 respondents with warm compress intervention.	Measuring the pain scale in Rheumatoid Arthritis patients as a pretest value. After the intervention was given, the measurement of back pain was carried out as a posttest score. Benson relaxation is done every 2 days with a duration of 10-20 minutes for 2 weeks. Warm compress is done once a day with a duration of 20-30 minutes for 2 weeks.	The average pain scale for Rheumatoid Arthritis before the Benson relaxation intervention was 6.46 with a standard deviation of 1.572. The average pain scale for Rheumatoid Arthritis before the warm compress intervention was 5.09 with a standard deviation of 1.221. The mean of the Rheumatoid Arthritis pain scale after the Benson relaxation intervention was 3.00 with a standard deviation of 1.342. The Rheumatoid Arthritis pain scale after warm compress intervention was 2.82 with a standard deviation of 1.471. The T-test result is $p = 0.765$ , and the T value is 0.303, which means that there is no significant difference in the mean of Rheumatoid Arthritis pain with Benson relaxation therapy and warm compresses.
Sunarti dan Alhuda (2018)	To determine the effect of warm compresses with red ginger on pain scales in patients with Rheumatoid Arthritis.	This type of research is pre-experiment with one group pre-post test design. Statistical test using the Wilcoxon signed-rank test. The sampling	Measuring the pain scale of Rheumatoid Arthritis patients for the pretest value.	The mean pretest pain scale in Rheumatoid Arthritis patients was 3.60 with a standard deviation of 940.

		<p>technique was the purposive sampling technique.</p> <p>The population in this study were 20 elderly respondents who experienced Rheumatoid Arthritis.</p>	<p>A warm compress of red ginger was applied using a washcloth for 20 minutes.</p> <p>After being given a warm red ginger compress, the pain scale was measured for the post-test value.</p>	<p>The average posttest pain scale in Rheumatoid Arthritis patients was 2.60 with a standard deviation of 940.</p> <p>The results of the Wilcoxon signed-rank test value <math>p = 0.000</math>, which is that there is an effect that is offering a warm ginger compress on pain of Rheumatoid Arthritis.</p>
Etri Yanti, Eliza Arman, Dwi Christina Rahayuningrum (2018)	<p>Knowing the effectiveness of red ginger (<i>Zingiber Officinale Rosc</i>) and lemongrass (<i>Cymbopogon Citratus</i>) compresses pain in the elderly Rheumatoid Arthritis.</p>	<p>This type of research is a Quasy Experiment with a posttest control group design research design. The sampling technique was purposive sampling—statistical analysis using independent T-test.</p> <p>The number of samples was 24 respondents divided into 3 groups, namely 8 respondents in the ginger compress group, 8 respondents in the lemongrass group, and 8 respondents in the control group.</p>	<p>Measuring the pain scale using Numeric Analog Visual (NAV) on patients for the pretest value</p> <p>In the red ginger group, a warm compress was applied to red ginger using a washcloth for 20 minutes and carried out for 7 consecutive days.</p> <p>In the lemongrass group, warm compresses were given to lemongrass using a washcloth for 20 minutes and carried out for 7 consecutive days.</p> <p>After being given the intervention to compress ginger and compress lemongrass for the post-test value, measuring the pain scale again after being given the intervention.</p>	<p>The average pain scale in the red ginger compress group was 3.94, with a standard deviation of 1.237.</p> <p>The average pain scale in the lemongrass compress group was 1.88, with a standard deviation of 0.835.</p> <p>The statistical value of red ginger is <math>p = 0,000</math>, and the value of lemongrass is <math>p = 0.001</math>, which means that a warm compress using red ginger is more effective than a warm compress using lemongrass.</p>
Marlina Andriani (2016)	<p>Knowing the effect of warm lemongrass compresses on reducing the intensity of Rheumatoid Arthritis pain in the elderly.</p>	<p>This type of research is a pre-experimental design with one group pretest and posttest design. The sampling technique uses a total sampling technique—statistical test using the T-test.</p> <p>The population in this study amounted to 20 respondents.</p>	<p>Measuring the pain scale of the respondent through interviews using a numeric twig scale for the pretest value.</p> <p>Then do a warm lemongrass compress for 20 minutes using a washcloth.</p> <p>Conducting observations by assessing the measurement results using the Wong Barker scale (face scale) for the posttest scores.</p>	<p>Before being given warm lemongrass compresses, the average pain scale value was 4.90 with a standard deviation of 1.071.</p> <p>After being given a warm lemongrass compress, the average value of the pain scale was 2.95 with a devasi standard of 1.099.</p> <p>The statistical value, namely <math>p = 0.000</math>, means that warm lemongrass compresses Rheumatoid Arthritis pain.</p>
Pera Siahaan, Nurhayati	<p>Knowing the effectiveness of back massage on the intensity</p>	<p>This research is experimental research with one group pretest-posttest design—</p>	<p>Measuring the pain scale using the Rheumatoid Arthritis Pain Scale (RAPS) for the pretest value.</p>	<p>The average pain scale before back massage intervention was given, namely 2.</p>

Siagian, Yunus Elon (2017)	of moderate rheumatic pain scale in older women in Karyawangi Village, West Bandung Regency.	statistical test using paired sample t-test. The number of samples in this study was 17 respondents.	Intervening back massage using baby oil for 30 minutes 2 days After being given intervention using the Rheumatoid Arthritis Pain Scale (RAPS) for the post-test value, measuring the pain scale.	The average pain scale after back massage intervention was 1.2. The statistical value is $p = 0.05$ , which means that there is an effect of giving back massage interventions on Rheumatoid Arthritis pain.
NK. Matalia Gandari, A.A.K Ngurah Darmawan dan NK. Budiadnyani (2019)	Knowing the effect of ergonomic exercise on pain changes in the elderly with rheumatism in Sada Jiwa Banjar Pasekan, Sembung Village, Mengwi District, Bandung Regency.	This research is a pre-experimental study with a one-group pretest and posttest design. The sampling technique is the Total Sampling—statistical test using the Wilcoxon test. The population in this study was 30 respondents.	Measuring pain in respondents for the pretest value. Provide ergonomic exercise interventions. Measuring pain in respondents after being given ergonomic exercise intervention for posttest scores.	The average pain scale in the pretest was moderate. The average pain scale in the post-test is mild. The statistical test value is the value of $p = 0.000$ , which means an effect of ergonomic exercise on the level of pain in the elderly with rheumatism.
Ridhyalla Afnuhazi (2018)	Knowing the effect of rheumatic exercise on reducing pain scale in older adults aged 60-80 years with rheumatism at PSTW Kasih Sayang Ibu Batusangkar.	This type of research is the Quasy Experiment pre posttest with the control group. The sampling technique was purposive sampling—a statistical test using a dependent t-test. The population in this study were 16 respondents.	Measuring the pain scale using the Numerical Rating Scale for the respondents for the pretest value. Providing rheumatic exercise intervention for 8 minutes. Measuring the back pain scale for respondents using the Numerical Rating Scale after being given the intervention.	The average pain scale in the pretest was 3.19, with a standard deviation of 0.403. The average pain scale on the posttest was 2.75 with a standard deviation of 0.447. The statistical test value is the value of $p = 0.004$ , which means that there is an effect of rheumatic exercise therapy on the rheumatic pain scale.
Istianah, Hapipah dan Elisa Oktaviana (2020)	Knowing the effect of a combination of yoga exercises with Open Kinetic Chain Exercise using keroncong music to reduce Rheumatoid Arthritis pain in Mekar Sari Village, Narmada, West Lombok.	The population in this study was 43 respondents.	Conducting assessments on residents to determine people's knowledge about Rheumatoid Arthritis, assess pain scales and measure blood pressure. Conduct health education about Rheumatoid Arthritis. Doing a combination of open kinetic chain exercise yoga interventions using keroncong music for 30 minutes is done weekly.	The average level of knowledge before being given health education is less. The average level of knowledge after being given health education was sufficient. The mean pretest blood pressure levels were systolic blood pressure 140.2 and diastole 83.9. The average posttest blood pressure levels were systolic blood pressure of 132.8 and diastole 81.8. The average pretest pain scale was mild as many as 24 respondents.

			Reviewing knowledge about Rheumatoid Arthritis after being given health education, after 10 minutes of doing yoga exercises, pain scales and blood pressure were carried out for the post test.	The average posttest pain scale was mild as many as 28 respondents.
Nova Maulana (2019)	Knowing the effect of yoga Pranayama therapy and aromatherapy on reducing rheumatoid arthritis pain in the elderly at Panti Wredha Budhi Dharma Yogyakarta.	This research method is pre-experimental with a pretest posttest approach. The sampling technique used purposive sampling—test analysis using Wilcoxon. The population in this study were 20 respondents.	Measuring the pain scale using a numerical scale on the respondent for the pretest value. Then the intervention of yoga pranayama therapy and giving aromatherapy for 20 minutes in 2 weeks. Measuring the pain scale again using a numerical scale after being given the intervention for the posttest score.	The mean pretest pain scale was 5.35 with a standard deviation of 0.587. The average posttest pain scale was 2.60 with a standard deviation of 0.681. The statistical test result is the value of $p = 0000$ , which means that there is an effect of giving pranayama yoga therapy and aromatherapy on the rheumatoid arthritis pain scale.

There are 2 pain impulse transmitters in the human body that can deliver pain sensations and other sensations, such as warmth, cold, touch, etc. There are 2 types of impulses, namely small and large diameter impulses. Small diameter impulses are A-delta and C fibers that function to transmit pain, which is hard. These receptors are free nerve endings present on all skin surfaces and in deeper body structures, namely tendons, fascia, bones, and internal organs. Meanwhile, large-diameter impulses such as A-beta fibers have receptors located on the body's surface structure, and their function is to transmit other sensations, such as vibrations, touch, sensations of hot or cold sensations, and subtle pressure. A-beta impulses have inhibitory or inhibiting properties, which are transmitted to C and A-delta fibers.

According to the gate control theory, pain sensation depends on large and small nerve fibers' action because they are both in the root of the dorsal ganglion. When there is stimulation in large nerve fibers, it will increase the substance gelatinous, which causes the mechanism to close so that T cell activity is inhibited. The stimulation of large fibers will directly stimulate the cerebral cortex. Furthermore, it will be returned to the spinal cord via efferent fibers, and this reaction affects T cells' activity. The stimulation of small fibers causes the substance gelatinous to be inhibited and makes the door to the mechanism open. This causes T cell activity to be stimulated, which then delivers pain stimulation.

#### a. Warm compress

Warm compress interventions to reduce or relieve pain by reducing or eliminating stimulation at nerve endings or blocking the direction of pain impulses going to the brain. Applying a warm compress to the body will cause a signal to the hypothalamus through the spinal cord. When the receptors sensitive to heat stimulation appear on the hypothalamus, the effector system will emit a signal that causes sweat to start and peripheral vasodilation. What regulates changes in the size of the blood vessels, namely the vasomotor center in the medulla oblongata of the brain stem, under the influence of the hypothalamus

in the anterior part so that the vasodilation phase occurs. When vasodilation occurs, the oxygen supply to the tissues runs smoothly, and tissue metabolism increases due to smooth blood flow. The temperature for a warm compress is 38 ° - 40 ° C.

The gate control theory reveals that when giving a warm compress can cause the release of endorphins in a natural pain killer that comes from the body blocking the transmission of pain stimuli, in neuromodulators there is a closure of the defense mechanism by inhibiting the release of substance P, activating larger and more A-beta sensory nerve fibers. Fast. This process can reduce pain transmission through small diameter C and delta-A fibers, at the synaptic gate closure of pain transmission occurs.

The research of Oop Ropei, Suharjiman, and Ismi Dara (2018), "The Effectiveness of Benson Relaxation and Warm Compress on Rheumatoid Arthritis Pain in the Elderly at the Tresna Werdha Karawang Social Protection House," in this study, giving warm compresses was done once a day with a duration of 20-30. minutes in 2 weeks. The tool used to compress warm is using a washcloth.

Several plants can be used for warm compresses to reduce pain, including ginger and lemongrass. The content of ginger is nutritious for reducing pain because ginger has several properties, including spicy, bitter, and aromatic derived from oleoresin—Oleoresins in ginger, such as zingerone, gingerol, and shogaol. Oleoresin has strong anti-inflammatory and antioxidant properties. The zingerone content in ginger functions to inhibit prostaglandin synthesis so that pain can be reduced. Prostaglandin is a compound in the body that is a pain mediator from inflammation or inflammation. Prostaglandins are made from arachidonic acid in the body's cells with the cyclooxygenation (COX) enzyme's help. If there is an obstacle in the cyclooxygenase enzyme, prostaglandins cannot be formed. In ginger, there is also water and oil content, which functions as an enhancer. The enhancer function increases the permeability of oleoresin to penetrate the skin without irritation or damage to the peripheral circulation.

Sunarti and Alhuda's research (2018), "The Effect of Red Ginger (*Zingiber Officinale* Roscoe) Warm Compress on Decreasing the Scale of Rheumatoid Arthritis Pain in the Elderly at the UPT Social Services for the Elderly and Toddlers in the Binjai and Medan Region," in this study ginger compresses were given for 20 minutes using the washcloth.

Lemongrass contains essential oils with chemical properties and pharmacological effects, namely spicy and warm taste, which can be used for anti-inflammatory (anti-inflammatory), and can relieve pain analgesic, and can improve blood circulation. Other content in lemongrass, namely: antioxidants, which function to prevent cancer, and anti-microbial and anti-bacterial functions to treat infections. In the lemongrass plant, there is an enzyme, namely the cyclo-oxygenase enzyme, which functions to reduce inflammation, which is absorbed through the skin in areas where inflammation occurs.

Marlina Andriani (2016) "The Effect of Warm Lemongrass Compress on the Decrease in Pain Intensity of Rheumatoid Arthritis in the Elderly," in this study, warm lemongrass compresses were applied for 20 minutes using a washcloth.

In Etri Yanti's research, Eliza Arman and Dwi Christina Rahayuningrum (2018) "The Effectiveness of Giving Red Ginger (*Zingiber Officinale* Rosc) and Lemongrass (*Cymbopogon Citratus*), red ginger is more effective than warm compresses using lemongrass. This is because the content of natural antioxidant compounds in ginger is quite high.

#### b. Cupping

Cupping has a role in removing substances that cause pain, namely substances that occur due to death or inflammation in tissues such as bradykinin and histamine. The occurrence of expenditure on these substances plays a role in reducing pain and plays a role in reducing the occurrence of inflammation that occurs in the sick body part. When cupping therapy is carried out in the body, there is an activity in the nerve pathways that transmit pain signals to the brain, and this is due to the strong suction of the cupping device. Each time the

suction process occurs, it will stimulate the nerves on the skin surface. The stimulation is continued to the spinal cord's posterior horn through the A-delta and C nerves and a thalamic Spino fracture towards the thalamus, which will produce endorphins. While the other half of the stimulation will be continued through sympathetic afferent fibers that go to the motor neurons and cause reflex sympathetic intubation, this causes generalized pain intubation through endorphin and segmental sympathetic cycles. The occurrence of a balance of activity from sensory neurons and descending control fibers from the brain will regulate the process of defense. A balance of activity occurs from delta-A and C neurons, which release substance P, which aims to transmit impulses through defense mechanisms. There are mechanoreceptors. Beta A neurons have a thicker shape, which more quickly releases inhibitory neurotransmitters. If the more dominant insertion of beta-A fibers will result in the defense mechanism's closure, this is the basis of therapy for pain relief.

In the research of Fitra Pringgayuda, Idayati, and Purwati Indiaresti (2020), "Wet Basin Therapy for the Back Area Reduces Joint Pain in Rheumatoid Arthritis Patients," in that study, the measurement of pain after cupping therapy was given after 15 minutes of intervention because the body had already undergone a process of repairing microcirculation in blood vessels that arise as a result of the relaxing effect (relaxation) of the stiff muscles by the suction of the cupping device.

#### c. Benson

The Benson relaxation technique combines relaxation response techniques and individual belief systems or faith factors that are pronounced repeatedly with regular rhythms and followed by a resigned attitude. This technique focuses on certain expressions in the form of God's names or certain words that have a calming meaning for the patient. Certain contents that are read repeatedly involve elements of belief, faith in religion, and God, who are believed to be more likely to cause a strong relaxation response than just relaxation without involving elements of belief.



In the research of Oop Ropei, Suharjiman, and Ismi Dara (2018), "The Effectiveness of Benson Relaxation and Warm Compress on Rheumatoid Arthritis Pain in the Elderly at the Tresna Werdha Karawang Social Protection House," in this study, Benson relaxation was carried out every 2 days with a duration of 10 - 20 minutes. For 2 weeks.

#### d. Back Massage

Providing back massage interventions will have the effect of reducing anxiety and muscle tension. This stimulation of muscle massage causes an increase in delta A nerve fibers and C fibers' excitability and releases substance P in the afferent nerves. In mechanoreceptors (touch apparatus: skin), there are defense mechanisms, and in the center of the descending nerve cortex release endogenous opiates. Endogenous opiates are endorphin hormones that function to relieve pain to block or decrease pain impulses. The release of opiate receptors can be stimulated by stimulation of the skin through massage. Opiate receptors are located on peripheral sensory nerve endings.

In Pera Siahaan's research, Nurhayati Siagian and Yunus Elon (2017) "The Effectiveness of Back Massage Against the Intensity of Moderate Rheumatic Pain in Elderly Women in Karyawangi Village, West Bandung Regency," in this study, back massage was carried out for 2 days with a duration of 30 minutes per days using baby oil.

#### e. Gymnastics

Prayanama yoga is very suitable for the elderly because, in this yoga, the movement used is lighter, namely only breathing techniques to be suitable for older adults who have decreased body function. Breathing regulation or control prana is by stopping the inhalation process and exhalation of the exhalation that is done after doing a sitting position. Yoga breathing techniques control breathing and thoughts. This serves to strengthen the respiratory system, reduce fatigue, thoughts, and emotions so that patients can feel calm and the pain they feel can be reduced. The mechanism of breathing exercises in yoga against the physical changes that occur, namely starting from creating an atmosphere of

conscious relaxation so that the body can release the muscle tension that occurs. When the body begins to relax, the respondent's breath will become slow and deep so that the respiratory system in the body can rest. With a slowdown in the rhythm of breathing, the heart rate slows down and can positively influence the entire circulatory system and the heart to rest and rejuvenate. If the rejuvenation process has occurred, the pain will be reduced.

In Nova Maulana's (2019) study "The Effect of Yoga Pranayama and Aromatherapy on Decreasing Rheumatoid Arthritis Pain Levels in the Elderly at Panti Wredha Budi Dharma Yogyakarta 2019", in this study, yoga pranayama was given for 2 weeks duration of 20 minutes.

Yoga with Open Kinetic Chain Exercise Using Keroncong Music. Yoga exercise relaxes the body to stimulate alpha waves in the brain, which are connected to a state of relaxation and mental alertness. The provision of a combination of kinetic chain exercise yoga exercise interventions using keroncong music has a direct psychological impact, which helps create a feeling of relaxation, reduce tension and increase feelings of pleasure. This happens because when pituitary gland exercise increases the production of beta-endorphins. Another effect of exercise is to increase nerve distribution in the brain by increasing parasympathetic neurotransmitters (norepinephrine, dopamine, and serotonin). With the increase in beta-endorphin production so that the pain you feel is reduced.

The Istianak, Hapipah, and Elisa Oktaviana research (2020), "Combination of Yoga Exercise with Open Kinetic Chain Exercise Using Keroncong Music to Reduce Rheumatoid Arthritis Pain in Mekar Sari Village, Narmada, West Lombok," in this study, yoga exercise interventions using keroncong music was carried out twice. In 2 weeks with a duration of 30 minutes.

Rheumatic Gymnastics. Rheumatic exercise interventions focus on joint movement while stretching and strengthening muscles. Providing rheumatic exercise interventions will affect the work of the cerebral cortex in cognitive and emotional aspects so that the

effect that arises is a positive perception and relaxation. This can balance homeostasis in the body through the HPA Axis to produce Corticotropin Releasing Factor (CRF). Then CRF will stimulate the pituitary gland to reduce ACTH production so that there is an increase in endorphin production, which results in a decrease in the production of cortisol and other stress hormones and causes pain to be reduced.

Ridhyalla Afnuhazi's research (2018), "The Effect of Rheumatic Exercise on the Reduction of Rheumatic Pain in the Elderly," rheumatic exercise in this study was given for 8 minutes.

Movement in ergonomic gymnastics is a movement that is very effective, efficient, and logical because the series of movements are a series of prayer movements that have been carried out by humans since ancient times until now. Ergonomic gymnastics is a combination of muscle movements and breathing. There are 2 movements in ergonomic exercise, namely the perfect standing motion and bending body movements. When the standing movement is perfect, the effect that arises is that all nerves become one point in control in the brain, and the awareness of the mind controls the mind to be healthy and fit. When the body bends down, the effect that arises is the intake of oxygen to the head and increased blood flow to the upper body, especially in the head, stimulating a relaxation response in the body from all physical and mental stress. When the relaxation response has appeared, endorphin release occurs, which causes trigger cell activity to be inhibited. Inhibition of trigger cells causes the gelatinous substance's gates to close, and the pain impulse is reduced or slightly transmitted to the brain, causing the patient to calm down and the pain to decrease.

## Conclusion

Rheumatoid Arthritis is an autoimmune disease or occurs when its own immune system attacks the body. This causes inflammation that causes pain and stiffness in the joints and limbs. This review shows many non-pharmacological treatments that can be given to patients with rheumatoid arthritis pain in the literature. Methods with non-

pharmacological management are proven to reduce the pain scale in patients with rheumatoid arthritis. Non-pharmacological management does not directly reduce the pain scale to normal limits, but non-pharmacological management does not have side effects such as pharmacological management.

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