



A LITERATURE REVIEW ON EFFECT OF CLINICAL MAT PILATES ON HEALTH-RELATED QUALITY OF LIFE IN MENOPAUSAL WOMEN

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ABSTRACT

Physical, psychological, and social changes are carried by the hormonal shifts resulting from menopause and the climacteric.

OBJECTIVE: The research was to evaluate the effect of a Pilates based exercise program on the standard of living of climacteric women, as it is thought that the movements utilized in Pilates have an impact on mental as well as physical fitness.

METHOD: The authors gathered reviews including of comprehensive randomised controlled trials, systematic reviews, and experimental research through looking PubMed and Google Scholar regarding the effectiveness of Mat Pilates exercises in menopausal women.

RESULT: All the articles taken for the review has shown that Mat Pilates exercises had a significant effect in maintaining and increasing muscles strength in menopausal women. the whole text of the articles was gathered. A Twenty of the thirty identified articles were selected for review.

KEYWORDS: Mat Pilates Exercise, Menopausal Changes, Climacteric Changes, Health Related Quality Of Life, Menstrual Symptoms, Physical And Mental Changes

INTRODUCTION

Menopause is the irreversible end of menstruation followed on by ovarian follicular function reduction. usually happens around the age approximately 45 to 55. After a year of amenorrhea, which is caused by the irreversible loss of ovarian function, menopause is identified. The menopausal age is 51.4 years on average. Menopause can cause a woman to have a longer or shorter menstrual cycle, miss periods, have a heavier or lighter period, experience hot flashes and night sweats, have trouble sleeping, have mood swings or changes including sadness and anxiety, have joint pain and stiffness in their musculoskeletal system, sometimes experience weakness in their lower extremities, and have vaginal dryness that makes it difficult to have sexual relations.

The anterior pituitary gland cyclic inhibition by oestrogen is broken, enabling the gland to continue secreting luteinizing hormone (LH) and follicle-stimulating hormone (FSH). Atrophic changes are observed, the uterus contracts, the ovaries reduce in size, the endometrium thins, and the cervix becomes smaller and secretes less. The fornices deepen and the vaginal wall atrophies, losing its elasticity. The vagina's fluids become less acidic, making an infection more likely. The genital tract and a prolapse tendency are the result of the supportive components failing. The labia become flatter and more prone to gaping, infection (vulvitis)

may ensue, and pubic hair decreases. Oestrogen shortage affects the synovial membrane, muscles, ligaments, tendon collagen, bones, and joint capsule.

Women have long faced a range of emotional and physical problems, from minor to severe. Clinical mat Pilates has demonstrated to be beneficial in increasing both the quality of existence and the strength of muscles. Occasionally, during the menopausal era, the symptoms may intensify due to the decline of hormones.

Prior till the mid-1980s, the Pilates Method was primarily unknown outside of the dance community. However, in the last ten years, the method has quickly acquired popularity, overcoming its relative obscurity. The Pilates method consists mostly on a very modest number of exercises. It is an approach to training and bringing the body and mind together as one. Joseph Pilates opened and operated a gym in New York between the latter half of the 1920s and the 1960s. He wrote two volumes outlining his methodology. First came P. Freidman and G. Eisen's 1980 book "The Pilates Method of Mental and Physical Conditioning." The books "Your Health" and "Return to Life Through Controllogy," which Pilates cowrote with W. J. Millar, were published in 1945.



Each exercise develops intentional and economical movement—a "minimum of motion" and smooth succession that are then included in daily living. He explains the way his thought process has developed and includes several exercises that you may do at home.

Clinical mat Pilates is a helpful intervention for menopausal women, even though the exercise benefits both physical and mental health, including flexibility and balance. The person's strength and flexibility have increased because of a clinical mat Pilates exercise program because breath control helps to relax the

muscles. A mat exercise using Pilates have been shown to improve muscle strength and flexibility, and they may also lessen the deleterious effects of menopause on function. Since there is no physical contact, the activity is less hazardous than different types of exercise since there's a lower risk of musculoskeletal harm. Additionally, it enhances quality of life, dynamic postural stability, muscle strength, muscular flexibility, and core strength.

The benefits of the Pilates technique on enhanced muscle strength, flexibility, motor skills, posture, pain management, and personal autonomy have all been investigated and validated.

Sr No.	AUTHOR	YEAR	STUDY	SAMPLE SIZE	SUMMARY
1	Maryam Abdoshahi	2023	Experimental study	32	An Experimental study on "The Impact of Pilates Training on Mental Health and Happiness Among Untrained Menopausal Women." Based on the research, it is advised that menopausal women take part in Pilates and other physical training programmes to enhance their mental health.
2	Anjali Bais, Pratik Phansopkar	2020	Comparative Study	42	It is A comparison between the Progressive Muscle Relaxation Technique and Pilates training Regarding the standard of living of menopausal women. 42 volunteers who are over 45 years old were split up into two groups. at random: Group A (n = 21) and Group B (n = 21).
3	Maria Carrasco-Poyatos, et. al.	2019	Randomized Control Trail	20	A Randomized Controlled Trail on "Pilates vs. Muscular Training In Older Women. Effect In Functional Factors and The Cognitive Interaction." omen over the age of 60 who were between 60 and 80 were asked to take part in the research. The appraisal and statistical analysis were conducted by blinded research personnel. Pilates should be suggested for upgrading older women's overall functional condition; however, muscle building exercises are efficient for developing static balance. Both training regimens work well to increase the total amount of lean body mass. Some aspects of functional autonomy interact with the cognitive function.
4	Nathalia Regina Sabatini Gandolfi, et. al	2019	Longitudinal study	40	Longitudinal research carried out on "The influence of the Pilates metho on quality of life and bone remodelling in older women: a controlled study" This study's aim was to assess how the Pilates approach affected a group of elderly women's quality of life and indicators of bone remodelling.: the Pilates class had a 50-minute Pilates exercise session once a week for 20 weeks, while the group under control didn't either. quality-of-life evaluation ratings for physical functioning and physical component summary improved in the Pilates group. Bone remodelling indicators showed no alterations.



5	Małgorzata Długosz-Bo's, et. al.,	2017	Experimental Study	50	An experimental study conducted on Impact of Three Months Pilates Training on Balance and Fall Risk in Older Women, 50 participants were included and split into two groups at random. The Pilates programme given for 60 min, twice a week for 6 months. Prior to and after the instruction cycle, all women underwent an assessment using Timed Up and Go (TUG), the One Leg Stance Test (OLST), a test performed on a Free step baropodometric platform, and the tests performed on a Biosway platform The Limits of Stability (LoS) test and the Modified Clinical Test of Sensory Interaction on Balance (mCTSIB) performed on a closed eyes on an unstable surface indicated statistically significant variations in the experimental group. The alterations listed above weren't statistically significant. in relation to the control group. Pilates training affected the participants' balance by improving LOS and reducing fall risk.
6	Daniele Tavares Martins-Meneses, et. al	2014	Experimental Study	44	An Experimental Study on "Mat Pilates Training Reduced Clinical and Ambulatory Blood Pressure In Hypertensive Women Using Antihypertensive Medications. During the pre- and post-experimental periods, the following factors were assessed: body mass, height, body mass index, waist and hip circumferences, flexibility, and the strength of the right and left hands. They were also compared to each other. They were also compared to each other. In all cases tested (clinical, 24 h, awake, and sleeping), TG demonstrated statistically significant improvements both within and across groups for the systolic, diastolic, and mean BP. MP reduces ambulatory and clinical BP in hypertensive women using antihypertensive medicines. These findings back up the suggestion that MP be used as a non-drug therapy for hypertension.
7	Gustavo RodrÃ-guez-Fuentes, et. al.,	2014	Observational study	27	Observational research on the benefits of Pilates on quality of life of premenopausal women. There were 27 females in the sample, ranging in age from 38 to 63. The plan of Pilates-based exercises was created in groups. For 12 straight weeks, a Pilates plan was performed twice a week for 60 minutes. The Health Questionnaire SF-36, Spanish Version 2 (SF-36v2) was employed to assess the quality of existence in the pre and post the intervention. The SF36v2 questionnaire's 8-dimension scores showed statistically significant differences.



8	Fatma ARSLAN, et. al.,	2012	Experimental Study	66	An Experimental study on “Evaluation of The Effect of Pilates Mat Exercise Program On Some Fitness Parameters And Weight Loss Of Middle Aged Perimenopausal Sedentary Women.” 66 middle-aged, overweight, inactive women who experience hot flushes participated in this research as volunteers. Women who were sedentary provided their body weight, body composition (measured by the skinfold calliper), waist hip ratio, waist circumference, and body fat %. In addition, individuals filled out a questionnaire with questions about menopausal bleeding patterns, including vasomotor symptoms. The measurements were taken twice: once prior to and once subsequent to a 6-week set of one-hour exercises performed three days a week as part of a Pilates mat training programme. it was discovered that sedentary women's hot flushes from vasomotor symptoms were greatly reduced by Pilates mat activity. The results validate the impact of Pilates mat workouts on body composition measurements and weight loss. Women going through the menopause transition may benefit over the long run from Pilates mat workouts
9	Meenakshi Kalhan, et. al.,	2020	Cross-sectional Study	400	A Cross-sectional Study, on “Prevalence of Menopausal Symptoms and Its Effect On Quality of Life Among Rural Middle Aged Women (40-60 Years) Of Haryana, India. Data were gathered for sociodemographic parameters, pertinent menstrual history, and other variables. The rating scale for menopause was employed in order to determine the prevalence of menopausal symptoms and the QOL. Menopausal symptoms that were discovered to be 87.7% prevalent. Among the research participants, 70.2% had a reduced QOL. The low QOL was caused by the psychological disorders in 70.8% of cases.
10	Fareha Khatoon, et. al.,	2018	An Observational Cross-Sectional Study	300	An Observational Cross-sectional Study, on ‘Assessment Of Menopausal Symptoms Using Modified Menopause Rating Scale (MRS) In Women Of Northern India.’ For a whole year the research was carried out in the Obstetrics and Gynaecology Department of Era's Lucknow Medical College and Hospital in Lucknow. The Modified Menopause Rating Scale (MRS) was used to evaluate menopausal symptoms. . Joint and muscle soreness (87%), low mood (70%), heart discomfort (60.3%), physical and mental tiredness (60%) and sleep issues (56%) were the greatest often reported symptoms. Hot flushes, the most common menopausal symptom, were reported by 53.3% of women. More symptoms that included additional prevalent in descending order were



					irritability (46.6%), anxiety (40.3%), bladder issues (26%), vaginal dryness (23%), and sexual issues (20%). women from lower socioeconomic origins and those without a formal education were demonstrated to be more prone to experience symptoms of menopause, and this difference was determined to be statistically significant.
11	M. Rakibul Islam, et. al.,	2014	A Comprehensive & Systematic Literature	MEDLINE, EMBASE, PsycINFO, CINAHL, SCOPUS	<p>A Systematic Review.” on June 2013, MEDLINE, EMBASE, PsycINFO, CINAHL, SCOPUS, and Google Scholar were used to obtain all English-language studies that had data on the appearance of menopausal symptoms in women residing in Asian nations. Utilising a risk of-bias technique specifically created for the systematic evaluation of prevalence studies, the risk of bias of the included research was evaluated. criteria were satisfied by 23 independent research. Among psychological, vasomotor, and sexual complaints, physical symptoms were the most frequent. Physical symptoms predominate, followed by psychological problems, vasomotor symptoms, and sexual symptoms. To determine whether the discrepancies in prevalence reporting are a result of methodological problems or because of racial, cultural, or other socioeconomic inequalities, Further investigation with representative samples is required.</p>

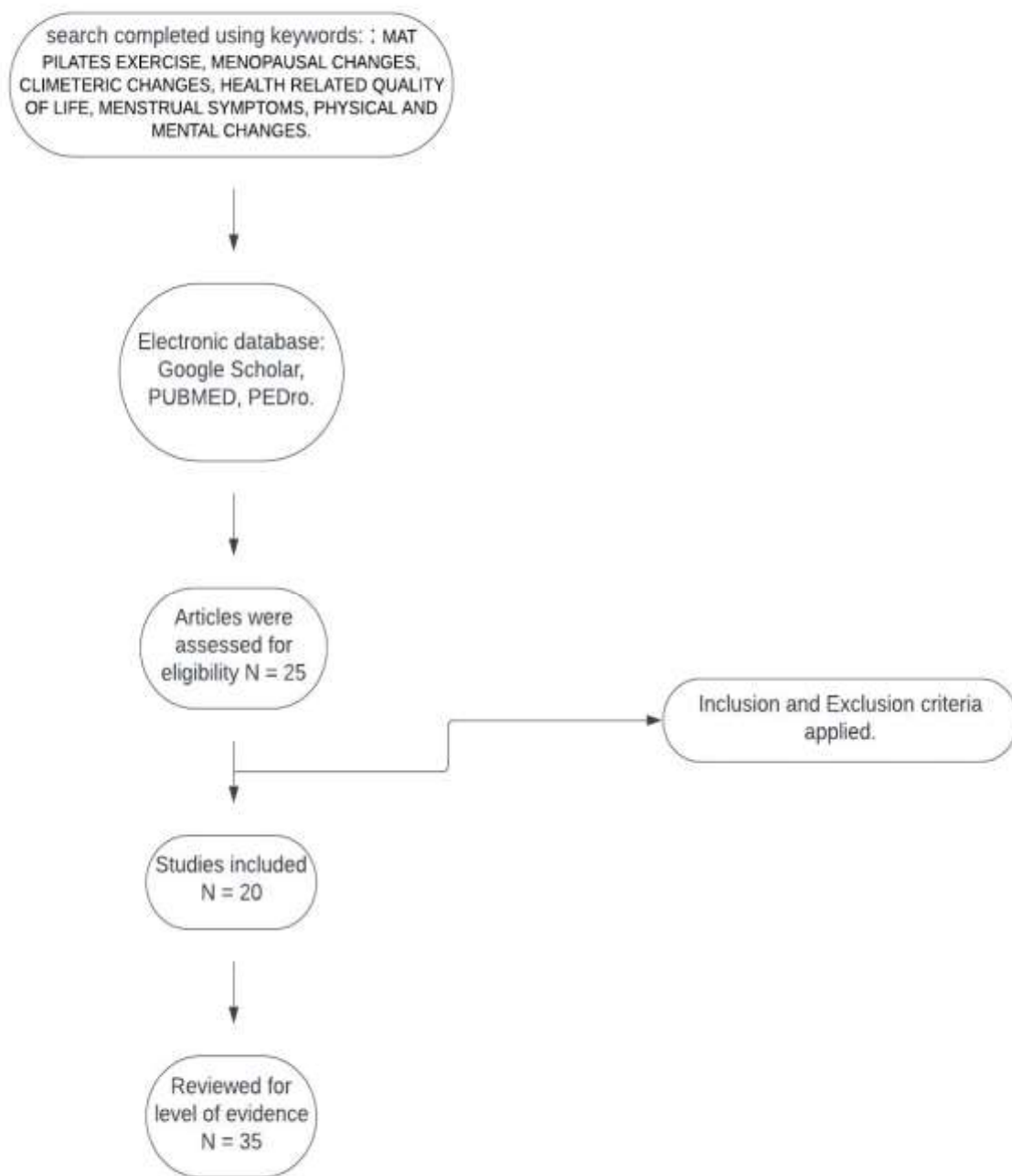
12	Sashimalar Mathialagan, et. al.,	2022		321	<p>“menopause Rating Scale (MRS) In Malay Language-Translation and Validation in A Multi ethnic Population Of Selangor, Malaysia.” An expert who is multilingual translated the English version of MRS into Malay and then back translated it A panel examined the translated version of MRS to assess its face validity. The Menopause Rating Scale's Malay translation of the English version demonstrated exceptional construct validity, test-retest reliability, and reliability.</p>
13	Peter Francis, et. al.	2019		199	<p>“Age-Group Differences in the Performance of Selected Tests of Physical Function and Association with Lower Extremity Strength.” Peak torque (PT) of the knee extensors (KE) was measured from a maximum voluntary isometric contraction. Participants next had 5-repetition and 30-second chair rise tests, a 900-m gait speed test, and 10-m maximum and habitual gait speed tests. Extended physical performance Tests ought to be applied in aging research on healthy older adults.</p>



14	H. Dwi Susanti, et. al.,	2019		30	Construct Validity of The Menopause Rating Scale in Indonesia. The MRS measures psychological, somaticvegetative, and urogenital symptoms using 11 items collected from participants' regularly symptom logs. According to the findings, the MRS's short sufficient construct validity for the questionnaire for assessing the signs of menopause in Indonesian women.
15	Professor H. P. G. Schneider, et. al.	2017			Accurate health-related quality of life (HRQOL) assessments is essential for clinical practise, research, health treatments, and health planning. This study addresses the important measurement characteristics of HRQOL instruments, factors influencing health status, and the HRQOL measures that are currently accessible. Specifically, each HRQOL measure created for use at the climacteric is addressed in terms of its reliability, validity, and usefulness. Depending on the person or community being examined, it is important to use tools that have undergone validation.
16	Klaas Heinemann, et. al.	2004	A Methodologic al Review		“The Menopause Rating Scale (MRS): A Methodological Review.” In-depth evaluations on the authenticity and reliability of the MRS are based on a large international survey from 2001–2002 that was conducted in 9 countries across 4 continents. To provide a preliminary assessment of test-retest reliability, several little convenience samples were employed. The information was centrally examined. To calculate discriminative validity, information from post marketing HRT research was employed Despite the fact that the test-retest reliability sample size was modest, reliability metrics (consistency and test retest stability) were found to be good across nations. Validity: MRS internal organisation was very consistent across nations, leading experts to believe that the scale accurately reflects the same occurrence in symptomatic women. The methodological data that is now available reveals that the MRS scale has good quality for measuring and comparing HRQoL of ageing women across time and across different geographic locations. It also suggests high reliability and high validity as far as the construct validation procedure could be finished yet.
17	Kloubec, JA.	2010	Experimental study	50	Pilates to enhance posture, balance, flexibility, and muscle endurance. This study sought to ascertain how Pilates exercises affected balance, posture, upper-body muscular endurance, hamstring flexibility, and abdominal endurance. For twelve weeks, two one-hour sessions of a 12-week Pilates program were offered to fifty individuals. According to this research study, people can improve their muscular endurance and flexibility through Pilates at a comparatively modest intensity exercises.



18	Erick KM, Michael AH, et al.	2004	Experimental Study	47	<p>An experimental study on “Repeated Utilizing Chair Stands to Assess Lower Limb Strength in Older Adults Women”. sit-to-stand (STS) For older persons, performance is frequently utilized as a stand-in for strength in the lower limbs.</p> <p>Furthermore, it is unknown how Ankle, knee, and hip joint strength that is bilaterally isokinetic relates to older persons' STS performances. Both the 30-second chair STS test and the 5-chair STS test were the two STS tests used by the authors to assess these associations in sexagenarian women. The majority of STS Difference was not explained showing that significant other variables are also involved in finishing the action, even while the strength of the hip flexor, knee extensor, and ankle plantar flexor are important for executing the STS movement.</p>
19	Kang Hee Cho, et al.	2012	Survey Study	86	<p>A survey study on “Effect of the Lower Limb Power on Falls and Balance of the Elderly To evaluate the impact of the lower limb strength on falls and balance in older people living in a community as determined by lower limb strength and balance assessments and a health status questionnaire. A total of 86 participants (69.8±5.3 years old) were divided into two groups: "Fallers" and "Non-fallers". Thirty-one The group consisted of participants who had at least one incident of an unexpected fall within the previous year. "Fallers", and the remaining 55 those who weren't familiar with a fall within the previous year, "non-fallers According to this research, the "Chair stand test" is a helpful screening method for lower limb strength, which is correlated with elderly people's risk of falls and balance.</p>
20	Lee CW, Hyun J, Kim SG.	2013	Experimental Study	40	<p>An experimental study on “Influence of Pilates Mat and Apparatus Exercises on Pain and Balance of Businesswomen with Chronic Low Back Pain” The objective of the research was to examine the influence of mat Pilates and apparatus Pilates on entrepreneur women with persistent back pain's pain and static balance. Participants were chosen at random allocated to Pilates mat exercises (PME) or Pilates apparatus exercise (PAE), and performed the appropriate Pilates exercises thrice a week for eight weeks. Using the those who weren't familiar with Visual Analogue Scale (VAS), Degree of pain was measured. PME showed greater improvement in pain level and balance compared with PAE in this research.</p>



Literature Search Methodology

Pedro and Google Scholar are two search engines on the internet that are utilized for journal collection. The articles were identified by the authors using the keywords. The full texts of the articles were gathered. A total of 40 to 45 articles were identified in which 20 articles were selected for the study.

Study Selection

Inclusion Criteria

1. The articles in which there is discussion of the effects of Mat Pilates Exercises were included.
2. The articles which are published in English language are included.
3. The articles with full text from year 2004 to 2023 were included.



Exclusion Criteria

1. The articles which were in other languages were excluded.
2. The articles which were below 2004 were excluded

DISCUSSION

The most definition indicator of the end of a woman's reproductive cycle is the menopause. For most women, the menopause typically lasts from 40 to 60 years of age. Throughout the course of a woman's life, female sex hormones have a variety of effects on her health and wellbeing. Women experience extraordinary hormonal changes in the middle years as a result of ovarian aging and the menopausal transition on that followed. The menopausal transition on stage includes a rise in the blood concentration on of follicle-stimulating hormone (FSH) and a fall in the concentration on of oestradiol, both of which vary greatly between individuals. As people age, their muscle and bone mass diminish, increasing their chance of developing osteoporosis and sarcopenia in later life. Pilates is a well-known form of exercise that combines control over posture, movement, and breathing. It has been widely used in programs for physical training and rehabilitation on. Pilates embraces a set of exercises that integrate flexibility, breathing, posture, and muscular quality.

The escalating work is adjusted to the abilities and limitations of the patients and can be integrated into an individual or group-based program. Moreover, the current study's findings support Shah's assertion on that Pilates evenly targets each muscle group through a combination on of dynamic and static strength training, thereby strengthening the entire body. Every body part is taken care of. Additionally, we practice all three planes of motion: sitting, laying, and standing. This suggests that despite the absence of using large weights, the muscles are exercised in a variety of ways, resulting in a consistent and extremely deep strength and tone. Pilates develops strength from the inside out, starting with the deep core muscles that support the body during movement and working out to the limbs. Pilates also increases endurance through both individual and group activities.

There was a study in which it was evaluated to see how lower extremity muscular strength and postural stability were affected after eight weeks of core stability training with Pilates. 40 Subjects in good health were split up into two groups at random: twenty members of the core stability training (CST) group and twenty members of the control group. For eight weeks, the CST group an ended three 60-minute Pilates weekly training sessions, whereas the control group got no training at all. We used isokinetic equipment to test lower extremity muscular strength before and after training, and a balancing device was used to measure postural stability. The CST group showed significant post-test increases in postural stability and lower limb muscle strength ($P < 0.05$). But in the group under supervision, there was minimal change in either of these metrics' notable variations in the lower extremities.

The total data from these investigations emphasizes the many advantages of Pilates instruction on for the range of demographics and health issues. Pilates is a flexible and effective exercise technique with wide-ranging implications for health promotion and preventing illness, especially in menopausal and middle-aged women, in addition to those who experience chronic low back discomfort or hypertension. It can improve physical fitness criteria, decrease chronic pain, enhance mental well-being, as well as control cardiovascular risk factors. To further understand the underlying mechanisms and enhance the application of Pilates interventions for optimizing health outcomes across a range of demographic populations, more research is recommended.

CONCLUSION

However, it was shown that mat Pilates exercises were useful in enhancing menopausal women's quality of life and physical strength. Many studies suggest that mat Pilates exercises can help reduce menopausal symptoms, which enhances quality of life and increases physical and muscle strength.

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