

Effectiveness of Advanced Allied Therapies for Enhancing Exercise Capacity and Quality of Life in Peri- and Post-Menopausal Women: A literature review

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Abstract:

Menopause is a profound physiological shift for women and it is frequently accompanied by symptoms that severely reduce exercise capacity and quality of life. Although menopausal hormone treatment (MHT) can successfully reduce certain symptoms, interest in non-pharmacological alternatives has grown due to worries about possible side effects. Exercise, especially strength training, aerobic activity, mind-body techniques, and pelvic floor muscle training, has been shown to enhance physical function and lessen symptoms such as genitourinary pain, muscle atrophy, and bone density loss. Nutritional approaches, like the Mediterranean diet and sufficient protein intake, offer widespread advantages for inflammation, body composition, and metabolic well-being. Additionally, complementary therapies such as acupuncture and cognitive behavioral therapy (CBT) have demonstrated marked improvements in vasomotor symptoms, sleep issues, and psychological distress. A comprehensive literature review was performed to pinpoint guidelines for therapies that enhance exercise capacity and overall quality of life in women experiencing perimenopause and postmenopause. This narrative review incorporated 18 studies that met the selection criteria for innovative and cutting-edge allied interventions. These studies were identified using keywords associated with perimenopause, postmenopause, exercise capacity, quality of life, and complementary therapies. The study was finished using electronic resources like PubMed, Google Scholar, Medline, and Research Gate. While individual treatments show promise, evidence indicates that integrated, multimodal approaches, which tackle interconnected menopausal changes, yield the most comprehensive benefits. Nevertheless, additional research is required to standardize interventions, evaluate long-term outcomes, and enhance accessibility.

Keywords: Exercise, Yoga, Qigong, Tai-chi, Mindfulness, Cognitive Behavioral Therapy, Diet, Accupuncture

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Introduction:

Menopause marks the end of a woman's reproductive years. During this time, the ovaries stop functioning and produce fewer peptide and steroid hormones. These changes, along with the natural aging process, trigger a variety of physiological shifts in the body. While most menopausal symptoms are temporary and not dangerous, they can still cause significant discomfort and impair the daily lives of many women. The long-term effects of hormonal fluctuations on the body's various organ systems are far more concerning than the acute symptoms of menopause. Consequently, extensive research has focused on how menopause impacts the skeletal and cardiovascular systems in particular [1, 2]. Hormonal alterations

during menopause and the natural aging process have detrimental effects on both systems [1, 2]. Hormonal therapy is widely used in various communities and is recommended by doctors to help with both the short-term and long-term symptoms of menopause. Hormonal treatments have been suggested to alleviate both the immediate and long-term consequences of menopause. But these treatments have also raised concerns about an increased risk of acquiring several forms of uterine and probably breast cancer. The use of hormone treatment raises complex issues regarding whether the financial and health concerns are worth the benefits [3]. After menopause, women spend a significant portion of their lives. In 1990, there were around 467 million women aged 50 and over in the

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world. By 2030, this figure is expected to increase to 1200 million [4].

1. Navigating Menopause and its Impact on Health

1.1. Defining Menopause and its Stages

The permanent end of menstruation is a significant biological occurrence known as menopause. Retrospectively, after 12 consecutive months of amenorrhea with no other pathological or physiological causes, the World Health Organization (WHO) Scientific Group on Research in the Menopause defines natural menopause as the cessation of menstruation due to decreased ovarian follicular activity [5]. The mean age of menopause is around 51 years old, although it can start in the 30s or as late as the mid-50s [6]. The menopausal transition (before the last menstrual period [FMP] with increased cycle unpredictability), perimenopause (shortly before FMP and the first year after), and postmenopause (after FMP) are the three major stages according to WHO [5]. Menopausal symptoms are caused by declining levels of progesterone and estrogen, especially estrogen. More severe symptoms are frequently the result of menopause that occurs prematurely (before age 40) or after oophorectomy or iatrogenic ovarian ablation [7].

1.2. Common Physiological and Psychological Symptoms of Menopause

With prevalence and severity ranging greatly across women, the menopausal transition is frequently linked to a variety of physiological and psychological symptoms that have a substantial impact on day-to-day living [8, 9]. Physiological symptoms include genitourinary syndrome of menopause (GSM), which includes vaginal dryness, dyspareunia, vulvovaginal irritation, urinary symptoms, and decreased libido, and vasomotor symptoms (VMS), which include hot flashes and night sweats, irregular menstruation, weight gain, joint pain, and skin changes [8,10]. Cardiovascular disease, dyslipidemia, type 2 diabetes, and osteoporosis are all made more likely by declining estrogen levels and rising central obesity [2]. Up to 50% of postmenopausal women report genitourinary symptoms, and almost 80% of them suffer from VMS [2]. In terms of psychology, mood swings, anxiety, depression, irritability, sleep issues, and cognitive abnormalities are linked to menopause [11, 12]. During or after menopause, depression affects over 39% of women [12]. Together, these interconnected symptoms lower quality of life

1.3. The Significant Impact on Exercise Capacity and Quality of Life

Physical performance and exercise capacity are strongly impacted by hormonal changes that occur during menopause, especially a decrease in estrogen levels. Even in women who were previously active, reduced estrogen can cause disruptions to established exercise regimens and deterioration in strength and aerobic fitness by inhibiting protein synthesis, which results in lean muscle mass loss, muscle atrophy, and metabolic decline [13]. The physical, psychological, social, sexual, and environmental aspects of quality of life are all significantly impacted by menopausal symptoms. Together, persistent vasomotor symptoms, mood swings, sleep issues, and genitourinary pain lower functional independence and life satisfaction [14]. Weight-bearing activities like walking and resistance training are crucial for maintaining bone density and reducing the risk of osteoporosis after menopause, while regular physical activity promotes mood, sleep, and weight control [15]. Additionally, yoga has been found to improve mood, minimize cardiovascular risk, and lessen symptoms in early menopause [16].

1.4. Rationale for Exploring Advanced Allied Therapies

The most effective treatment for symptoms like vasomotor symptoms (VMS) and genitourinary syndrome of menopause (GSM) is menopausal hormone therapy (MHT), which involves estrogen and/or progesterone. However, there are some risks associated with MHT, such as an increased risk of cardiovascular disease, breast cancer, stroke, and thromboembolic events [3]. Many women are looking for non-hormonal, non-pharmacological alternatives as a result of these worries. The systemic impacts of estrogen decrease on mood, sleep, metabolism, muscle mass, and bone density underscore the shortcomings of single-intervention therapies and the necessity of comprehensive, multimodal methods. Without the risks of MHT, allied therapies provide symptom relief, better physical function, and increased well-being by addressing the interrelated physical, metabolic, and psychological aspects of menopausal symptoms through evidence-based, non-pharmacological interventions [17]. These treatments are still neglected in traditional care despite mounting evidence, which offers a chance to incorporate them more widely to enhance results and lessen the burden of long-term healthcare.

Table 1: Overview of Advanced Allied Therapies for Menopausal Women

NAME OF AUTHOR	STUDY DESIGN	PARTICIPANTS	INTERVENTION	OUTCOME MEASURES	CONCLUSION
EXERCISE BASED INTERVENTIONS					
Mayer, F., et al. (2011) ²²	Systematic review and meta	Adults aged 60 to 80+ years.	Resistance training	Muscular Strength, Muscle Mass, Functional	High-intensity strength training is superior to

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	analysis			Performance, Bone Mineral Density	low-intensity training for the elderly.
Fragala et al. (2019) ²⁵	Systematic review and meta-synthesis	Adults aged 65 years and older	High Intensity Resistance training	Muscle Quality: muscle architecture and neuromuscular activation Functional Markers: Timed Up and Go (TUG), gait speed, and sit-to-stand performance. Metabolic Health: Insulin sensitivity and reduction in systemic inflammation (IL6 and CRP)	Countering muscle disuse through resistance training is a powerful intervention to combat the loss of muscle strength and muscle mass, physiological vulnerability, and their debilitating consequences on physical functioning, mobility, independence, chronic disease management, psychological well-being, quality of life, and healthy life expectancy.
Bloch-Ibenfeldt et al. (2024) ²⁶	Randomized Controlled Trial (RCT)	Healthy older adults at retirement age. Average Age: 64.2 years (at baseline).	Heavy Resistance Training (HRT) and Moderate-Intensity Training (MIT) in the experimental group and Control Group just maintained the usual activity levels.	Leg extensor muscle strength (measured via isometric dynamometry), Handgrip strength, Lean body mass (muscle mass) measured by DXA, Physical function and activity levels.	A single year of heavy resistance training at retirement age induces permanent or long-lasting beneficial effects on muscle strength, effectively "buffering" the individual against future frailty.
Watson, S. L., et al. (2018) ²³	Randomized Controlled Trial (RCT)	Postmenopausal women (average age 65 ± 5years).	High-Intensity Resistance and Impact Training to experimental group and Low-intensity home-based exercise to the control group	Dual-energy X-ray Absorptiometry, Timed Up and Go test, functional reach and vertical jump, Femoral neck cortical thickness	High-Intensity Resistance and Impact Training is not only safe but significantly superior to low-intensity exercise for postmenopausal women with bone loss
Westcott, W. L. (2012) ²⁴	Review	Middle-aged and older adults (including postmenopausal	Resistance Training	Body Composition, Metabolic Markers, Bone mineral density (BMD), Resting blood	Resistance training is a powerful, non-pharmacological

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		women)		pressure and lipid profiles (cholesterol), Mental Health	intervention for reversing and managing chronic disease.
Trujillo-Muñoz, P. J.etal. (2025) ²⁹	Systematic review and Meta analyses	Women in perimenopause and early postmenopause (collectively referred to as the climacteric period):40 to 70 years.	Aerobic exercise, resistance training, Mind body training (yoga, pilates, tai chi)	Quality of Life : Using validated scales (SF-36, MENQOL) to measure vitality and social functioning. Mental Health: Levels of anxiety and depression. Vasomotor Symptoms: Frequency and "bothersomeness" of hot flashes. Physical Fitness: Muscle strength (1RM) and cardio respiratory endurance. Bone Health: Bone mineral density (BMD) at the spine and hip.	Physical exercise (especially when combined/multi-modal) significantly improved all dimensions of Quality of Life compared to sedentary control groups.
Asikainen T.M.et al. (2004) ²⁷	Systematic review	Early postmenopausal women (up to 10 years post-menopause)	Aerobic exercise	Cardio respiratory Fitness, Cardiovascular Risk Factors: Serum lipids (Cholesterol, LDL, HDL, Triglycerides) and resting blood pressure, Body Composition, Bone Health	Walking at a "brisk" pace for 30 minutes, most days of the week, is the minimum effective dose for cardiovascular protection in early menopause
Daley, A. J., et al. (2015) ²⁸	Randomized Controlled Trial (RCT)	Sedentary menopausal and postmenopausal women	Group-based aerobic exercise to experimental group and control group participants were asked to maintain their current sedentary lifestyle and received no specific exercise prescription	The frequency and "bothersomeness" of vasomotor symptoms (hot flashes and night sweats), recorded via a daily symptom diary and psychological health (anxiety and depression scales), Quality of Life (using the Greene Climacteric Scale), Physical functioning and cardiovascular fitness markers	The women who exercised reported feeling better able to manage the symptoms and felt less "bothered" by them compared to the sedentary group. The exercise group showed significant improvements in depressed mood, physical functioning, and overall quality of life
PELVIC FLOOR MUSCLE TRAINING					
Mercier et al. (2020) ³²	Systematic Review	Postmenopausal women diagnosed with	Pelvic Floor Muscle Training (PFMT)	Vaginal Health:Vaginal Health Index (VHI) or visual inspection of	PFMT was found to improve vaginal

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		Genitourinary Syndrome of Menopause		tissue integrity. Sexual Function: Female Sexual Function Index (FSFI) Urinary Symptoms: Measures of incontinence and urgency Muscle Function: Strength and tone of the pelvic floor muscles.	tissue health and reduce pain during intercourse in post menopausal women with genitourinary syndrome of menopause
MIND BODY PRACTICES (YOGA, TAI CHI, PILATES, QIGONG, MINDFULNESS)					
Nguyen et al. (2020) ³¹	Systematic Review and Meta-Analysis	Peri-menopausal and postmenopausal women	Hatha yoga, Restorative yoga, and mindfulness-based yoga.	Psychological Symptoms: Specifically focused on anxiety, depression, and perceived stress. Vasomotor Symptoms (VMS): Frequency and intensity of hot flashes and night sweats. Quality of Life (QoL): Measured via the Menopause-Specific Quality of Life (MENQOL) questionnaire. Sleep Quality: Sleep disturbances and insomnia scores.	Yoga was found to be significantly more effective than no treatment or education for reducing depression and anxiety.
Cramer, H (2012) ¹⁶	Systematic review and meta-analysis	Peri-menopausal and postmenopausal women	Hatha yoga, Integrated Approach of Yoga Therapy (IAYT), and Pranayama (breathing-focused) in the experimental group and "usual care," no treatment, or other health education programs in the control group	Total Menopausal Symptoms: Overall score on validated scales, Psychological Symptoms: Specifically anxiety and depression, Frequency and severity of hot flashes and night sweats, Physical pains and urinary/vaginal issues.	Yoga can be recommended as a safe and effective complementary intervention for managing the psychological distress associated with menopause
Kong, Y. et al. (2022) ³⁰	Systematic review and meta-analysis	Postmenopausal women: 50-75 Years	Tai Chi: (Yang, Chen, Sun), Qigong: Specifically Baduanjin or Wuqinxi.	Bone Mineral Density (BMD): Measured via DXA scans, Quality of Life (QoL): SF-36), Balance and Falls	Tai Chi and Qigong significantly increased or maintained BMD at the lumbar spine and femoral neck compared to control groups. The authors highlighted

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					these exercises as "low-cost, low-risk" options that are particularly suitable for older women who may not be able to perform high-intensity weightlifting.
NUTRITIONAL INTERVENTIONS					
Sayón-Orea, C., et al. (2020) ³³	Systematic review	Perimenopausal and postmenopausal women	Mediterranean diet in the experimental group and Standard "Western Diet" (high in refined sugars and saturated fats) or low-fat diets in the control group.	Frequency and severity of hot flashes and night sweats, Body Composition: Weight change, Body Mass Index (BMI), and waist circumference (visceral fat),Lipid profiles (cholesterol/triglycerides) and glucose metabolism, Bone mineral density and risk of fractures, Blood pressure, Quality of Life	High adherence to the Mediterranean diet supports menopausal health by reducing fat mass, lowering the risk of metabolic syndrome and cardiovascular disease, and protecting bone mineral density. It may also alleviate hot flashes, making it a recommended "gold standard" dietary pattern for improving overall health and managing menopause-related symptoms
Silva, T. R.et al. (2018) ⁴³	Narrative review	Perimenopause, menopause, and late postmenopause	The Mediterranean Diet and Protein Optimization with high Fiber and Micronutrients intake	Body Composition, Bone Mineral Density (BMD) and fracture risk markers, Insulin sensitivity, lipid profiles (LDL/HDL), and blood pressure, Frequency and severity of hot flashes	Tailored nutrition is a fundamental, non-pharmacological "medicine" for menopause
COMPLEMENTARY & PSYCHOLOGICAL THERAPIES					
Rukure, H., & Husted, M. (2025) ³⁷	Systematic review	Perimenopausal and postmenopausal women.	Face-to-Face Group CBT, Telephone-delivered CBT, and Digital/Self-Help CBT.	Health-Related Quality of Life (HRQoL), measured by scales like the Greene Climacteric Scale or the Menopause-Specific Quality of Life (MENQOL) questionnaire. Reduction in the	CBT is consistently effective at improving the overall Quality of Life for menopausal women. The study found that Digital and

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				perceived impact (bothersomeness) of hot flashes and night sweats. Improvements in sleep hygiene and sleep quality. Reduction in anxiety and depressive symptoms.	Telephone-delivered CBT are just as effective as in-person sessions for improving QoL, which is a major win for accessibility.
Hunter, M. S., & Smith, S. C. (2014) ³⁶	Randomized clinical trial (RCT)	Women in the menopausal or postmenopausal phase. experiencing problematic vasomotor symptoms (VMS)	Cognitive behavioural therapy in the experimental group and usual care in the control group.	Hot flash/night sweat problem rating, Frequency of hot flashes and night sweats, Quality of Life (using the Women's Health Questionnaire), Psychological distress (anxiety and depression)	CBT significantly improves the menopausal experience by reducing the bothersomeness of hot flashes and night sweats, decreasing their frequency by about 40%, and enhancing mood, anxiety, and overall quality of life
Zhang, X. et al. (2025) ³⁹	Systematic Review and Meta-Analysis	Perimenopausal and postmenopausal women. diagnosed with insomnia	Acupuncture vs. placebo/sham or vs. pharmacological sleep aids (like Estazolam or Zz-drugs). Acupuncture plus standard management (such as Hormone Therapy or low-dose sedatives) vs. standard management alone.	PSQI (Pittsburgh Sleep Quality Index) scores—the gold standard for measuring subjective sleep quality. ISI (Insomnia Severity Index) scores. Sleep Efficiency: Percentage of time spent asleep while in bed. Hormonal Levels: Changes in serum estradiol E2, FSH, and LH. Safety: Incidence of adverse events compared to sedative medications.	Acupuncture, whether used alone or with other treatments, was significantly more effective at improving PSQI scores than standard management alone. Acupuncture had a significantly lower risk of side effects compared to pharmacological sleep medications.
Avis, N. E., et al. (2016) ³⁸	Randomized controlled trial (RCT)	Perimenopausal and postmenopausal women aged 45 to 60 years experiencing vasomotor symptoms	Accupuncture in the experimental group and control group maintained their usual care for 6 months	Frequency of vasomotor symptoms (VMS), tracked via a daily diary, Sleep quality (measured by the Pittsburgh Sleep Quality Index), Depressive symptoms (measured by the CES-D scale), Quality of Life (measured by the	The study concluded that a course of acupuncture is a safe and effective non-pharmacological option for reducing the frequency of hot flashes and

				Menopause-Specific Quality of Life (questionnaire)	improving quality of life in menopausal women.
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2. Understanding Exercise Capacity and Quality of Life in Menopausal Women

2.1. Hormonal Changes and Physical Function

Physical function is significantly altered during menopause due to declining estrogen levels. Bone loss is accelerated by disrupted bone remodeling, raising the risk of osteopenia, osteoporosis, and fractures [15]. The loss of muscle mass and strength, the acceleration of sarcopenia, and the impairment of functional independence are all consequences of reduced estrogen, which also lowers protein synthesis [18]. Weight gain and more frequent or intense hot flashes are linked to metabolic changes, which include a decreased metabolic rate and an increase in visceral fat [19]. Although therapies like strength training can improve insulin sensitivity, lower blood pressure, and improve cardiovascular health, cardiovascular risk increases as estrogen's protective effects fade [20]. Increased joint pain, tendon problems, and musculoskeletal discomfort are also associated with lower estrogen levels [21]. Numerous postmenopausal health concerns can be reduced with the aid of these focused therapies.

2.2. Domains of Quality of Life Impacted by Menopause

Menopause causes interrelated physical and mental changes that drastically lower quality of life in a number of areas. Physical symptoms that affect everyday functioning and energy levels include hot flashes, nocturnal sweats, weariness, and discomfort. Psychologically, mood swings, anxiety, despair, irritability, and sleeplessness are common among women, and sleep disturbance is a significant factor in decreased wellbeing [11, 12, 14]. This connection is highlighted by the fact that physical health improvements, particularly those brought about by exercise can have a good impact on mental health. Urinary incontinence, which affects more than half of postmenopausal women, and painful sex, can have an influence on social and sexual well-being because they lower intimacy, confidence, and social engagement. Menopausal genitourinary syndrome, characterized by vaginal dryness, tissue atrophy, and dyspareunia, further compromises sexual health and relationships [10]. When combined, these symptoms result in measurable declines in quality-of-life scores, underscoring the need for comprehensive, early interventions with allied health professionals to support healthy aging.

3. Exercise-Based Interventions

With its many advantages that immediately improve exercise ability and quality of life, exercise is a vital component of health management during the

menopausal transition. Numerous techniques have proven effective, such as aerobic exercise, mind-body techniques, strength training, and pelvic floor muscle training.

3.1. Strength Training

In order to improve bone density, muscle strength, physical function, and hormonal and metabolic health, strength training, also known as resistance training, is a very effective way to address the physiological changes that come with menopause [22]. Resistance training has been shown to significantly increase maximum oxygen consumption and strength in the upper and lower extremities in postmenopausal women [23]. Numerous processes contribute to these advantages, such as the enhancement of protein synthesis and neuromuscular adaptations to maintain muscle mass, strength, and functional independence, as well as the stimulation of osteoblast activity to counteract estrogen-related bone loss and lower the risk of fracture [24, 25].

While better joint stability lowers the risk of falls and joint pain, increased lean muscle mass also improves insulin sensitivity, cardiovascular health, and resting metabolic rate [24]. To avoid the shift from "vulnerable" to "frail" [25], training intensity is essential; low-intensity training is not enough.

According to evidence, two to three weekly sessions with progressive overload and moderate-to-high resistance (60–80% one-repetition maximum) are advised as the "Gold Standard" for optimizing muscle hypertrophy and bone health [25]. Furthermore, it has been demonstrated that a single year of intense resistance training at retirement age can produce long-lasting or permanent positive effects on muscle strength, hence "buffering" the person against future weakness [26].

3.2. Aerobic Exercise

A key worry after menopause is cardiovascular health, which can only be achieved through aerobic exercise such as brisk walking, cycling, or swimming. Frequent aerobic exercise promotes heart health overall, decreases blood pressure, and enhances circulation. Additionally, it improves mental health by lowering stress, anxiety, and depressed symptoms, generating endorphins, and improving sleep quality by controlling body temperature [27]. There is conflicting evidence about its impact on vasomotor symptoms (VMS), including hot flashes. Numerous researches, including randomized controlled trials, claim improvements in mood, physical function, and general quality of life along with a decrease in hot flashes at night. Other meta-analyses, however, indicate that aerobic exercise does not always reduce VMS, suggesting that although it promotes overall health, its direct effect on

menopausal symptoms may vary [28]. Furthermore, women participating in mixed-modality programs (combining resistance and aerobic training) showed the strongest gains in both physical health and quality of life compared to those participating in only one kind [29].

3.3. Mind-Body Practices (Yoga, Tai Chi, Pilates, Qigong, Mindfulness)

By combining breathing, exercise, and meditation, mind-body techniques provide a comprehensive strategy for addressing menopausal symptoms. According to systematic reviews, perimenopausal and postmenopausal women benefit from yoga, tai chi, Pilates, Qigong, Baduanjin, and mindfulness-based stress reduction in terms of bone mineral density, sleep, anxiety, depression, and fatigue [28-31]. Through stress reduction and nervous system regulation, yoga has wide-ranging advantages for mood, sleep, blood pressure, BMI, psychological, somatic, and urogenital symptoms, as well as emotional and sexual quality of life [29]. Although yoga isn't a direct "cure" for hot flashes, it has been found to be a safe, effective, and "low-barrier" strategy that focuses on treating the psychosomatic burden of menopause (sleep and mood) [31]. Additionally, tai chi supports musculoskeletal function by improving bone health, balance, flexibility, and fall prevention [30].

3.4. Pelvic Floor Muscle Training (PFMT)

Kegel exercises, also known as pelvic floor muscle training (PFMT), are an effective way to treat menopausal genitourinary syndrome and associated dysfunctions. By strengthening the muscles that support the pelvic organs, PFMT improves vaginal dryness, vulvar atrophy, dyspareunia, urine incontinence, and lowers the risk of pelvic organ prolapse. Although its effects on orgasm and prolapse outcomes are inconsistent, it also improves sexual function, including desire, arousal, lubrication, and satisfaction. Increased blood flow, neural stimulation, and muscle strength are all advantageous. PFMT enhances symptom management, social confidence, and general quality of life under the supervision of pelvic floor physical therapists, frequently with biofeedback [32].

4. Nutritional Interventions

In controlling menopausal symptoms and improving general health, nutritional solutions are essential yet complementary, frequently acting in tandem with physical activity.

4.1. Mediterranean Diet

Menopausal women can benefit from the Mediterranean diet in a number of ways. It emphasizes fruits, vegetables, whole grains, legumes, nuts, olive oil, and moderate amounts of fish and chicken. By lowering LDL, total cholesterol, and triglycerides while perhaps increasing HDL, it improves lipid profiles,

decreases blood pressure, and aids in weight management. Given the hazards of obesity, metabolic syndrome, and cardiovascular disease associated with menopause, this is essential. In addition to increasing bone density, muscle mass, and reducing hot flashes, the diet's anti-inflammatory and antioxidant qualities improve mood, gut micro biota balance, vascular health, and general quality of life during menopause [33].

4.2. Targeted Nutrients (Protein, Omega-3 Fatty Acids)

Certain nutrients are essential for regulating physiological changes that occur during menopause. Consuming enough protein is crucial for maintaining lean muscle mass and promoting healing, especially in the fight against sarcopenia. Higher-than-normal intakes—roughly 1 g/kg/day to maintain muscle and 1.2–1.7 g/kg/day for physically active women—are frequently advised by experts. BCAA-rich protein sources may also affect the risk of type 2 diabetes and insulin resistance. With some indication of less hot flashes, omega-3 polyunsaturated fatty acids may help with vasomotor symptoms, sleep issues, and depression symptoms. Exercise and tailored nutrition together produce better weight and fat loss results than diet alone [34, 35].

5. Complementary and Psychological Therapies

In addition to physical activity and proper diet, a number of complementary and psychological therapies provide evidence-based methods for managing menopausal symptoms and improving quality of life. These therapies are especially effective in treating psychological distress and sleep difficulties.

5.1. Cognitive Behavioral Therapy (CBT)

An efficient non-pharmacological treatment for menopausal symptoms, including sadness, anxiety, and sleeplessness, is cognitive behavioral therapy (CBT) [36, 37]. Cognitive behavioral therapy (CBT) strengthens coping, cognitive processes, and problem-solving skills while also improving sleep quality and symptom severity. Group-based methods frequently yield more psychological advantages. CBT has been shown to be consistently successful in raising menopausal women's general Quality of Life. The treatment helps women "reclaim" their everyday functioning, not only alleviate symptoms. CBT delivered over the phone and online is equally successful as in-person sessions at enhancing quality of life, which is a significant factor for accessibility. Better social, professional, and physical functioning is made possible by the psychological load being relieved, even in cases when hot flashes continue [37].

5.2. Acupuncture

Acupuncture is quite effective at treating menopausal symptoms, especially sleep problems and vasomotor

symptoms. According to Avis et al. (2016), women who had acupuncture experienced a 36.7% decrease in the incidence of hot flashes at six months. The results of the treatment lasted for at least six months after the procedure, indicating a long-lasting "legacy" influence on thermoregulation [38]. A meta-analysis reported that acupuncture significantly enhanced the quality of sleep when compared to either no treatment or sham acupuncture [39]. The largest benefits occurred when administered as a supplement to normal therapy, and these benefits may be mediated by serotonin modulation, decreased FSH, elevated estradiol (E₂), and regulation of the hypothalamic–pituitary–ovarian axis. Additionally, acupuncture showed excellent safety, tolerance, and no risk of reliance [39].

Comparative Effectiveness and Synergistic Approaches

Although menopausal hormone treatment (MHT) is very successful for severe symptoms, it has hazards, including blood clots, breast cancer, heart disease, and stroke. For these reasons, safer alternatives are needed. Research shows that as compared to single strategies, combined interventions—such as diet and exercise or MHT and strength training—increase bone mineral density, improve quality of life, and help people control their weight [3, 40]. This illustrates how estrogen loss has a multi-systemic effect on metabolic, psychological, and musculoskeletal health. For women going through menopause, integrated, multi-modal therapy that includes psychology, diet, and exercise is therefore the most beneficial, providing individualized, all-encompassing advantages.

Challenges, Limitations, and Future Directions

Current research is limited by a number of issues, despite encouraging findings in favor of advanced allied therapies for menopausal women. Inconsistent results and methodological variation are prevalent in various programs. Despite their general benefits, mind-body practices have inconsistent results, which emphasize the necessity for robust, standardized study designs [28, 30]. Acupuncture studies frequently encounter methodological problems, such as insufficient controls and non-standardized protocols [38], and there is disagreement over the best exercise regimens for pelvic floor muscle training [32]. Nutritional studies, such as those on the Mediterranean diet, also show heterogeneity and potential bias, complicating interpretation [33, 34]. It is impossible to draw definitive conclusions on efficacy due to the variation in design, intervention type, and outcome measurements.

The application of these treatments is further constrained by practical issues. The expense of medications, insurance restrictions, and varying levels of health literacy prevent many women from accessing evidence-based menopause therapy. Despite its success in treating depression, anxiety, and insomnia [36], cognitive behavioral therapy (CBT) may be limited by

the availability of therapists; nevertheless, online and telephone delivery hold promise for increasing accessibility and cost-efficiency.

To determine the effectiveness, ideal dosage, and long-term consequences of allied therapies, future research should give priority to large-scale, randomized controlled studies with defined methodologies. To elucidate the mechanisms by which treatments produce benefits, mechanistic research is required. To guarantee fair access and application, cost-effectiveness and safety assessments across a range of demographics are also essential. In order to improve comprehensive menopausal care and women's physical, psychological, and social quality of life, these gaps must be filled. This will help integrate non-pharmacological approaches, such as strength training [22–25], aerobic exercise [27, 28], mind–body practices [30, 31], PFMT [32], dietary strategies [33–35], cognitive behavioral therapy [36, 37], and acupuncture [38, 39], into clinical guidelines.

Conclusion and Recommendations

Menopause has a significant impact on one's ability to exercise and overall quality of life. For severe symptoms, hormone therapy is still useful, although non-pharmacological solutions are becoming more and more popular. There is evidence that exercise, such as aerobic activity, mind-body techniques, strength training, and pelvic floor training, can improve mood, sleep, genitourinary health, muscle mass, and bone density. Weight management, inflammatory control, and metabolic health are all improved by nutritional tactics like a Mediterranean diet and a sufficient protein intake. Complementary treatments, such as acupuncture and Cognitive Behavioral Therapy (CBT), reduce vasomotor symptoms, anxiety, depression, insomnia, and psychological discomfort. Menopause's interrelated physical and psychological issues are addressed by integrated, multi-modal therapies that have synergistic effects.

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