

The Effects of Physical Activity and a Balanced Nutrition Plan in Peri-Menopausal and Menopausal Women: A Literature Review and a Pilot Study in Albania

Elona Mehmeti

PhD, Department of Projects and Technology, Sport University of Tirana, Albania

Abstract: Menopause represents a critical transitional phase in a woman's life, characterized by a progressive decline in ovarian function and marked hormonal fluctuations—particularly reductions in estrogen and progesterone levels—that influence a wide range of physiological systems. This period often brings about a variety of distressing symptoms, including hot flashes, night sweats, fatigue, sleep disturbances, mood swings, and cognitive difficulties, which can significantly impair daily functioning and diminish overall quality of life. In addition to these symptoms, menopause is associated with an increased risk for chronic health conditions, such as cardiovascular disease, obesity, metabolic syndrome, type 2 diabetes, and osteoporosis, further exacerbating physical and psychological strain. These health risks are serious. Unfortunately, limited societal awareness and a lack of targeted interventions make things worse. Extensive research demonstrates that regular physical activity and a nutritionally balanced diet are among the most effective non-pharmacological approaches to managing menopausal symptoms and preventing chronic disease. These lifestyle factors contribute to improved bone density, better metabolic regulation, enhanced mood, and reduced inflammation, offering a holistic path to sustained health in midlife and beyond. This paper presents a comprehensive review of the existing literature on the effects of physical activity and diet during the peri-menopausal and menopausal periods, highlighting evidence-based practices and international recommendations. Furthermore, the article introduces a pioneering research initiative currently underway in Albania—one of the first of its kind in the region—which aims to evaluate the nutritional status and key health indicators of peri- and menopausal women. Conducted in partnership between the Sports University of Tirana and the medical nutrition clinic Nutristudio, the study utilizes laboratory assessments and clinical evaluations to create personalized physical activity and dietary plans tailored to the needs of this population. The ultimate goal is to enhance physical and mental health, promote active social participation, and contribute to the development of national health strategies aligned with global best practices.

Keywords: Menopause, Peri - Menopause woman, Physical Activity, Nutrition, Albania

1. Introduction

Menopause is a natural and inevitable biological transition in a woman's life, typically occurring between the ages of 45 and 55, and is defined by the permanent cessation of menstruation due to the decline in ovarian follicular activity. While it marks the end of a woman's reproductive capacity, menopause also signifies the beginning of a complex period characterized by significant hormonal, metabolic, and psychosocial changes. Among these, the decline in estrogen levels is the most consequential, leading to a cascade of physiological effects that impact various systems of the body, including the musculoskeletal, cardiovascular, and nervous systems (Santoro et al., 2019).

The symptoms associated with menopause are diverse and often debilitating. Vasomotor symptoms such as hot flashes and night sweats are the most commonly reported, followed by fatigue, sleep disturbances, irritability, cognitive difficulties, and mood swings. These symptoms can vary in intensity and can last for years. In addition, hormonal shifts contribute to adverse changes in body composition, including increased central adiposity and loss of lean muscle mass, which further influence physical performance and self-perception.

More concerning is the increased vulnerability to chronic conditions during and after the menopausal transition. The

decline in estrogen is a key factor in the development of cardiovascular disease, dyslipidemia, insulin resistance, and metabolic syndrome. Bone mineral density also declines sharply, increasing the risk for osteoporosis and fractures (Avis et al., 2020). These physical health risks often co-occur with mental health concerns such as anxiety, depression, and reduced self-esteem, creating a complex clinical picture that requires a comprehensive and multidisciplinary management approach.

From a global perspective, there are marked differences in how menopause is perceived and managed. In high-income countries such as the United Kingdom and Sweden, public health systems have increasingly recognized menopause as a key stage of women's health that requires tailored policy responses. For instance, the UK has developed national guidance under the framework "Menopause in the Workplace", encouraging organizations to adopt inclusive policies and supportive environments for menopausal women. The National Health Service (NHS) also provides extensive information and structured treatment pathways, including hormone therapy, counseling, and lifestyle recommendations.

In Sweden, healthcare services during the menopausal transition are integrated into the broader preventive care system, offering women access to free consultations, hormone replacement therapies (HRT), and individualized counseling as part of public health coverage. Meanwhile, in

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the United States, institutions like the North American Menopause Society (NAMS) play an important role in both clinical education and advocacy, offering resources for healthcare providers and patients. Increasingly, private companies in North America and Europe have incorporated menopause awareness into workplace wellness programs, acknowledging its impact on employee health and productivity.

In contrast, low - and middle - income countries such as Albania face significant challenges in addressing menopausal health. Limited awareness, insufficient public discourse, and the absence of structured national programs result in many women receiving little or no support during this life phase. Despite the increasing prevalence of menopause - related health issues, there remains a lack of integrated services, trained personnel, and policy - driven initiatives targeting the specific needs of this demographic. The cultural stigma associated with aging and hormonal changes often exacerbates the invisibility of menopausal women in health agendas, contributing to underdiagnosis and poor quality of life (Howell et al., 2021).

Given these disparities, there is a growing need for inclusive and proactive policy interventions that recognize menopause as a crucial aspect of women's health. Health authorities, educational institutions, and community organizations must collaborate to create accessible resources—such as toolkits, mobile applications, and awareness campaigns—and to invest in infrastructure that enables regular health monitoring, personalized counseling, and lifestyle guidance for women in midlife. Regional adaptation of international guidelines, such as those from the European Menopause and Andropause Society (EMAS), could help standardize care while respecting local socio - cultural contexts.

In this light, Albania presents both a challenge and an opportunity. With a healthcare system in transition and growing awareness of women's health issues, the country stands to benefit significantly from targeted research and evidence - based interventions. This article contributes to that goal by reviewing current scientific findings on the role of physical activity and balanced nutrition in managing menopause, and by presenting an ongoing national initiative that aims to develop personalized and scalable solutions to support the health and well - being of menopausal women.

2. Literature Review

2.1 Global Policy Context and Health System Responses

In developed countries, menopause is increasingly recognized not only as a clinical condition but as a critical public health and workplace well - being concern. Governments and health systems are adopting strategic approaches to support women during this transitional life stage. In the United Kingdom, the landmark report *Menopause in the Workplace*—endorsed by policymakers and supported by public health campaigns—encourages employers to implement inclusive and supportive workplace environments. These initiatives promote flexible working arrangements, provide access to information, and foster open discussions to reduce stigma. In parallel, the National Health Service (NHS) offers comprehensive clinical

guidelines for the management of menopausal symptoms, encompassing both pharmacological interventions (such as hormone replacement therapy) and non - pharmacological approaches, including lifestyle modifications, mental health support, and diet recommendations.

Similarly, Sweden has integrated menopause management into its national healthcare system. Preventive services, including regular health assessments, hormonal evaluations, bone density screenings, and personalized counseling, are offered free of charge. These services are part of the broader health agenda focused on gender equity. Public health campaigns also help normalize menopause as part of the aging process, thus promoting early help - seeking behavior and community support.

In the United States, the North American Menopause Society (NAMS) plays a pivotal role in shaping clinical practice and public awareness. NAMS provides standardized education and training modules for healthcare providers, while also maintaining a strong digital presence with educational content for women navigating menopause. Furthermore, large corporations are increasingly acknowledging the impact of menopausal symptoms on productivity, attendance, and employee retention. As a result, many companies have incorporated menopause - related support into employee wellness programs, offering resources such as health coaching, access to specialists, and tailored mental health support.

In stark contrast, many low - and middle - income countries, including Albania, lack structured health policies, public dialogue, or institutional frameworks addressing menopause. Health systems in these regions often prioritize reproductive and maternal health, while the post - reproductive phase remains neglected. There are few, if any, specialized clinics, national guidelines, or community - level awareness initiatives focused on menopausal health. Access to reliable information is limited, and cultural stigmas around aging and hormonal change further discourage women from seeking support. Consequently, women are left to navigate this biologically and psychologically complex period without sufficient tools, often resulting in unmanaged symptoms, diminished quality of life, and reduced social and economic participation (Howell et al., 2021).

This policy and resource gap exacerbates existing gender inequalities, as menopausal women in under - resourced settings may withdraw from the labor force, limit their social engagement, or silently endure symptoms that could otherwise be mitigated with early intervention. The absence of supportive infrastructures also hinders the ability of healthcare professionals to offer evidence - based care or preventive guidance. In this context, it becomes imperative for countries like Albania to learn from global models and adapt successful strategies to local realities, fostering cross - sector collaborations and introducing low - cost, scalable interventions that empower women in midlife and beyond.

Table 1 shows the percentage distribution of MHT - related publications by leading European countries from 2000 to 2021. Italy and the United Kingdom are the top contributors,

together accounting for over 45% of the European total in this field.

Table 1: MHT - related publications by leading European countries from 2000 to 2021

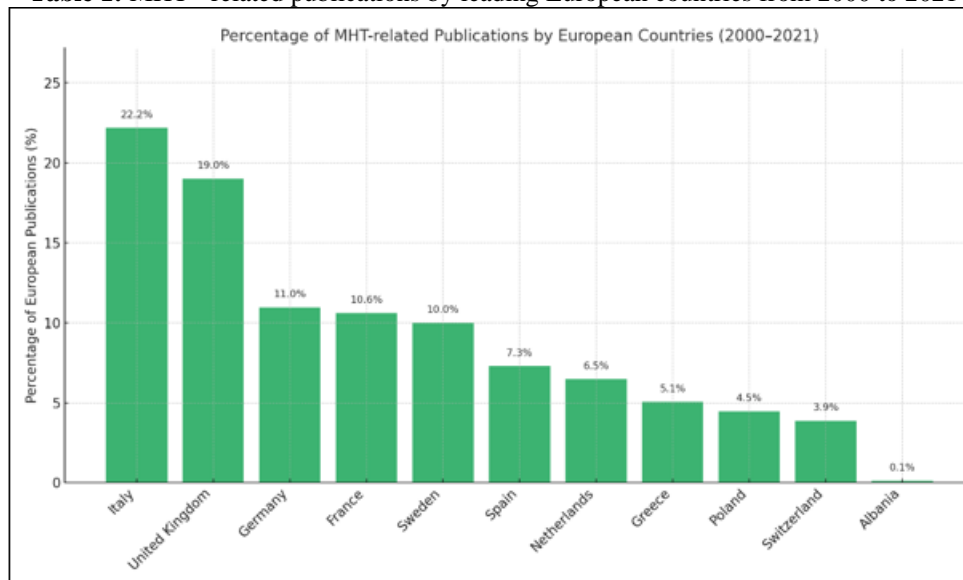


Table 2 presents an index that evaluates menopause support across European countries considered factors like the availability of hormone replacement therapy (HRT), menopause clinics, and workplace policies:

Table 2: Index Evaluating Menopause Support across European countries

Country	Number of Menopause Clinics	HRT Availability	Workplace Menopause Policies
United Kingdom	59	Yes	Yes
Spain	20	Yes	No
Italy	3	Yes	No
Germany	2	Yes	No
Netherlands	1	Yes	Some
Belgium	1	Yes	No
Austria	1	Yes	No

Source: *The Independent Pharmacy*

2.2 Role of Physical Activity

Regular physical activity is widely recognized as one of the most effective non - pharmacological interventions for managing a broad spectrum of menopausal symptoms. A growing body of research emphasizes the multifaceted benefits of exercise during the peri - menopausal and post - menopausal stages, encompassing physiological, psychological, and social domains. Aerobic exercise, resistance training, and weight - bearing activities have been shown to improve bone mineral density, maintain lean muscle mass, reduce visceral fat, and enhance metabolic efficiency (Zhao et al., 2015; Sipilä et al., 2020). These outcomes are particularly important given that menopause is associated with accelerated bone loss, increased risk of sarcopenia, and unfavorable shifts in body composition due to hormonal decline, especially in estrogen.

Evidence suggests that regular exercise also plays a crucial role in modulating vasomotor symptoms such as hot flashes

and night sweats. While the exact mechanisms remain under investigation, improvements in thermoregulatory function and vascular health are believed to contribute to the decreased frequency and severity of these symptoms (Freeman et al., 2011). Furthermore, exercise enhances sleep quality and circadian rhythm stability, which are often disrupted during menopause due to hormonal imbalances and psychological stressors (Elavsky et al., 2014).

Beyond physiological benefits, physical activity is consistently associated with improved mood, reduced levels of anxiety and depression, and enhanced cognitive function. This is attributed to the exercise - induced release of endorphins and neurotrophic factors such as brain - derived neurotrophic factor (BDNF), which promote neuroplasticity and emotional resilience (Hyde et al., 2010; Firth et al., 2018). Group - based physical activity has also been linked to increased social connectedness and self - efficacy, which are crucial for maintaining motivation and long - term adherence, particularly among women experiencing feelings of isolation or reduced self - worth during midlife (Biddle et al., 2011).

Moreover, global health authorities advocate for the inclusion of structured physical activity in menopausal care protocols. The World Health Organization (WHO, 2020) recommends at least 150 minutes of moderate - intensity aerobic physical activity weekly, complemented by muscle - strengthening activities on two or more days per week for adults over 50. The European Menopause and Andropause Society (EMAS) also underscores physical activity as a foundational component of lifestyle interventions for menopausal women, encouraging healthcare providers to integrate exercise prescription into routine consultations (Perez - Lopez et al., 2014).

Longitudinal and cross - sectional studies further affirm the protective effects of physical activity against chronic diseases common in postmenopausal populations, such as cardiovascular disease, type 2 diabetes, and osteoporosis. For

instance, a systematic review by Daley et al. (2011) found that physically active women were significantly less likely to report severe menopausal symptoms and had improved metabolic profiles compared to sedentary counterparts.

Despite these known benefits, participation in physical activity tends to decline during the menopausal transition, often due to fatigue, joint discomfort, lack of motivation, or limited access to appropriate facilities and guidance (Eyigor et al., 2010). Therefore, targeted interventions that are age-sensitive, culturally adapted, and easily accessible are necessary to encourage greater engagement in regular exercise. Community-based programs, digital tools, and interdisciplinary collaborations between physiotherapists, nutritionists, and gynecologists can significantly enhance the uptake and sustainability of physical activity routines in this population.

In conclusion, the role of physical activity in managing menopausal symptoms and preventing long-term health deterioration is well established in the literature. Promoting structured and enjoyable forms of exercise among menopausal women is not only a matter of individual well-being but a public health priority that can alleviate healthcare burdens associated with aging female populations.

2.3 Importance of a Balanced Nutrition Plan

A well-structured and balanced nutritional plan is a cornerstone of managing menopausal health, playing a pivotal role in mitigating symptoms, preserving physical functionality, and preventing chronic disease. During perimenopause and postmenopause, hormonal shifts—particularly the decline in estrogen—impact metabolic rate, lipid profiles, bone turnover, and body composition, increasing susceptibility to osteoporosis, cardiovascular disease, and sarcopenia (Sacks et al., 2017; Greendale et al., 2019). Thus, dietary strategies must be tailored to address these specific physiological changes and nutritional needs.

Bone health becomes a primary concern during menopause due to accelerated bone resorption and decreased calcium absorption linked to estrogen deficiency. The Institute of Medicine (IOM, 2011) recommends a daily intake of 1,200 mg of calcium and 600–800 IU of vitamin D for women over 50, which helps maintain bone mineral density and reduce fracture risk. Nutritional sources of calcium such as dairy products, leafy greens, almonds, and fortified foods, along with moderate sun exposure or supplements for vitamin D, are crucial in this context.

Protein intake is another vital element. With aging and hormonal decline, the risk of sarcopenia increases, which in turn affects strength, balance, and metabolic rate. Current recommendations suggest an intake of 1.0–1.2 g of protein per kilogram of body weight per day for older women, ideally spread evenly across meals to maximize muscle protein synthesis (Bauer et al., 2013; Deutz et al., 2014). High-quality protein sources such as fish, lean meats, legumes, eggs, and dairy should be prioritized.

Additionally, **dietary fiber** and **healthy fats** are essential for cardiovascular and metabolic health. Menopause is associated

with elevated LDL cholesterol, triglycerides, and insulin resistance. Diets rich in soluble fiber (e.g., oats, legumes, fruits) help manage lipid profiles, while unsaturated fats—particularly omega-3 fatty acids from sources like fatty fish, flaxseeds, and walnuts—contribute to inflammation reduction and vascular health (Manson et al., 2020; Jenkins et al., 2011).

Phytoestrogens, such as isoflavones and lignans found in soy products, flaxseeds, and legumes, mimic estrogen's activity and may provide symptom relief, particularly in women who cannot or choose not to use hormone replacement therapy. Several studies have shown that phytoestrogens can modestly alleviate vasomotor symptoms and support bone and cardiovascular health without significant adverse effects (Messina et al., 2017; Lethaby et al., 2013).

Personalized nutrition plans that align with the **Daily Recommended Intake (DRI)** for macro- and micronutrients are critical for supporting energy levels, hormonal balance, cognitive function, and immune resilience during the menopausal transition. These plans should take into account individual health profiles, lifestyle patterns, cultural preferences, and potential deficiencies. Nutritional assessment tools and biomarkers (e.g., vitamin D status, lipid panels, body composition analysis) can guide precision-based dietary interventions.

Furthermore, adherence to dietary models such as the **Mediterranean diet**, which emphasizes plant-based foods, lean proteins, olive oil, and moderate alcohol intake, has been associated with lower inflammation, improved cognitive outcomes, and reduced cardiovascular risk among postmenopausal women (Martínez-González et al., 2019; Estruch et al., 2013).

Despite the known benefits of nutritional intervention, challenges such as limited access to nutrition counseling, low nutrition literacy, and economic barriers hinder implementation in many regions, including Albania. This highlights the need for public health programs.

In conclusion, balanced nutrition—grounded in scientific evidence and tailored to the unique needs of menopausal women—is not only essential for managing symptoms and preventing disease but also for enhancing overall quality of life during midlife and aging.

3. Methodology: Pilot Study in Albania

To address the varied challenges faced by peri and menopausal women in Albania—ranging from hormonal changes to social stigmatization and lack of targeted healthcare interventions—the Sports University of Tirana, in close collaboration with Nutristudio (a specialized Medical Nutrition Clinic), has initiated a groundbreaking pilot study. This research project represents the first structured scientific approach of its kind in the country, aiming to provide evidence-based strategies for improving women's health during this critical life stage.

Objectives

- To assess the nutritional status, body composition, and key physical health parameters of peri-menopausal and

menopausal women using standardized and validated tools.

- To develop and implement individualized physical activity protocols that are both safe and effective, taking into consideration hormonal changes and age - related physiological factors.
- To design personalized nutritional plans that align with the latest international recommendations, including those issued by the European Menopause and Andropause Society (EMAS), ensuring a holistic and culturally appropriate approach.

Measurements

All physiological and anthropometric measurements will be conducted in the state - of - the - art laboratories of the Sports University of Tirana. These facilities were significantly upgraded in 2021 with support from the National Agency for Scientific Research and Innovation (AKKSHI), enabling high - precision data collection and analysis. Tools will include bioelectrical impedance devices, metabolic analyzers, and functional fitness testing equipment to ensure a comprehensive evaluation.

This pilot initiative not only aims to improve the physical and mental well - being of the participating women but also seeks to promote their continued social engagement, independence, and productivity. By generating data that reflect the unique needs of Albanian women, the project is expected to inform future health policies and intervention models tailored to the local context, potentially setting a precedent for broader regional implementation.

4. Discussion

The integration of exercise, nutrition, and education - based interventions has consistently been shown to significantly enhance the quality of life among menopausal women (Stuenkel et al., 2020). Holistic and interdisciplinary strategies that combine physical activity, dietary guidance, and psychosocial support are increasingly recognized as best practice in managing the wide array of physiological and psychological symptoms associated with menopause. These include hot flashes, fatigue, mood fluctuations, sleep disturbances, and increased risk of metabolic and cardiovascular diseases. When tailored to individual health profiles and preferences, such multifaceted approaches can not only alleviate symptoms but also contribute to long - term prevention of chronic conditions, such as osteoporosis, type 2 diabetes, and hypertension.

Despite the growing evidence, Albania still shows a clear gap in both institutional awareness and public understanding of menopause as a critical life stage requiring medical attention and structured support. Cultural stigmas and the lack of open discourse have led to widespread neglect of midlife women's health needs. Consequently, many women endure this transitional phase without adequate information or access to evidence - based care. This highlights the urgent need for the development and implementation of comprehensive public health policies specifically aimed at midlife and older women. These policies should focus on education, prevention, and access to affordable services.

To address these gaps, it is essential to create accessible and culturally sensitive informational resources. Toolkits for healthcare providers, mobile health applications offering lifestyle tracking and symptom management tips, as well as awareness campaigns through traditional and digital media can play a transformative role. Such tools would help normalize conversations around menopause and equip women with the knowledge and resources to advocate for their own health. Moreover, investment in gender - sensitive and age - appropriate healthcare infrastructure—including training programs for professionals in gynecology, nutrition, psychology, and physiotherapy—is fundamental to building a supportive ecosystem for women entering this life stage.

5. Conclusion

Managing menopause calls for a well - rounded and tailored approach a holistic that reflects the physical, emotional, and social dimensions of women's health. Research overwhelmingly supports the role of regular physical activity and a balanced, nutrient - rich diet in mitigating menopausal symptoms, enhancing emotional resilience, and maintaining metabolic health. Such interventions, when integrated into daily life and supported by qualified professionals, can significantly improve overall well - being and help women maintain autonomy and productivity during midlife and beyond.

In countries like Albania—where discussions around menopause are limited and healthcare systems are still evolving—the establishment of structured, evidence - based support systems is not only timely but essential. This includes the development of clinical guidelines, the inclusion of menopause education in medical and community health training, and the integration of menopausal care into primary healthcare services.

The pilot study initiated by the Sports University of Tirana in partnership with Nutristudio marks a significant milestone in this effort. As the first initiative of its kind in the country, it seeks to generate locally relevant data and intervention models that address the specific health, social, and cultural needs of Albanian women. The insights and outcomes from this study will serve as a valuable foundation for shaping future national strategies, informing policy decisions, and inspiring similar initiatives across the region. Ultimately, the broader aim is to promote women's health equity and ensure that every woman in Albania enters the menopausal transition with dignity, support, and access to quality care.

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