Health benefits of exercise and dietary interventions for patients with psoriasis – a literature review

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Abstract

Introduction: Psoriasis is a prevalent chronic inflammatory systemic disease that can manifest in a variety of clinical manifestations. Psoriasis was thought to only affect the skin. Recent findings from dermatologic, rheumatologic, and cardiologic research indicate that it is a systemic disease, henceforth referred to as psoriatic disease.

Purpose of work: Collecting information on the benefits of physical activity and diet modifications in patients with psoriasis on aspects such as metabolic syndrome, cardiovascular risk, mental health, and general well-being.
Summary: Psoriasis is a disease that affects many areas of life. Physical activity improves the body weight, mental health, and cardiovascular risk of patients with psoriasis. Engaging in physical activity may reduce the probability of developing psoriasis and may also ameliorate its course. The Mediterranean diet, ketogenic diet, probiotics, and alcohol withdrawal may also alleviate the course of psoriasis. It is noteworthy to mention the potential limitations that may arise in the context of this disease, including embarrassment resulting from skin lesions and joint discomfort resulting from psoriatic arthritis. Sports training ought to be customized for each patient, taking into account their limitations and preferences.

Keywords: psoriasis, sport, physical activity, exercise, diet

Introduction

Psoriasis is a prevalent chronic inflammatory systemic disease that can manifest in a variety of clinical manifestations. Psoriasis was thought to only affect the skin. Recent findings from dermatologic, rheumatologic, and cardiologic research indicate that it is a systemic disease, henceforth referred to as psoriatic disease. The psoriatic disease causes inflammation in the skin, as well as psoriatic arthritis, hypertension, metabolic syndrome, depression, inflammatory bowel disease, or other cardiovascular diseases. Multiple comorbidities can be expected with the progressive aging of the population. It has a relapsing-remitting course. The primary risk factor for the onset of psoriatic disease is obesity, which also contributes to the occurrence of psoriatic arthritis. Stress, infection, and medication are the most common trigger factors (1-3).

Various types of innate and adaptive immune cells are involved in psoriasis. The interleukin (IL)-23/Th17 axis is crucial for the development of psoriasis (4). The evidence suggests that dendritic cells, Th17 cells, and keratinocytes are involved in the pathology of psoriasis. Dendritic cells make tumor necrosis alpha (TNF-α) and IL-23 to help T cells differentiate into Th17 cells, which make key psoriatic cytokines IL-17, IFN-γ, and IL-22. Their activity results in inflammation of the skin and activation and hyperproliferation of keratinocytes (5). The idea that the skin's microbiota plays a big part in causing psoriasis has
become important because scientists have noticed that the microbes in the skin are not as diverse. Another idea, called oxidative stress, says that the damage to cells the release of chemicals called reactive oxygen species, and a lack of antioxidants can cause psoriasis (6).

Topical corticosteroids constitute a fundamental component of the treatment of psoriasis. However, prolonged administration may result in stria and cutaneous atrophy, as well as systemic adverse effects such as topical steroid withdrawal (7). Oral systemic nonbiologic therapies for psoriasis patients include oral acitretin, methotrexate, cyclosporine, apremilast, tofacitinib, and deucravacitinib (8). At present, a diverse array of biological treatments are accessible for moderate to severe psoriasis, encompassing inhibitors, IL12/23 inhibitors, IL17 inhibitors, and IL23 inhibitors (3, 9).

As a persistent condition, psoriasis frequently impacts the physical, psychological, and social status of the patient, thereby influencing their experience of illness and requirements. It is imperative to emphasize the combined physical, psychological, and social consequences of psoriasis and its attendant care requirements. Assist and guide patients with their coping strategies with high-quality therapeutic interventions, provide information about psoriasis, monitor, and follow up regularly over time, and get feedback to inform further treatment and care (10). Physical activity and enhancing the physical fitness of patients with psoriasis also play a significant role in this care. Smoking, obesity, metabolic syndrome, hypertension, dyslipidemia, diabetes, and decreased physical activity are associated with psoriasis, which increases cardiovascular risk (11). What is more, vigorous physical activity is correlated with a decreased likelihood of the occurrence of psoriasis (12). On the other hand, metabolic syndrome is associated with an increased risk of developing psoriasis (13). Regular physical activity has the potential to have a beneficial impact on the natural course of the disease, positively influencing not only the severity but also the frequency of metabolic comorbidities (14, 15).

**Physical activity and cardiovascular risk**

Patients suffering from psoriasis do not engage in adequate physical activity as recommended for cardiovascular health, which may contribute to the elevated risk of cardiovascular disease and metabolic syndrome observed in this patient group (16). The overall capacity to perform exertion exercise is referred to as cardiorespiratory fitness. Individuals with
psoriasis may have lower cardiovascular fitness, and these variations may not be explained by self-reported disease severity or physical activity. Those reporting high life impairment or body surface area had significantly lower cardiorespiratory fitness (17). Low cardiorespiratory fitness at an early age is associated with an increased risk of incident psoriasis and psoriatic arthritis in men (18). Furthermore, patients with psoriasis are at a higher risk of atrial fibrillation and should therefore be closely monitored for this condition (19).

Different life zones of psoriasis patients can benefit from exercise. Sheppard et al. developed an exercise program for patients with psoriasis. A 10-week intervention consisting of two group walking sessions per week each of 1 hour duration was implemented. The exercise program was designed to remove barriers to exercise for those with psoriasis. Regular physical activity may possess significant health advantages for individuals with psoriasis, including reduced cardiovascular risk and enhanced psychosocial functioning (20). It is possible that both psychological and physiological reasons are involved. Lack of physical activity may contribute to the elevated risk of cardiovascular disease in individuals with psoriasis, as well as the inherent dangers associated with systemic inflammation and psoriasis-associated comorbidities. Because of its beneficial effects on systemic inflammation and cardiometabolic comorbidities associated with psoriasis, physical activity should be encouraged in all psoriasis patients (21).

**Physical activity and body weight**

Obesity increases the risk of cardiovascular disease in patients with psoriasis and can make adipocytes and immune cells produce proinflammatory adipocytokine. Schwartz et al. found that 66.9% of German psoriasis patients were overweight or obese, compared to approximately 50% of the German general population. The proportion of affected body surface area, cardiovascular risk factors, and cardiovascular event frequency increased with an increase in BMI. Overweight participants had more severe psoriasis and impaired engagement in weight loss diets and physical activity (22). As measured by waist circumference, central adiposity is associated with a higher risk of developing psoriasis (23). Patients who self-report psoriasis are less likely to exercise in order to lose weight (24). Furthermore, psoriasis has the potential to be a prediabetic condition. Patients with psoriasis displayed a higher degree of insulin resistance in comparison to healthy control subjects (25). Poor dietary and physical activity routines may
be contributing factors to overweight and metabolic syndrome in individuals with psoriasis (26). The implementation of a healthy lifestyle resulted in the reduction of body fat, enhancement of body fat distributions, enhancement of resting metabolic rate, and enhancement of pulmonary functions (27).

A 20-week dietetic intervention, coupled with an increase in physical activity, resulted in a reduction in the severity of psoriasis in systemically treated overweight or obese patients with active psoriasis. Naldi et al. examined a cohort of 303 overweight or obese individuals with moderate-to-severe chronic plaque psoriasis who failed to achieve clearance after four weeks of continuous systemic treatment. Patients were randomly assigned to receive either a 20-week quantitative and qualitative dietary plan incorporating physical exercise for weight loss, or a simple informative counseling session at baseline regarding the efficacy of weight loss in the clinical management of psoriatic disease. The analysis of the Psoriasis Area and Severity Index (PASI) from baseline to week 20 indicated a median reduction of 48% in the dietary intervention group and 25.5% in the information-only group. There was a significant difference in the PASI score reduction between the study groups, and the weight-loss goal was reached by 29.8% of patients in the dietary intervention group, compared to 14.5% in the information-only group (28). Weight loss for patients with psoriasis has long-lasting positive effects on the severity of the psoriasis (29).

**Physical activity and musculoskeletal effects**

It is possible that very strenuous physical activity will cause joint pain and tenderness in patients with psoriasis and psoriatic arthritis (30). Particularly in professional athletes who are subject to a greater training load (31). In the context of leisure sports activity, the impact of low to moderate biomechanical stress on entheses in patients with psoriasis and psoriatic arthritis seems to be well tolerated by psoriatic patients without causing an increase in tenderness, pain, or ultrasound-proven inflammation (30). However, the impact of psoriasis on leisure activities is considerable. Patients with psoriasis tend to reduce or give up leisure-time activities because of their condition (32).

Patients with psoriasis without psoriatic arthritis also experience fatigue and musculoskeletal pain. Psoriatic patients without psoriatic arthritis can benefit from a 16-week
aerobic training program at moderate intensity. It significantly improves scores on the illness therapy fatigue scale (FACIT-Fatigue), the health assessment questionnaire disability index (HAQ-DI), and the visual analog scale (VAS) without increasing markers of muscle damage. It also improves fat mass percentage, lipid profile, and maximal oxygen consumption (33).

**Physical activity and general well-being**

Psoriasis has a negative impact on quality of life (34). Most negative impacts of psoriasis on health-related quality of life are reported as limitations on clothing, sleep disorders, and depression/anxiety, and with psoriatic arthritis, as limitations on clothing, sports/leisure, or daily routine and sleeping disorders (35). Disease severity, single status, working status, sports activities, nail dystrophy, exposed area involvement, itching, disturbed sleep, stress, and infection are general factors associated with impact on health-related quality of life (34). The degree of disease severity is a significant predictor of the severe impact of psoriasis on health-related quality of life (34). Sleeping disorders and depression are prevalent conditions that should not be overlooked (35). The optimal treatment of psoriasis patients requires a comprehensive approach that incorporates psychological aspects (34).

Additionally, psoriasis has a significant secondary impact on the lives of family members and partners. Most of them said that the way their relative or partner was treated made them have to spend extra time doing housework. They elucidated psychological pressures that encompassed anxiety, distress, and apprehension regarding the patient's future, as well as social disruption resulting from a lack of social confidence, either due to embarrassment or the time required for care duties. Limitations to holiday plans, sports, and leisure activities, and evenings out were described by them. They expressed limitations on their daily activities, such as shopping, work, and time with other family members, and felt that their close relationships had deteriorated (36). It is important to bear in mind that individuals with psoriasis are also subjected to financial expenses arising from their treatment, which have a significant impact on their household budgets (37).

Many patients have social and emotional problems, even though they can get modern treatment. 50% of patients expressed their belief that psoriasis had hindered their sexual relationships. 11% of them stated that they would refrain from having children if their offspring
were to develop the disease. The majority of people with psoriasis avoided common social activities, such as swimming and sports (38).

Patients with psoriasis, particularly severe psoriasis, usually undertook less physical activity than persons who had never been diagnosed with psoriasis. Clinicians ought to encourage patients with psoriasis, particularly those with more severe disease, to engage in more physical activity. The psychological and physical obstacles to their patients' physical activity should be identified and addressed by them (39). Psoriasis has a significant impact on many aspects of the patient's daily life. The role of sport in improving quality of life seems relevant, even if it is underestimated (40).

**Dietary interventions in psoriasis**

Diet may influence the course of psoriasis. The research shows that psoriasis is connected to other health problems like obesity, high blood pressure, diabetes, high cholesterol, and liver disease. A healthy diet implementation has a great impact on obesity, non-alcoholic fatty liver disease/hepatic steatosis, and diabetes associated with psoriasis (41). What's more, non-adherence to general national dietary guidelines increases the risk of prevalent psoriasis (42).

Patients who practice intermittent fasting or follow ketogenic or Mediterranean diets have been shown to have positive effects on inflammatory conditions, such as psoriasis, atopic dermatitis, hidradenitis suppurativa, and acne (43). The utilization of the Mediterranean and ketogenic diet in patients with psoriatic arthritis and psoriasis results in weight reduction, reduced body mass index (BMI), reduced waist circumference, reduced total fat mass, and reduced visceral fat. The ketogenic diet also resulted in a decrease in the severity of disease symptoms as measured by the PASI and Disease Activity Index of Psoriatic Arthritis Scale (DAPSA), as well as a decrease in the blood concentration of IL-6, IL-17, and IL-23 (44). Patients with severe psoriasis were less likely to adhere to the Mediterranean diet. Nonetheless, the Mediterranean diet has the potential to impede the progression of psoriasis (45). Additionally, a healthy diet and exercise regimen can also improve erectile dysfunction associated with psoriasis (46). Dietary intervention in psoriatic arthritis demonstrates the greatest evidence of benefit for weight loss among obese patients (47). A non-pharmacological,
holistic approach may enhance the quality of life for individuals with psoriatic arthritis, incorporating dietary adjustments, adequate sleep duration, and physical activity (48).

The detrimental impact of an imbalanced diet, alcohol abuse, and smoking on the progression of psoriasis vulgaris can be observed (49). The analysis revealed that with each additional gram of daily alcohol intake, the odds of developing psoriasis increased by 4%. This association was more prominent in the group drinking more than 45 g of alcohol per day (50). Furthermore, there is an increasing number of reports about the intestinal microbiota and its impact on the progression of various diseases. The possible role of probiotics in psoriasis is emphasized, and probiotic supplementation may be helpful to treat psoriasis (51). Present evidence regarding the role of the gut microbiome and metabolites in psoriasis and their potential implications for diagnosis and treatment is currently and constantly being developed (52). A gluten-free diet may lessen the severity of psoriasis in people with gluten intolerance or the presence of gluten-specific antibodies. There is no evidence that micronutrient supplements (i.e., selenium, vitamin D, vitamin B12) have a beneficial effect on patients with normal serum levels (53).

Patients with psoriasis need to understand how their diet affects their symptoms and make changes to their diet. The literature offers limited guidance to individuals suffering from psoriasis, focusing on shedding pounds and afflicting coexisting conditions. Understanding diet modification and larger, controlled trials are needed to establish dietary strategies for psoriasis management (54-56).

Conclusions

Engaging in physical activity may reduce the probability of developing psoriasis and may also ameliorate its course. Physical activity improves the body weight, mental health, and cardiovascular risk of patients with psoriasis. It is noteworthy to mention the potential limitations that may arise in the context of this disease, including embarrassment resulting from skin lesions and joint discomfort resulting from psoriatic arthritis. Sports training ought to be customized for each patient, taking into account their limitations and preferences. The Mediterranean diet, probiotics, and alcohol withdrawal may also alleviate the course of psoriasis.
DISCLOSURE

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