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Quality of Life and Exercise Adherence in Individuals with Chronic Inflammatory Skin Diseases: A Narrative Review

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ABSTRACT

Background. Chronic inflammatory skin diseases (CISDs) such as atopic dermatitis, psoriasis, hidradenitis suppurativa and chronic spontaneous urticaria significantly impair health-related quality of life (HRQoL). Symptoms (itch, pain), heat/sweat sensitivity, and psychosocial burden (stigma, anxiety) may also reduce physical activity participation and undermine long-term exercise adherence, yet the evidence remains fragmented across conditions.

Aim. To synthesize current evidence on the relationship between HRQoL impairment and exercise participation/adherence in individuals with CISDs and to identify recurring barriers and facilitators relevant for clinical and exercise counseling.

Material and methods. A narrative review was conducted using targeted searches of PubMed and Google Scholar and reference-list screening. Search terms combined CISD diagnoses (atopic dermatitis, psoriasis, hidradenitis suppurativa, chronic urticaria) with HRQoL and physical activity constructs (DLQI, Skindex, physical activity, exercise, adherence, barriers, facilitators, lifestyle intervention). English-language publications were prioritized; selected non-Russian sources in other languages were considered when relevant.

Results. Across CISDs, poorer HRQoL was consistently associated with symptom interference and psychosocial distress, which plausibly contributes to reduced exercise engagement. Evidence was strongest for atopic dermatitis, where higher disease severity was linked to lower physical activity. In psoriasis and hidradenitis suppurativa, qualitative and observational studies highlighted multi-level adherence barriers: symptom exacerbation with sweating/heat, pain and friction (especially in intertriginous areas), visibility-related stigma, and low exercise self-efficacy. Facilitators included individualized exercise planning, trigger reduction strategies, and integration of symptom control with behavioral support. Intervention-oriented evidence exists mainly in psoriasis, suggesting feasibility of structured lifestyle approaches.

Conclusions. Exercise adherence in CISDs is shaped by interacting symptom, psychosocial, and environmental factors closely aligned with HRQoL domains. Multi-component, individualized strategies combining optimized disease control with barrier-aware exercise counseling are most likely to support sustainable physical activity.

Keywords: chronic inflammatory skin diseases, quality of life, physical activity, exercise adherence, atopic dermatitis, psoriasis.

Content

1. Introduction 5
2. Research materials and methods 8
2.1. Participants 8
2.2. Review methodology 9
2.3. Data Collection and Analysis 9
2.3.1 Data Collection 10
2.3.2 Statistical Analysis 10
2.3.3 Synthesis of Results 11
3. Research Results 11
3.1. HRQoL burden in chronic inflammatory skin diseases and measurement approaches 11
3.2. Associations between CISDs and physical activity level / exercise participation 12
3.3. Barrier and facilitator themes shaping exercise adherence 13
3.4. Intervention and lifestyle-oriented evidence relevant to adherence 15
3.5. Evidence mapping and integrated conceptual interpretation 15
4. Discussion 16
4.1. HRQoL as a behavioral determinant of exercise adherence 17
4.2. Disease severity and physical activity: evidence and interpretation 17
4.3. Barriers to exercise adherence: commonalities across diseases 18
4.4. Facilitators and strategies to support adherence: clinical and behavioral implications 19
4.5. Limitations of the evidence base and implications for future research 20
4.6. Summary interpretation 20
5. Conclusions 21
Disclosure 22
Supplementary Materials 22
Author Contributions 23
Funding 23
Institutional Review Board Statement 23
Informed Consent Statement 23
Data Availability Statement 23
Acknowledgements 23
Conflicts of Interest 23
References 24

1. Introduction

Chronic inflammatory skin diseases, including atopic dermatitis, psoriasis, hidradenitis suppurativa, and chronic urticaria, are long-term conditions characterized by recurrent inflammation, visible lesions, pruritus and/or pain, and fluctuating severity. Beyond physical symptoms, these disorders have a measurable and often substantial impact on health-related quality of life, affecting sleep, social interactions, work productivity, self-esteem, and mental health. Dermatology has therefore developed and widely adopted validated instruments to quantify patient-reported burden, with the Dermatology Life Quality Index (DLQI) remaining one of the most frequently used tools in both research and clinical practice (Finlay & Khan, 1994; Basra et al., 2008). Complementary measures such as Skindex further capture emotional, symptomatic, and functional dimensions of skin-related QoL (Chren et al., 1996). In the context of CISDs, these tools consistently demonstrate that disease burden extends well beyond skin signs and is closely linked to daily functioning and health behaviors (Basra et al., 2008; Ghezzi et al., 2024).

Physical activity is a cornerstone of health promotion and disease prevention, with well-established benefits for cardiovascular risk, metabolic health, mental well-being, and overall mortality. However, for many individuals with CISDs, exercise participation may be reduced, irregular, or difficult to sustain over time. Exercise adherence—the ability to maintain regular physical activity in a consistent manner—may be threatened by disease-specific barriers such as itch provoked by heat or sweat, pain from inflamed lesions (particularly in intertriginous areas), friction-related irritation, embarrassment from visible skin manifestations, fear of symptom worsening, and fatigue due to sleep disturbance. In atopic dermatitis, the burden of itch, sweating-related irritation, and sleep impairment is well known to translate into broader functional limitations and reduced well-being (Birdi et al., 2020). Population-level data also indicate that atopic dermatitis is associated with lower levels of physical activity among adults, suggesting that disease burden may contribute to sedentary behavior or difficulty sustaining exercise routines (Silverberg et al., 2016). More recent findings similarly report that increasing atopic dermatitis severity is associated with decreased physical activity, reinforcing the view that symptom intensity may be a central determinant of exercise participation (Schwartzman et al., 2023).

The relationship between CISDs and physical activity is likely bidirectional. On the one hand, inflammatory skin disease symptoms and psychosocial impacts may reduce exercise engagement and adherence; on the other hand, reduced physical activity may contribute

indirectly to worse overall health status and comorbidities that are relevant for inflammatory skin disease populations. Psoriasis, for example, is strongly linked to obesity and metabolic risk, and reduced exercise participation may worsen these comorbidity pathways (Jensen & Skov, 2016). Moreover, specific physiological concerns can act as perceived or real barriers: early evidence suggested the possibility of heat intolerance among some psoriatic patients, which could plausibly make vigorous exercise more difficult or uncomfortable and discourage continued participation (Leibowitz et al., 1991). From a behavioral perspective, qualitative and mixed-method research has identified barriers to physical activity in chronic plaque psoriasis, including physical discomfort, visibility concerns, motivational factors, and disease-related practical obstacles, all of which may erode adherence over time (Auker et al., 2020). In addition, work examining exercise responses and barriers in psoriasis suggests that both physiological and perceptual factors should be considered when designing supportive interventions (Enos et al., 2020a; Enos et al., 2020b).

Hidradenitis suppurativa represents another high-burden inflammatory disease where exercise adherence may be particularly challenging due to pain, drainage, friction, and lesion location. The condition has been shown to markedly decrease quality of life and professional activity, highlighting the potential for substantial day-to-day functional limitation (Matusiak et al., 2010). Lifestyle-focused research in hidradenitis suppurativa has also explored associations between physical activity patterns and disease severity, supporting the clinical relevance of activity behaviors in this population (Lorite-Fuentes et al., 2022; Bouwman et al., 2024). Taken together, these findings suggest that exercise adherence in CISDs is not merely a matter of motivation, but is shaped by symptom physiology, psychosocial burden, environmental triggers, and health-system support.

Importantly, there is growing interest in whether physical activity interventions can improve outcomes in inflammatory skin disease populations. In psoriasis, a randomized controlled trial evaluating diet and physical exercise provides evidence that lifestyle modification can be studied rigorously and may have clinically meaningful implications (Naldi et al., 2014). Even when exercise does not directly alter inflammatory disease activity in all cases, it may still confer important benefits through improved mental health, self-efficacy, social functioning, and comorbidity reduction. Conversely, psychological distress and reduced HRQoL can reduce willingness to participate in exercise settings and impair long-term adherence. Data linking physical activity and mental health among patients with atopic dermatitis or chronic spontaneous urticaria further support the relevance of psychosocial dimensions in exercise behavior (Wiis et al., 2023).

Given this landscape, a focused synthesis is warranted to clarify how QoL impairment relates to exercise behavior in CISDs, which barriers are most consistently reported across conditions, and what practical strategies may support adherence in a safe, individualized manner. This narrative review therefore examines the intersection of HRQoL and exercise adherence in chronic inflammatory skin diseases, drawing on evidence from dermatology QoL research and condition-specific studies on physical activity, barriers, and lifestyle interventions (Finlay & Khan, 1994; Chren et al., 1996; Basra et al., 2008; Silverberg et al., 2016; Auker et al., 2020; Lorite-Fuentes et al., 2022).

Research Objective. The objective of this narrative review is to synthesize and critically integrate the available evidence on how chronic inflammatory skin diseases influence health-related quality of life (HRQoL) and, in turn, affect physical activity participation and long-term exercise adherence.

Research Problems. The present review addresses the following research problems: (1) How do chronic inflammatory skin diseases affect health-related quality of life, and which QoL domains are most relevant to exercise participation? (Finlay & Khan, 1994; Basra et al., 2008; Birdi et al., 2020). (2) What is the current evidence linking CISDs—particularly atopic dermatitis, psoriasis, and hidradenitis suppurativa—to reduced physical activity levels or poorer exercise adherence? (Silverberg et al., 2016; Schwartzman et al., 2023; Auker et al., 2020; Lorite-Fuentes et al., 2022). (3) What disease-specific and cross-cutting barriers (symptoms, heat/sweat sensitivity, pain, stigma, psychological distress, comorbidities) most strongly contribute to reduced participation and discontinuation of exercise? (Auker et al., 2020; Enos et al., 2020a; Matusiak et al., 2010; Leibowitz et al., 1991). (4) Which intervention approaches—behavioral, environmental, and clinical—are supported by the literature as potentially improving exercise engagement and sustaining adherence in these populations? (Naldi et al., 2014; Enos et al., 2020b).

Research Hypotheses. Based on the reviewed literature, the following hypotheses guide the synthesis: (1) Lower dermatology-specific HRQoL is associated with reduced exercise participation and poorer adherence in individuals with chronic inflammatory skin diseases, with symptom burden (itch, pain, sleep disturbance) acting as major mediators (Finlay & Khan, 1994; Birdi et al., 2020; Matusiak et al., 2010). (2) Disease severity is inversely associated with physical activity levels, particularly in atopic dermatitis and psoriasis, and may be partly explained by heat/sweat sensitivity, perceived social stigma, and fear of symptom exacerbation during exercise (Silverberg et al., 2016; Schwartzman et al., 2023; Auker et al., 2020; Leibowitz et al., 1991). (3) Multi-component strategies—combining tailored exercise planning, symptom

control, psychological support, and practical trigger-reduction (e.g., clothing choice, temperature management)—are more likely to improve exercise adherence than single-component recommendations (Enos et al., 2020a; Enos et al., 2020b; Naldi et al., 2014).

2. Research materials and methods

2.1. Participants

As this is a narrative review, no new participants were recruited. The term participants in this section refers to the populations represented in the included primary studies and clinical investigations examining health-related quality of life, physical activity patterns, and exercise participation/adherence in individuals with chronic inflammatory skin diseases.

Across the included literature, the target populations primarily comprised adolescents and adults diagnosed with common chronic inflammatory dermatoses, most frequently atopic dermatitis, psoriasis, hidradenitis suppurativa, and chronic urticaria/chronic spontaneous urticaria. Atopic dermatitis populations were represented both in questionnaire-based clinical samples and in large population-based analyses evaluating associations between disease status or severity and physical activity levels (Lonne-Rahm et al., 2014; Silverberg et al., 2016; Schwartzman et al., 2023). Psoriasis cohorts included individuals with chronic plaque psoriasis participating in qualitative/mixed-method studies on barriers to physical activity, as well as interventional lifestyle research that incorporated structured physical activity components (Auker et al., 2020; Naldi et al., 2014; Enos et al., 2020a; Enos et al., 2020b). Hidradenitis suppurativa populations were included in studies focusing on disease-related quality-of-life impairment and lifestyle correlates (Matusiak et al., 2010; Lorite-Fuentes et al., 2022; Bouwman et al., 2024). In addition, cross-sectional work addressing physical activity and mental health outcomes incorporated participants with atopic dermatitis and chronic spontaneous urticaria, broadening the inflammatory-skin-disease spectrum relevant to exercise behavior (Wiis et al., 2023).

The reviewed studies generally included both female and male participants and encompassed a wide range of disease severities, from mild disease managed primarily in outpatient settings to moderate-to-severe disease associated with substantial symptom burden and functional limitations. HRQoL outcomes were commonly assessed using validated dermatology-specific instruments such as the Dermatology Life Quality Index (DLQI) and/or Skindex, enabling comparison of QoL burden across conditions and facilitating analysis of how symptom-driven impairment may relate to exercise participation and adherence (Finlay &

Khan, 1994; Chren et al., 1996; Basra et al., 2008). Where disease severity metrics were reported in the original studies, they were used in this review to contextualize the relationship between symptom load and physical activity outcomes, particularly in atopic dermatitis and psoriasis (Silverberg et al., 2016; Schwartzman et al., 2023; Ghezzi et al., 2024).

Overall, the participant populations represented in the included evidence reflect clinically relevant groups in which exercise behavior may be influenced by pruritus, pain, heat/sweat sensitivity, friction in intertriginous areas, sleep disturbance, psychosocial distress, and comorbid metabolic risk factors—features that are central to chronic inflammatory skin disease burden and plausible determinants of reduced exercise adherence (Birdi et al., 2020; Jensen & Skov, 2016; Matusiak et al., 2010; Auker et al., 2020).

2.2. Review methodology

This narrative review summarizes current evidence on HRQoL and exercise participation/adherence in individuals with chronic inflammatory skin diseases. The literature was identified through targeted searches of the PubMed and Google Scholar online databases, supplemented by screening reference lists of relevant full-text articles to capture additional sources. The following keywords (alone and in combinations) were used: chronic inflammatory skin disease, atopic dermatitis, psoriasis, hidradenitis suppurativa, chronic urticaria, chronic spontaneous urticaria, quality of life, HRQoL, Dermatology Life Quality Index, DLQI, Skindex, physical activity, exercise, exercise adherence, barriers, facilitators, lifestyle intervention, obesity, and mental health. Publications in English were prioritized, with selected papers in other languages considered when they provided unique clinical or methodological insights (excluding Russian-language sources). Most included publications were published within the past decade; however, earlier seminal validation studies for dermatology-specific HRQoL instruments were also included due to their foundational relevance to the topic.

2.3. Data Collection and Analysis

Because this is a narrative review, no primary data were collected and no new statistical analyses were performed. Instead, «data» were collected from the included published literature and synthesized qualitatively to describe (1) the magnitude and domains of health-related quality of life impairment in chronic inflammatory skin diseases, (2) associations between CISDs and physical activity/exercise participation and adherence, and (3) the most frequently reported barriers and facilitators influencing sustained exercise engagement.

2.3.1 Data Collection

For each eligible publication, key information was extracted using a structured approach focused on clinical relevance and comparability across conditions. Extracted items included: study design (cross-sectional, case-control, randomized controlled trial, qualitative/mixed-method), setting and recruitment context, clinical population (diagnosis, age group, sex distribution), disease severity indicators (when reported), HRQoL instruments and outcomes (e.g., DLQI, Skindex and their subdomains), physical activity or exercise-related outcomes (e.g., self-reported activity levels, exercise engagement/adherence indicators, perceived barriers), and major conclusions relevant to the review objectives. Foundational instrument validation studies were included to support interpretation of HRQoL outcomes in dermatology populations (Finlay & Khan, 1994; Chren et al., 1996; Basra et al., 2008). Condition-specific studies were extracted to characterize links between disease burden and activity patterns, including atopic dermatitis cohorts and population-based analyses (Lonne-Rahm et al., 2014; Silverberg et al., 2016; Schwartzman et al., 2023), psoriasis studies evaluating barriers and engagement with exercise (Auker et al., 2020; Enos et al., 2020a; Enos et al., 2020b), hidradenitis suppurativa studies examining HRQoL and lifestyle correlates (Matusiak et al., 2010; Lorite-Fuentes et al., 2022; Bouwman et al., 2024), and cross-sectional evidence relating physical activity to psychosocial outcomes in inflammatory skin disease populations (Wiis et al., 2023). Interventional lifestyle evidence in psoriasis incorporating structured physical activity components was also extracted to inform discussion of potential strategies supporting adherence (Naldi et al., 2014).

2.3.2 Statistical Analysis

No pooled quantitative synthesis (meta-analysis) was attempted, and no additional statistical testing was performed because the aim of the review was narrative integration rather than effect-size estimation. However, statistical approaches reported in the included primary studies were documented and summarized descriptively to contextualize the strength and limitations of the evidence base. Across the literature, common analytical approaches included descriptive statistics to characterize HRQoL and activity patterns; group comparisons (e.g., t-tests, chi-square tests, ANOVA) to examine differences in activity levels or QoL across severity strata; and regression modeling to evaluate associations between disease status/severity and physical activity while adjusting for sociodemographic and health-related covariates (Silverberg et al., 2016; Schwartzman et al., 2023; Lorite-Fuentes et al., 2022). Qualitative and mixed-method studies were summarized according to their thematic analytic frameworks, emphasizing

recurring barrier and facilitator constructs relevant to exercise adherence in psoriasis and other CISDs (Auker et al., 2020; Enos et al., 2020a).

2.3.3 Synthesis of Results

Findings were synthesized using thematic narrative synthesis. First, HRQoL outcomes were mapped onto commonly reported domains in dermatology-specific tools (symptoms, emotions, functioning) to clarify which QoL burdens are most plausibly linked to exercise participation and sustained adherence (Finlay & Khan, 1994; Chren et al., 1996; Basra et al., 2008). Second, evidence on physical activity levels and adherence-related outcomes was grouped by disease (atopic dermatitis, psoriasis, hidradenitis suppurativa, chronic urticaria) to identify disease-specific versus cross-cutting patterns (Silverberg et al., 2016; Schwartzman et al., 2023; Auker et al., 2020; Matusiak et al., 2010). Third, barriers and facilitators were categorized into symptom-related factors (itch, pain, sweat/heat sensitivity, friction), psychosocial factors (stigma, embarrassment, anxiety, depressive symptoms), environmental factors (gym/clothing issues, temperature), and health-system/behavioral factors (education, coping skills, tailored exercise planning). Finally, the synthesis integrated interventional and lifestyle evidence—particularly from psoriasis and hidradenitis suppurativa research—to inform clinically actionable recommendations for supporting exercise adherence while minimizing symptom exacerbation and QoL deterioration (Naldi et al., 2014; Lorite-Fuentes et al., 2022; Bouwman et al., 2024).

3. Research Results

This section synthesizes the evidence on (a) HRQoL impairment in chronic inflammatory skin diseases and (b) how disease burden relates to physical activity (PA) participation and exercise adherence, including barriers, facilitators, and intervention-oriented findings.

3.1. HRQoL burden in chronic inflammatory skin diseases and measurement approaches

Across CISDs, HRQoL impairment is consistently documented using dermatology-specific patient-reported outcome measures. The Dermatology Life Quality Index (DLQI) remains a core tool for quantifying the impact of skin disease on daily life (Finlay & Khan, 1994), with broad validation and extensive use across dermatologic conditions (Basra et al., 2008). Skindex provides a complementary multidimensional perspective, capturing symptoms, emotions, and functioning (Chren et al., 1996). These instruments are important for exercise-related research

because they quantify domains directly relevant to exercise participation—such as symptoms (itch/pain), functional limitation, embarrassment, and social restriction.

In atopic dermatitis (AD), HRQoL impact is often driven by itch, sweat/heat sensitivity, sleep disturbance, and psychosocial strain; a systematic review and meta-analysis in adults supports the substantial HRQoL burden of AD (Birdi et al., 2020). In psoriasis, HRQoL impairment is similarly prominent, with literature reviews emphasizing both physical and psychosocial consequences that can plausibly reduce willingness to engage in visible or uncomfortable activities such as gym-based exercise (Ghezzi et al., 2024). In hidradenitis suppurativa (HS), HRQoL impact is frequently marked and functionally limiting, affecting professional activity and daily functioning (Matusiak et al., 2010), which has direct implications for sustained exercise adherence.

3.2. Associations between CISDs and physical activity level / exercise participation

Evidence indicates that some CISDs are associated with lower PA levels and/or reduced exercise engagement, particularly when symptom burden is higher. In AD, observational and population-based analyses report associations between AD (and its severity) and reduced physical activity in adults (Silverberg et al., 2016; Schwartzman et al., 2023). A questionnaire-based study also explored exercise-related experiences in adult AD patients, supporting the clinical relevance of exercise as a context in which symptoms and avoidance behaviors may occur (Lonne-Rahm et al., 2014). In addition, cross-sectional evidence linking PA and mental health among individuals with AD and chronic spontaneous urticaria (CSU) highlights that psychosocial functioning may co-vary with activity behavior in these populations (Wiis et al., 2023).

In psoriasis, the evidence base places strong emphasis on barriers to PA and perceived difficulty maintaining activity rather than only reporting activity prevalence. Qualitative and mixed-method work has identified multiple barriers to physical activity among patients with chronic plaque psoriasis (Auker et al., 2020). Other studies investigating exercise engagement and responses suggest that both physiological and perceptual factors contribute to exercise behavior (Enos et al., 2020a; Enos et al., 2020b). Earlier physiologic work raised the possibility that some psoriatic patients could experience heat intolerance, which may discourage vigorous exercise and worsen adherence over time (Leibowitz et al., 1991). The broader comorbidity context is also relevant: psoriasis is associated with obesity and metabolic risk, potentially increasing perceived and actual barriers to activity (Jensen & Skov, 2016).

In HS, the relationship between lifestyle behaviors and disease severity has been examined in cross-sectional and case-control contexts. Studies reporting associations between lifestyle (including PA) and HS severity support the clinical relevance of exercise behavior in this population, while also implying that pain, friction, and lesion location may complicate sustained adherence (Lorite-Fuentes et al., 2022; Bouwman et al., 2024).

3.3. Barrier and facilitator themes shaping exercise adherence

Across conditions, the literature converges on a multi-domain barrier structure that can erode long-term adherence even when exercise is initially attempted:

Symptom-related barriers. Itch (AD), pain (HS), skin tenderness, and sweat/heat sensitivity can make exercise uncomfortable and increase avoidance, particularly for higher-intensity workouts (Birdi et al., 2020; Matusiak et al., 2010; Leibowitz et al., 1991). For HS, friction and pain in intertriginous areas plausibly reduce adherence to activities involving repetitive movement or tight athletic clothing (Matusiak et al., 2010).

Psychosocial barriers. Visibility of lesions and stigma-related concerns (especially in psoriasis and HS) may reduce willingness to exercise in public settings, impair confidence, and amplify avoidance (Auker et al., 2020; Ghezzi et al., 2024; Matusiak et al., 2010). Psychological distress and mental health correlates are also relevant, as exercise participation and mental well-being appear linked in inflammatory skin disease populations (Wiis et al., 2023).

Environmental/practical barriers. Heat, sweating, and clothing friction act as practical triggers that patients often report managing through avoidance, exercise modification, or setting selection (Lonne-Rahm et al., 2014; Auker et al., 2020; Enos et al., 2020b).

Facilitators. The reviewed studies collectively imply that adherence is more plausible when exercise is tailored (intensity modulation, planned cooling, clothing choice), symptoms are proactively managed, and patients receive guidance that reduces fear of worsening (Auker et al., 2020; Enos et al., 2020b; Lonne-Rahm et al., 2014).

Table 1. Summary of evidence linking HRQoL and exercise adherence across chronic inflammatory skin diseases.

Condition	HRQoL burden (typical drivers; instruments)	Evidence related to PA / adherence	Dominant barriers reported	Practical adherence implications
Atopic dermatitis	High symptom and functional burden; itch/sweat sensitivity; DLQI/Skindex	Lower PA associated with AD and with higher severity in adults; exercise context	Sweat/heat-triggered discomfort, itch, sleep disturbance, psychological stress	Tailored intensity, cooling planning, symptom control and barrier-care to prevent avoidance

	commonly relevant (Finlay & Khan, 1994; Chren et al., 1996; Basra et al., 2008; Birdi et al., 2020)	discussed in questionnaire data (Silverberg et al., 2016; Schwartzman et al., 2023; Lonne-Rahm et al., 2014)	(Birdi et al., 2020; Lonne-Rahm et al., 2014)	and dropout (Lonne-Rahm et al., 2014)
Psoriasis	Substantial HRQoL impairment; psychosocial and functional impact (Ghezzi et al., 2024; Finlay & Khan, 1994; Basra et al., 2008)	Strong focus on barriers and engagement; physiologic concerns (heat intolerance) noted; adherence shaped by perceptual and practical factors (Auker et al., 2020; Enos et al., 2020b; Leibowitz et al., 1991)	Stigma/visibility concerns, discomfort, sweating/heat, motivation and perceived barriers (Auker et al., 2020; Enos et al., 2020b)	Combine behavioral support + practical trigger management; structured lifestyle programs feasible (Naldi et al., 2014)
Hidradenitis suppurativa	Marked QoL reduction; pain, drainage, friction; functional restriction (Matusiak et al., 2010)	Lifestyle/PA patterns associated with disease severity in observational contexts (Lorite-Fuentes et al., 2022; Bouwman et al., 2024)	Pain, friction in intertriginous zones, clothing limitations, embarrassment (Matusiak et al., 2010)	Prefer low-friction modalities, clothing/skin protection, gradual progression, individualized plans
Chronic spontaneous urticaria	QoL and mental health relevant; exercise may interact via stress/physical triggers (Wiis et al., 2023)	Cross-sectional evidence links PA and mental health in CSU/AD samples (Wiis et al., 2023)	Trigger unpredictability, anxiety about flares (Wiis et al., 2023)	Emphasize trigger-aware pacing and psychological reassurance alongside medical control

Overall, Table 1 highlights that although the specific symptom profiles differ across conditions, the drivers of reduced exercise engagement converge around symptom exacerbation with heat/sweating, psychosocial distress, and practical limitations related to clothing and friction. These cross-cutting patterns provide a rationale for multi-component adherence support and help contextualize the limited but growing intervention-oriented evidence discussed in the next subsection.

3.4. Intervention and lifestyle-oriented evidence relevant to adherence

Intervention-oriented literature is more developed in psoriasis than in some other CISDs. A randomized controlled trial evaluating diet and physical exercise in psoriasis demonstrates that structured lifestyle approaches can be investigated rigorously in this population (Naldi et al., 2014). While study aims may vary (e.g., weight/health outcomes, disease severity), such work is important for adherence because it suggests feasibility of guided exercise components within clinical frameworks.

In HS, observational lifestyle studies indicate that physical activity patterns and broader lifestyle factors are associated with disease severity and/or patient characteristics (Lorite-Fuentes et al., 2022; Bouwman et al., 2024). These studies do not directly test adherence interventions, but they support the rationale for tailored, barrier-aware activity counseling (e.g., low-friction exercise modalities, gradual progression, attention to clothing and skin protection).

3.5. Evidence mapping and integrated conceptual interpretation

To summarize how the included sources distribute across conditions and exercise-relevant topics, Figure 1 provides an evidence map (counts of included sources per condition × theme). Notably, AD has comparatively more evidence linking disease severity with reduced PA, whereas psoriasis has a dense cluster focused on barriers/facilitators and behavioral determinants of engagement, and HS evidence emphasizes HRQoL burden plus lifestyle correlates (Silverberg et al., 2016; Schwartzman et al., 2023; Auker et al., 2020; Matusiak et al., 2010; Lorite-Fuentes et al., 2022).

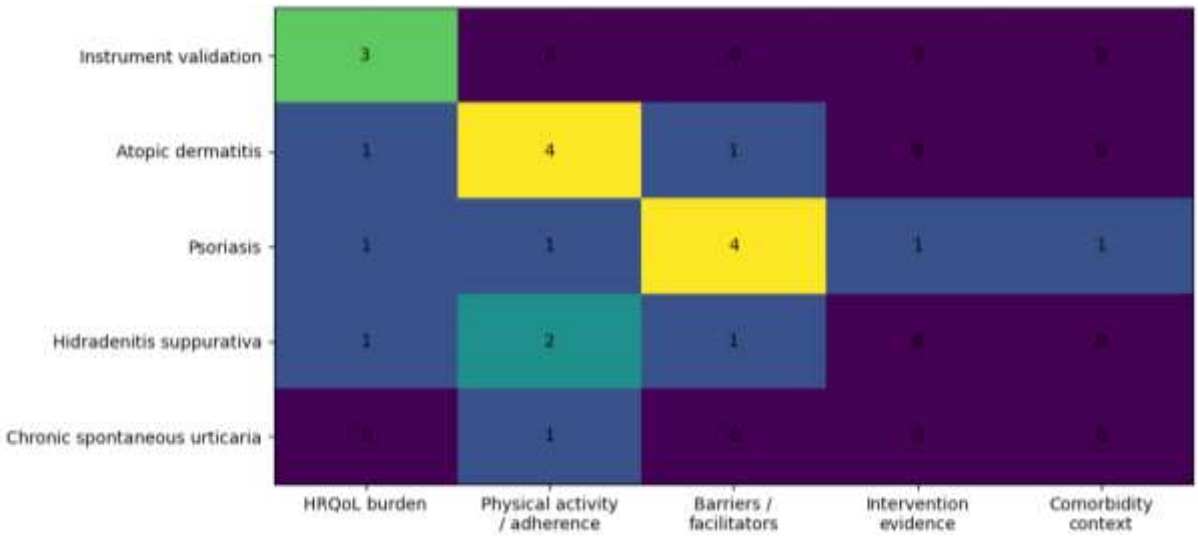

Figure 1. Evidence map of included sources by condition and topic (counts).

Figure 2 summarizes the distribution of the included literature across the key topic. Most sources focused on health-related quality of life burden and on physical activity/exercise participation and adherence, while fewer publications addressed intervention evidence and comorbidity context directly. This pattern reflects the current evidence base, in which validated HRQoL frameworks (e.g., DLQI) and observational or qualitative studies dominate the discussion of exercise behavior in chronic inflammatory skin diseases, whereas structured intervention studies remain limited (Finlay & Khan, 1994; Basra et al., 2008; Jensen & Skov, 2016; Auker et al., 2020; Wiis et al., 2023).

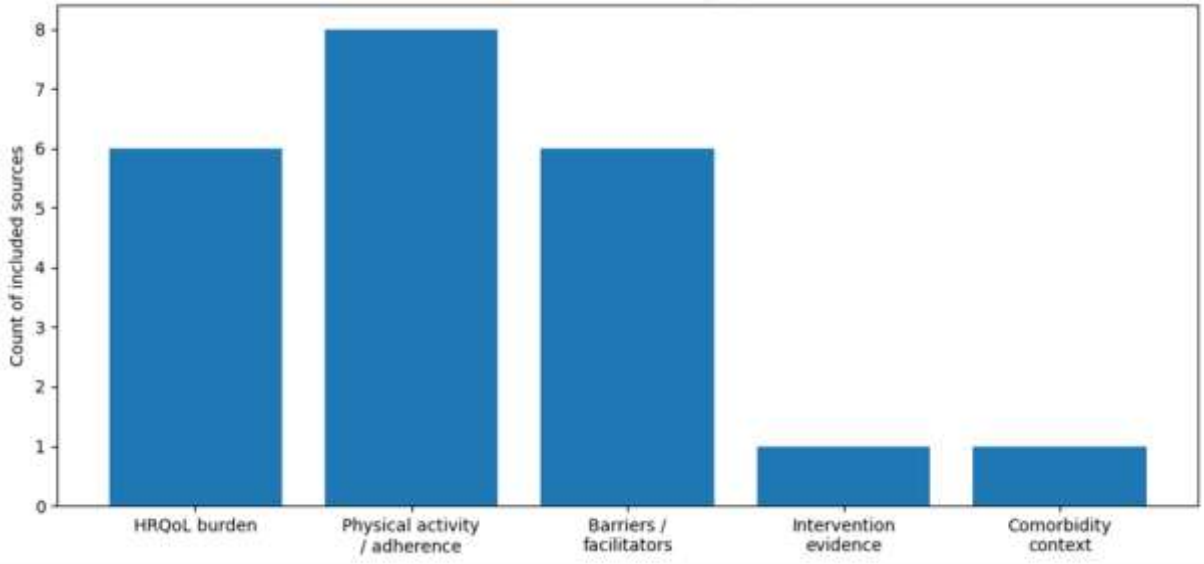

Figure 2. Distribution of included sources by topic.

4. Discussion

This narrative review examined the intersection of health-related quality of life and exercise participation/adherence in individuals with chronic inflammatory skin diseases, focusing on atopic dermatitis, psoriasis, hidradenitis suppurativa, and chronic spontaneous urticaria. The synthesized evidence suggests that reduced exercise engagement is rarely explained by a single factor; rather, it reflects an interplay between symptom burden (itch, pain, heat/sweat sensitivity), psychosocial stressors (stigma, embarrassment, anxiety), and practical barriers (clothing friction, environmental triggers, fear of symptom worsening). Importantly, the reviewed literature indicates that these barriers are strongly aligned with dermatology-specific HRQoL domains captured by validated instruments such as DLQI and Skindex, implying that QoL assessment can help identify patients at higher risk for reduced activity and poor adherence (Finlay & Khan, 1994; Chren et al., 1996; Basra et al., 2008).

4.1. HRQoL as a behavioral determinant of exercise adherence

A central interpretation arising from the evidence is that HRQoL impairment functions not only as an outcome of CISDs but also as a determinant of behavior—particularly sustained engagement with physical activity. Dermatology-specific HRQoL tools have long been used to quantify symptom interference, emotional burden, and functional limitation (Finlay & Khan, 1994; Chren et al., 1996). These domains map directly onto determinants of exercise adherence, including perceived capability, enjoyment, social comfort, and willingness to attend exercise settings. The DLQI, for example, captures impacts on daily activities, leisure, and personal relationships; high scores may therefore reflect barriers that reduce exercise initiation and persistence. The long-standing validation and interpretability of DLQI across dermatologic diseases further supports its use as a practical indicator of likely behavioral limitation (Basra et al., 2008). In psoriasis, comprehensive HRQoL reviews emphasize that psychosocial effects—such as social avoidance and diminished self-confidence—are major contributors to disability, suggesting clear pathways by which HRQoL impairment can reduce exercise adherence (Ghezzi et al., 2024).

In atopic dermatitis, HRQoL burden is often intensified by itch and sleep disturbance, factors likely to decrease energy, motivation, and perceived exercise tolerance. A systematic review in adult AD confirms substantial HRQoL impairment, reinforcing the plausibility that symptom burden may translate into reduced capacity or willingness to maintain regular exercise (Birdi et al., 2020). Clinically, this implies that improving symptom control and sleep quality could support exercise adherence indirectly, even when exercise itself is not the primary therapeutic target.

4.2. Disease severity and physical activity: evidence and interpretation

Evidence linking CISDs to lower physical activity is strongest in atopic dermatitis, where population-based findings suggest AD is associated with reduced physical activity levels in adults (Silverberg et al., 2016). More recent work also indicates that greater AD severity correlates with decreased physical activity, consistent with the hypothesis that symptom intensity contributes to avoidance or dropout (Schwartzman et al., 2023). While these observational designs cannot establish causality, the convergence of findings across datasets suggests that the association is not incidental. A plausible mechanistic interpretation is that sweat/heat sensitivity and post-exercise itch act as immediate negative reinforcers, reducing the likelihood of repeating exercise sessions and undermining adherence over time. Patient-reported experiences in adult AD support the idea that exercise is a context in which symptoms may worsen or become difficult to manage, reinforcing avoidance behaviors (Lonne-Rahm et al., 2014).

In psoriasis, evidence appears more concentrated on perceived barriers and behavioral constraints than on purely descriptive comparisons of activity levels. Qualitative work identifies barriers such as discomfort, appearance-related concerns, fear of negative evaluation, and practical difficulties in exercise contexts (Auker et al., 2020). This emphasis suggests that psoriasis-related limitations may be heavily mediated by psychosocial mechanisms and self-efficacy. In addition, physiological concerns may exist for subsets of patients; early research raised the possibility of heat intolerance in psoriatic patients, which could plausibly increase perceived exertion and discourage continued participation in vigorous activity (Leibowitz et al., 1991). Even if heat intolerance is not universal, the perception of heat-related symptom worsening may itself function as a barrier to adherence.

In hidradenitis suppurativa, HRQoL impairment is often severe, and symptoms such as pain, tenderness, friction, and drainage create direct mechanical barriers to exercise, especially activities involving repetitive movement and intertriginous friction (Matusiak et al., 2010). Cross-sectional lifestyle studies suggest relationships between lifestyle factors—including physical activity patterns—and disease severity, supporting clinical relevance of exercise behavior (Lorite-Fuentes et al., 2022; Bouwman et al., 2024). However, because this evidence is mostly observational, it is difficult to determine whether reduced activity worsens disease through indirect pathways (e.g., weight gain, metabolic dysfunction) or whether disease severity drives reduced activity. Most likely, both directions contribute, and reinforcing cycles can develop.

4.3. Barriers to exercise adherence: commonalities across diseases

Across CISDs, the literature supports a multi-domain barrier framework. Symptom-related barriers appear as primary drivers, though their manifestations differ by disease: itch and sweat sensitivity in AD, pain and friction sensitivity in HS, and discomfort/lesion irritation in psoriasis. Importantly, these symptom burdens are not limited to the exercise session itself; post-exercise flares, delayed discomfort, and prolonged itch/pain can amplify the perceived «cost» of exercise and reduce the likelihood of maintaining routines. This may be particularly relevant in conditions with delayed worsening after sweating or friction, where patients learn that exercise predicts symptoms later the same day or the next day.

Psychosocial barriers are also prominent. Stigma and body image concerns are repeatedly reported in psoriasis and HS, where visible lesions or scarring may reduce willingness to participate in public exercise environments, use locker rooms, or engage in group fitness settings (Auker et al., 2020; Matusiak et al., 2010; Ghezzi et al., 2024). Such barriers can persist

even when symptoms are physically tolerable, indicating that interventions should address both physical and psychological dimensions. The association between physical activity and mental health outcomes in inflammatory skin disease populations supports the concept that psychosocial status and exercise behavior are interconnected rather than independent (Wiis et al., 2023).

Practical and environmental barriers—such as heat, humidity, clothing choice, and friction—operate as proximal triggers that may transform exercise into a predictable symptom-provoking exposure. These barriers are modifiable, suggesting that adherence-support strategies should prioritize environmental and behavioral adjustments rather than only advising «exercise more». This is especially important because patients may already understand that exercise is beneficial but still find it unrealistic or unsafe due to symptom triggers.

4.4. Facilitators and strategies to support adherence: clinical and behavioral implications

Although barrier research is more common than intervention trials, the available evidence suggests several actionable principles. First, individualized exercise planning is likely essential. For AD, adjusting intensity, incorporating cooling breaks, and planning immediate post-exercise skin care may reduce symptom flares and improve willingness to continue (Lonne-Rahm et al., 2014). For HS, prioritizing low-friction modalities (e.g., cycling, swimming where feasible, low-impact training), using protective clothing, and managing lesion care and pain may be prerequisites for adherence (Matusiak et al., 2010). For psoriasis, addressing appearance-related concerns and self-efficacy may be as important as symptom control; qualitative insights suggest the need for supportive environments and practical counseling (Auker et al., 2020).

Second, integrating medical symptom control with lifestyle counseling appears critical. If itch, pain, or sweat-triggered flares are inadequately controlled, adherence strategies will likely fail. Conversely, when symptom control improves, activity may become feasible, and exercise can then be introduced gradually to build tolerance and routine. This aligns with the idea that HRQoL improvements may serve as a gateway to better exercise behavior rather than merely being an endpoint.

Third, structured lifestyle programs may provide a practical model for adherence support. In psoriasis, a randomized controlled trial incorporating diet and physical exercise demonstrates feasibility of lifestyle intervention frameworks in clinical research (Naldi et al., 2014). While not all CISDs have equivalent trial evidence, this example suggests that supervised, structured

programs may overcome barriers through accountability, education, and gradual progression, potentially improving adherence beyond what generic advice can achieve.

Fourth, comorbidity considerations strengthen the rationale for promoting physical activity in CISDs. Psoriasis is associated with obesity and metabolic risk, implying that reduced activity may exacerbate comorbidity burden (Jensen & Skov, 2016). Similarly, reduced activity may worsen mental health, and improved activity may support psychological resilience. The observed links between activity and mental health in AD/CSU populations suggest that adherence-support strategies could produce broader well-being benefits beyond skin symptoms alone (Wiis et al., 2023).

4.5. Limitations of the evidence base and implications for future research

Several limitations emerge from the current literature. First, heterogeneity in the measurement of physical activity and adherence limits comparability. Many studies rely on self-report activity measures, while others focus on perceived barriers without standardized adherence metrics. Second, the evidence is dominated by cross-sectional designs, limiting causal inference. For example, while AD severity is associated with reduced activity, it remains possible that inactivity contributes to worse overall health or inflammatory status, or that confounding factors (e.g., depression, obesity, socioeconomic status) influence both disease and activity patterns (Silverberg et al., 2016; Schwartzman et al., 2023). Third, intervention evidence is uneven across conditions: psoriasis has more structured lifestyle trial data, whereas HS and CSU lack robust randomized evidence specifically targeting exercise adherence.

Future research would benefit from: (1) prospective longitudinal studies that measure disease activity, HRQoL, and objective activity metrics over time; (2) standardized adherence outcomes, including exercise frequency, persistence, and dropout rates; (3) trials of multi-component adherence interventions combining symptom management, behavioral support, and environmental modification; and (4) disease-specific protocols that address unique barriers, such as friction/pain management in HS and sweat/itch mitigation in AD. Such work would provide stronger guidance for clinicians and exercise professionals seeking to support safe and sustainable physical activity in these populations.

4.6. Summary interpretation

Overall, the literature supports the conclusion that HRQoL impairment in CISDs is closely intertwined with reduced exercise participation and adherence, with symptom burden and psychosocial distress acting as key mediators. Practical trigger management, individualized

exercise planning, and integrated clinical-behavioral strategies appear most promising for improving adherence. From a clinical perspective, assessing HRQoL may help identify patients who need targeted counseling and tailored exercise recommendations, and addressing HRQoL domains may represent a pathway to improving both quality of life and long-term physical activity engagement.

5. Conclusions

Chronic inflammatory skin diseases impose a substantial and multidimensional burden that extends beyond visible skin symptoms and often translates into meaningful limitations in daily functioning, psychosocial well-being, and health behaviors, including physical activity and exercise adherence. The evidence synthesized in this narrative review supports the conclusion that reduced exercise participation in CISDs is not primarily a consequence of poor motivation or inadequate health awareness. Rather, it reflects a predictable interaction between symptom-driven barriers (e.g., itch, pain, sweat/heat sensitivity, sleep impairment), psychosocial determinants (e.g., stigma, embarrassment, fear of negative evaluation, anxiety), and practical constraints (e.g., clothing friction, lesion location, concern about post-exercise flares, and difficulty managing hygiene or symptom control around training sessions). These determinants closely correspond to domains captured by dermatology-specific HRQoL instruments such as the Dermatology Life Quality Index and Skindex, indicating that routine HRQoL assessment can serve not only as an outcome measure but also as a clinically useful signal of elevated risk for exercise avoidance, reduced persistence, and dropout.

Across the conditions examined, several disease-specific patterns emerge. In atopic dermatitis, the association between disease severity and lower physical activity appears particularly consistent, and is plausibly mediated by sweat-triggered itch, discomfort during overheating, and fatigue or reduced exercise capacity linked to sleep disturbance. In psoriasis, the literature emphasizes complex barriers to exercise that combine physical discomfort with strong psychosocial constraints, especially concerns about visibility, stigma, and public exercise environments; these factors can reduce both initiation of activity and long-term adherence even when physical capacity is preserved. In hidradenitis suppurativa, pain, friction in intertriginous areas, drainage, and mobility limitation constitute direct mechanical barriers that may require substantial modification of exercise type and environment for adherence to become realistic. Evidence involving chronic spontaneous urticaria, while more limited, indicates that psychosocial well-being and physical activity are interrelated, suggesting that

anxiety about unpredictability of symptoms may similarly undermine consistent exercise engagement.

A key conclusion from the reviewed evidence is that the most promising pathway to improve exercise adherence in individuals with CISDs is a multi-component approach rather than single, generic advice to «exercise more». Clinically meaningful strategies should integrate optimized medical symptom control with individualized activity planning, including adjustments of intensity and modality, proactive management of sweat/heat exposure, friction reduction through clothing and equipment choices, planned cooling and recovery periods, and structured post-exercise skin care and hygiene routines. In parallel, psychosocial support is essential: barrier-focused counseling, confidence-building strategies, and addressing stigma-related concerns may be critical determinants of whether patients can maintain participation in gyms or group exercise settings. Where feasible, structured lifestyle programs that combine education, gradual progression, and accountability may offer advantages for adherence, as suggested by intervention-oriented research in psoriasis. Importantly, supporting safe and tolerable physical activity in CISDs has potential benefits beyond skin-specific outcomes, including improved mental health, enhanced self-efficacy, and reduction of comorbidity risks that are particularly relevant in psoriasis and other inflammatory conditions.

Finally, this review highlights clear priorities for future research. There is a need for prospective studies that track disease activity, symptom variability, HRQoL and objective physical activity metrics over time, as well as controlled trials testing multi-domain adherence interventions tailored to specific diseases and barrier profiles. Standardized reporting of exercise adherence outcomes (frequency, persistence, dropout, and symptom-related discontinuation) would strengthen comparability across studies and improve translation into practice. From a clinical perspective, implementing routine HRQoL screening and incorporating individualized physical activity counseling into dermatology and sports medicine care may represent a practical, patient-centered strategy to improve both quality of life and sustainable engagement in physical activity among individuals living with chronic inflammatory skin diseases.

Disclosure

The authors declare that this manuscript was prepared independently. No external organization influenced the study design, data interpretation, or the content of the manuscript.

Supplementary Materials

Not applicable.

Author Contributions

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Conflicts of Interest

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