**Sweat-Induced Chronic Pruritus in Athletes Without Urticaria or Primary Dermatosis**

Gabrielle R. Minta, MD[1]; Claudia Loret de Mola Plaza, BS[2]; Kelly Frasier, DO, MS[1]; Alina G. Bridges, DO, FAAD[1]

[1]Department of Dermatology, Northwell, New Hyde Park, NY, USA

[2]Orlando College of Osteopathic Medicine, Orlando, FL, USA

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## Introduction

Pruritus during or after physical exertion is a common complaint among athletes, termed "runner's itch". Most clinical attention has focused on exercise induced urticaria, thought to be secondary to cholinergic release, or exercise induced pruritus in athletes with a primary dermatoses.[1,2] However, there are a subset of athletes reporting chronic, sweat-triggered pruritus in the absence of urticarial lesions or visible primary dermatoses. Despite these reports, chronic sweat-triggered pruritus without primary cutaneous findings remain underrecognized and poorly characterized in the literature, with no established diagnostic criteria or consensus on underlying mechanism.

## Objectives

To review current literature on heat- or sweat-induced pruritus occurring in the absence of urticaria or primary dermatosis, and to characterize proposed mechanisms.

## Methods

A narrative review was conducted, identifying literature published on PubMed/MEDLINE, Scopus, and Google Scholar through September 2026. Search terms included "sweat-induced pruritus", "exercise-induced pruritus", "exertional pruritus", "aquagenic pruritus", "cholinergic pruritus", "sweat-induced itch", "athletes", "sports", "exercise", "exertional", "pruritus", and "itch". Articles describing pruritus provoked by sweat, heat, or exertion in the absence of urticaria or primary dermatoses were included.

Given limited direct literature in athletic populations, mechanistically related case reports and studies were reviewed.

**Results**

Eight publications met inclusion criteria: five case reports, one case series (n = 7), one prospective, open-label study (n = 20), and one case-control/retrospective cohort study (n = 76). Across sources, pruritus onset ranged from 9 months to 19.5 years, and was classified as “cholinergic pruritus”, “aquagenic pruritus”, or “chronic pruritus of unknown origin”. Nearly all patients had poor or no response to multiple antihistamines. Medications with reported success included omalizumab, danazol, ruxolitinib, β-alanine, cyclosporine, and acitretin/isotretinoin. Pruritus symptoms improved as quickly as one week with oral cyclosporine, though sources most commonly noted improvement by month three.

Primary proposed mechanisms of disease included sweat duct dilation and acrosyringial wall thickening, and water-induced activation of acetylcholinesterases. One case reported a 64-year-old male with chronic pruritus and labs notable for thrombocytosis, ultimately undergoing bone marrow biopsy and diagnosed with essential thrombocythemia, which was thought to be contributing to the pruritus symptoms.

**Conclusion**

Sweat- and heat-induced pruritus without urticaria or primary dermatosis is likely underrecognized in athletes, despite representing a population with disproportionately high exposure to sweat and thermal triggers. Existing literature describes long-standing symptoms with inconsistent response to first-line antihistamines. Plausible mechanisms included sweat duct obstruction and acetylcholine-mediated pathways. Given athletes’ unique exposure profile, clinicians should consider sweat-induced pruritus once urticaria and primary dermatoses have been excluded and recognize conventional antihistamines are unlikely to provide adequate relief.

**References**

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