

How Participating in Sports Causes Manifestations and Mimics of Allergic Conditions and What to Do About Them for Optimum Performance



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This theme editorial reviews and outlines 7 manuscripts published by the *Journal of Allergy and Clinical Immunology: In Practice* 2020 titled Sports Allergy. One goal of this project is to identify how to diagnose correctly, treat effectively, and optimize health care outcomes for people of various ages and skill levels, who participate in sports activity and develop respiratory symptoms. Of course, not all activities that produce wheezes or chest tightness during exercise are from bronchoconstriction, and articles in this issue explore the differential diagnosis and approaches to treatment.

Koya et al¹ present exercise-induced bronchoconstriction (EIB) as a phenomenon observed in asthma and is seen in healthy individuals as well as frequently in athletes. The pathophysiology of EIB is thought to be related to hyperventilation, cold air, and epithelial damage caused by chlorine (when swimming) and from fine particles in inspired air. The diagnosis of EIB based on self-reported symptoms is not reliable and requires an objective examination. A short-acting β -agonist is the first choice for prevention of EIB, and an inhaled corticosteroid is essential for patients with asthma. Furthermore, treatment should include antidoping requirements in elite athletes.

Brannan and Kippelen² describe the mechanistic differences between indirect bronchial provocation tests including dry air hyperpnea (exercise, eucapnic voluntary hyperpnea), osmotic aerosols (inhaled mannitol), and direct tests (methacholine). The authors also help to elucidate the events leading to airway narrowing in asthmatics and elite athletes, while improving clinical utility of these tests to diagnose and manage EIB.

Del Giacco et al³ examine the main issues around the definitions and clinical differentiations of asthma in adolescent athletes. It discusses the best practice approaches to improve the

adherence to the clinical management, including non-pharmacological strategies directed to the family and trainers of adolescents. The tables address an overview of studies regarding athletes in various sports and the incidence of EIB.

Hull et al⁴ examine breathlessness during sport participation that can be caused by a variety of cardiorespiratory conditions, but when associated with stridor, usually arises from an upper airway etiology. The term exercise-induced laryngeal obstruction (EILO) may be used to describe the phenomenon of transient glottic closure occurring in association with physical activity. EILO symptoms are usually most prominent at maximal exercise intensity and resolve quickly on exercise cessation. It is important to recognize that EILO and asthma can coexist in a proportion of athletes. Furthermore, research is needed to establish the optimal treatment algorithm, and more work is needed to increase awareness of this important clinical entity.

Zeiger and Weiler⁵ discuss the concerns of elite and Olympic athletes with EIB who experience symptoms of breathlessness due to lack of adherence, improper medications, and/or generalized breathing dysfunction. Some of the challenges to promote adherence, managing dysfunctional breathing, and measuring and treating mental skills deficits are presented. A flow diagram for medical providers to identify the reasons for lack of response to traditional treatment plans for EIB with options on other treatment modalities was developed.

Geller⁶ explores how although exercising is both pleasant and healthy, in some individuals, it can trigger episodes of anaphylaxis or urticaria. Examples of these reactions include exercise-induced anaphylaxis (EIA) and cholinergic urticaria (CholU). Strenuous exertion may provoke both EIA and CholU, but with exercise the passive warming will induce solely CholU and not EIA. The morphologic size of the urticarial wheals can help distinguish between these 2 types of conditions. Small punctate wheals are present in CholU and large ones in EIA.

Lastly, Sutcliffe and Greenberger⁷ address psychological concerns that face college students who participate in sports. One contributing factor is the onset of most mental health disorders occurring in late adolescence and early adulthood. Pre-college trauma (emotional, physical, sexual, and witness to violence) and lower socioeconomic status can set the stage for psychological difficulties. Some of many stressors that may affect college athletes include peer pressures, independence, need to please family, friends and coaches, high level of expectations with a very strong commitment to succeeding and winning in competitive, and intense intercollegiate sports and time management for academic demands. Injuries are frequent in college athletes, and the presence of anxiety in the preseason is associated with greater risk of injury than in student athletes without anxiety. This case study illustrates the role of the sport psychologist in identifying

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psychological concerns in college athletes and demonstrates the opportunity to collaborate across disciplines to provide multidisciplinary treatment leading to improved health outcomes.

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