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Short Article

Eating Disorders in Athletes – A Review

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Zaburzenia odrzywiania wśród sportowców - przegląd

Eating Disorders in Athletes – A Review

Abstrakt

Cel badania

Celem pracy jest syntetyczne przedstawienie dowodów dotyczących zaburzeń odżywiania (ED) u sportowców, obejmujących częstość występowania, czynniki ryzyka, wyzwania diagnostyczne, skutki kliniczne oraz strategie postępowania w kontekście medycyny sportowej i zdrowia publicznego.

Materiały i metody badawcze

Analiza opiera się na badaniach epidemiologicznych, klinicznych i eksperymentalnych dotyczących ED w populacjach sportowców, ze szczególnym uwzględnieniem sportów estetycznych, wytrzymałościowych i kategorii wagowych, w których ryzyko występowania zaburzeń odżywiania jest najwyższe.

Podstawowe wyniki

Zebrane dane wskazują, że prewalencja ED w niektórych grupach sportowców może sięgać nawet 40%, przy czym mężczyźni stanowią około jedną czwartą diagnoz, często z objawami ukierunkowanymi na szczupłość i umięśnienie, co prowadzi do ich niedodiagnozowania. Niski poziom dostępnej energii (LEA) oraz zespół niedoboru energii w sporcie (RED-S) są centralnymi mechanizmami wywołującymi zaburzenia hormonalne, kostne i sercowo-naczyniowe, zwiększone ryzyko urazów oraz opóźnioną regenerację. Trudności diagnostyczne

wynikają z normalizacji restrykcyjnych zachowań, niedoszacowania objawów oraz ograniczonej skuteczności ogólnych narzędzi przesiewowych w populacji sportowców.

Wnioski

Skuteczne postępowanie kliniczne wymaga opieki wielodyscyplinarnej, wczesnego rozpoznawania „czerwonych flag", sportowo-specyficznych metod diagnostycznych oraz indywidualnie dopasowanych interwencji dietetycznych, psychologicznych i organizacyjnych. Profilaktyka powinna obejmować edukację trenerów, redukcję presji związanej z wyglądem oraz ograniczenie stygmatyzacji, aby zmniejszyć obciążenie zaburzeniami odżywiania wśród sportowców.

Abstract

Introduction

The aim of this review is to synthesize evidence on eating disorders (ED) in athletes, including prevalence, risk factors, diagnostic challenges, clinical outcomes, and management strategies in the context of sports medicine and public health.

Materials and Methods

The analysis is based on epidemiological, clinical, and experimental studies on ED in athlete populations, with particular focus on aesthetic, endurance, and weight-category sports, which carry the highest risk of developing eating disorders.

Main Findings

Data indicate that the prevalence of ED in some athlete groups may reach up to 40%, with men accounting for approximately one-quarter of diagnoses, often presenting symptoms oriented toward leanness and muscularity, which contributes to underdiagnosis. Low energy availability (LEA) and relative energy deficiency in sport (RED-S) are central mechanisms leading to hormonal, skeletal, and cardiovascular dysfunction, increased injury risk, and delayed recovery.

Diagnostic challenges stem from normalization of restrictive behaviors, underreporting of symptoms, and limited validity of standard screening tools in athletic populations.

Conclusions

Effective clinical management requires multidisciplinary care, early recognition of "red flags," sport-specific diagnostic approaches, and individually tailored dietary, psychological, and organizational interventions. Preventive strategies should include coach education, reduction of appearance-related pressure, and stigma mitigation to decrease the burden of eating disorders among athletes.

Słowa kluczowe

zaburzenia odżywiania; sportowcy; niska dostępność energii (LEA); względny niedobór energii w sporcie (RED-S); częstość występowania; czynniki ryzyka; badania przesiewowe; profilaktyka; medycyna sportowa

Keywords

eating disorders; athletes; low energy availability (LEA); relative energy deficiency in sport (RED-S); prevalence; risk factors; screening; prevention; sports medicine

1. Introduction

Eating disorders (EDs) in athletes represent a significant public health and sports medicine problem, affecting physical and mental health, training safety, and athletic performance. In

many disciplines, the culture of “winning at all costs” is reinforced by norms concerning thinness or body weight (aesthetic sports, endurance sports, weight-category disciplines), which fosters dietary restrictions, compensatory exercise, chronic low energy availability (LEA), and relative energy deficiency in sport (RED-S). Current clinical positions and reviews emphasize that this problem is not limited to women; men may account for up to one-quarter of individuals diagnosed with EDs, though their clinical presentation is often different (more oriented toward muscularity and “leanness”) and therefore less frequently recognized.

2. Materials and Methods

This review includes available systematic reviews, expert consensus statements, and empirical studies addressing eating disorders in athletes. The analysis focused on epidemiological data, risk factors, diagnostic tools, clinical consequences, and recommendations for prevention and treatment. Particular attention was paid to differences between sports disciplines and sex, as well as to the role of energy availability and mental health in the development and course of eating disorders.

3. Literature Review

3.1. Prevalence and variation by discipline/sex

In a sample of young women (N=120; 80 athletes – rhythmic gymnastics and soccer – and 40 non-athletes), the prevalence of eating disorder symptoms measured by the SCOFF questionnaire differed statistically between groups. Interestingly, in this particular study, the SCOFF score was higher among non-athletes than gymnasts (moderate effect: d=0.52), highlighting the heterogeneity of risk and the importance of sport context and competition level. At the same time, the authors cite a broad overview of earlier population data: in Norwegian

female athletes, ED prevalence reached **42% in aesthetic sports, 24% in endurance sports, 17% in technical sports, and 16% in team sports**; in a German study: **17% in aesthetic sports** vs **3% in team sports** and **2% among non-athletes**. [1]

In men, a narrative review reported that they may account for up to **~25%** of all ED diagnoses. Among male college students, the prevalence of risky behaviors was **7.9% for binge eating, 4.4% for excessive compensatory exercise, 4.0% for fasting, 2.7% for vomiting, and 1.6% for misuse of laxatives/diuretics**.

In this group, practices such as "lean gains" and bulk-cut cycles were also more common. [2]

Updated clinical reviews confirm that **aesthetic, endurance, and weight-category sports** carry higher risk than those where body composition is less relevant. At the same time, not every study demonstrates greater risk among athletes compared to controls the results depend on tools, definitions, and populations studied. [3]

3.2. Risk factors and mechanisms

Pressure for thinness/muscularity, sport-specific norms, and early specialization reinforce perfectionism, self-control, and "weight-performance" strategies, which may fuel cycles of restriction and compensatory exercise. In men, a greater focus on muscularity, use of "cheat meals," supplementation, and anabolic-androgenic steroids is observed with a **lifetime prevalence of ~6%**, and up to **~21%** among men from sexual minority groups. [4]

LEA/RED-S: Chronic energy deficit (insufficient intake relative to training expenditure) is associated with reduced bone mineral density, disturbances of hormonal axes (in men, including testosterone suppression), musculoskeletal weakness, and increased injury risk, ultimately impairing athletic performance. Expert statements recommend early identification of LEA as a "red flag" condition for EDs in sport. [5]

Psychosocial factors: Among athletes, perfectionism, low self-esteem, anxiety, "fat talk," as well as team climate and coaching style are important. Comorbidity with mood and anxiety disorders is frequent and affects prognosis and treatment course. [6]

3.3. Screening and detection

Screening in sport is hindered by: (a) normalization of restrictive eating practices, (b) shame and concealment of symptoms, especially in men, and (c) limited accuracy of general screening tools in athletic populations. A review of screening tool accuracy in athletes showed **few validation studies** and **highly variable sensitivity/specificity**; authors explicitly highlight the need for dedicated, sport-specific validated instruments and protocols. [7]

Clinical guidelines recommend a **proactive, multi-step screening process** conducted by an interdisciplinary team (sports physician, sports dietitian, psychologist/psychiatrist), combining targeted history, observation of eating and training behaviors, physical examination, basic laboratory markers, an if indicated bone mineral density and hormonal assessments. [8]

3.4. Clinical consequences and training safety

EDs and associated LEA/RED-S lead to **decreased bone mineral density, menstrual disturbances in women, hypogonadism in men, electrolyte imbalances (risk of arrhythmias), impaired healing, reduced immunity, and increased injury risk (including stress fractures)**. In practice, "red flag" symptoms include **significant body weight/BMI fluctuations, bradycardia, orthostatic hypotension, chronic fatigue/syncope, gastrointestinal and dermatological symptoms, as well as psychiatric manifestations (depression, anxiety, self-harm behaviors)**. [9]

From a performance perspective, EDs are linked to **higher injury rates, impaired recovery, and unstable form**; consequently, even short-term "weight benefits" are outweighed by long-term drawbacks. [10]

3.5. Clinical management and prevention in sport

General principles: early identification, safety assessment (hemodynamics, electrolyte/arrhythmia risk), decisions on workload modification or temporary medical disqualification, psychoeducation of the athlete and their environment (coaches, family), nutritional and psychotherapeutic treatment (CBT-E and other evidence-based approaches), and continuous medical supervision. Environmental guidelines also recommend preventive policies (healthy nutrition culture, "weight-neutral" approaches, non-stigmatizing language within coaching staff). [11]

Sex- and discipline-specific aspects: In men, there is a need to focus on behaviors targeting "muscular leanness" (excessive exercise, bulk-cut cycles, supplements/anabolics), as well as on **destigmatization** and active encouragement to seek help. [12]

Mental health: Clinical work emphasizes the strong comorbidity of depressive and anxiety symptoms, perfectionism, and EDs in athletes; in practice, this requires an integrated treatment plan and relapse monitoring, especially during periods of increased training loads and competitions. [13]

4. Summary

Eating disorders in sport are **common** and **clinically significant**, with presentations differing by sex, discipline, and competition level. Quantitative data indicate very high ED prevalence in aesthetic sports (**up to ~40% in some studies**), while in men there is a notable prevalence of compensatory behaviors and practices oriented toward muscularity, accompanied by a risk of anabolic steroid use (**~6% overall; ~21% in some subpopulations**). Low energy

availability (LEA/RED-S) represents a unifying mechanism underlying many health and performance consequences; therefore, the **first-line strategy** remains early, proactive screening and interdisciplinary care with clear criteria for workload modification.

There is also an urgent need for **better validated, sport-specific screening tools** and organizational interventions to reduce the pressure of "performance at the expense of health."

Disclosure

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