



NUTRITIONAL IMPACT ON PHYSICAL AND MENTAL SPORTS PERFORMANCE

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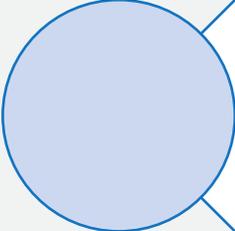
DECLARATION OF CONFLICT OF INTEREST:

- The presenter has no conflicts of interest or financial relationships to disclose.

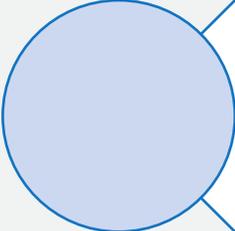
LEARNING OBJECTIVES

1. Explain how proper nutrition influences physical performance, recovery, and injury prevention in athletes.
2. Describe the relationship between nutrition, cognitive function, and mental health in sport.
3. Identify key nutritional strategies that support optimal physical and mental sports performance.

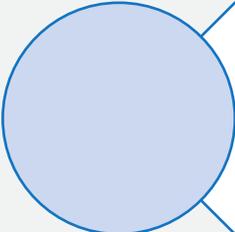
OVERVIEW OF BROAD SPORTS NUTRITION GOALS TO SUPPORT HEALTH AND PERFORMANCE¹



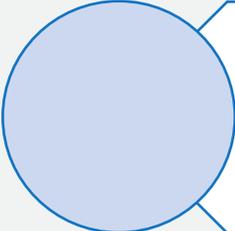
Meal consistency, optimal fueling strategies around exercise, adequate energy intake to support energy availability (replete), recovery, cognitive function, and emotional regulation.



Appropriate distribution of calories from the three macronutrients [carbohydrates, protein, and fat] based on activity levels [nutrient periodization].



Optimal micronutrient intake through a well-balanced diet including a variety of fruits, vegetables, dairy products, lean proteins, and whole grains.



Optimal hydration to support health, athletic performance and cognitive function.

INADEQUATE ENERGY INTAKE AMONG ATHLETES IS COMMON²⁻⁷

A pathway to Energy Deficiency with negative, health and performance consequences:

- Unintentional undereating (knowledge deficit)
- Food insecurity
- Intentional weight loss without disordered eating
- Disordered eating with dietary restraint and drive for thinness
- Compulsive exercise with inadequate energy intake
- Clinical eating disorder (AN, BN, OSFED, ARFID)

OUTCOMES OF ENERGY DEFICIENCY & POOR NUTRITION: **INJURY RISK**

Energy Deficiency & Injury Risk

- The Female Athlete Triad components [energy deficiency, menstrual disturbances, low BMD] are consistently associated with an increased risk of a bone stress injury.²
- Specific subclinical outcomes are less clearly defined in male athletes; more research is needed to understand the degree of LEA and risk for a bone stress injury.⁴
- Preliminary research has found an association between LEA and risk for ACL tears and other knee injuries in female athletes; more research is needed.¹⁰
- Subclinical DE and clinical ED are associated with an increased risk of low BMD and bone stress injuries.²⁻⁷

Nutritional Deficiency & Injury Risk

- Energy restriction and deficiency increases the risk of nutritional deficiencies.²⁻⁷
- Key Nutrients of Concern: Vitamin D, Calcium, Iron, and Macronutrients.¹

Nutrition & The Injury Rehabilitation Process

- Energy and protein needs are altered during injury, especially around surgery.¹
- Athletes may intentionally restrict intake during an injury due to concerns about weight/body composition, which can delay the recovery process [higher risk for DE behaviors during injury recovery].^{1,7}

OUTCOMES OF ENERGY DEFICIENCY & POOR NUTRITION: **MENTAL HEALTH & COGNITION**

Nutrition is vital for supporting optimal cognition in athletes (i.e., decision-making, attention, memory):

- Proper fueling strategies before and during exercise (carbohydrates).¹
- Moderate caffeine intake before exercise.¹
- Optimal hydration before and during exercise.¹
- A general well-balanced diet, rich in fiber and variety to support a healthy gut microbiome (gut-brain-axis).^{1,9}
 - Early theories suggest that LEA can negatively affect the gut-brain-axis.⁹

Challenges to cognitive function and mental health of athletes:

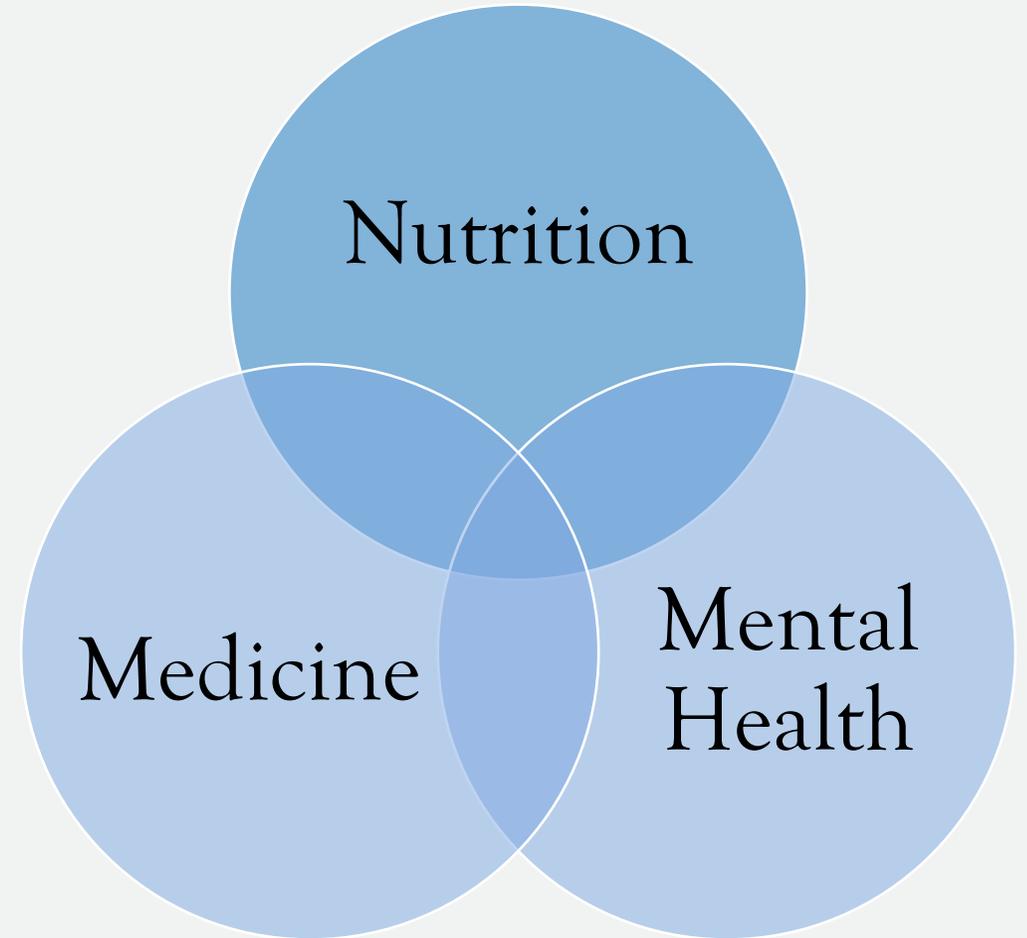
- Lack of access to a sports dietitian and sports nutrition education.^{2,6-7}
- Low energy availability (subclinical/pathological).²⁻⁷
- Subclinical disordered eating (DE) and clinical eating disorders (ED).²⁻⁷
 - Biopsychosocial mental disorders that effect nearly every system in the body.^{2,4,6-7}
 - Can occur with or without LEA and often co-occur with other mental disorders.^{2,4,6-7}

Warning Signs of ED/DE⁷

- Preoccupation with food, calories, body shape and weight.
- Avoidance of food related social activities (e.g., team meals) or social isolation.
- Bathroom visits after meals.
- Increasing rigidity or inflexibility in situations.
- Secretive behavior (food intake or exercise).
- Frequent illness or injury.
- Poor or declining mental health (e.g., abnormal outbursts).
- Dramatic weight fluctuations.

KEY NUTRITION STRATEGIES THAT SUPPORT OPTIMAL PHYSICAL AND MENTAL SPORTS PERFORMANCE¹⁻⁷

1. Establishing a core interdisciplinary team that is accessible, communicates regularly, and have experience working with athletes.
2. Meaningful Pre-Participation Physical Exam screening
 - Energy deficiency
 - ED/DE
3. Regular comprehensive nutrition assessments from a registered dietitian (RDN), preferably a sports dietitian (CSSD).
4. Regular nutrition education for coaches, athletes, and interdisciplinary team members.
 - Athletes are less likely to use resources depending on coach attitudes towards nutrition and mental health!⁸



***All athletes should have access to these resources!**

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