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How Coaches Can Recognize and Respond to RED-S While Supporting the Whole Athlete

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Introduction

Readers of the *Canadian Journal for Women in Coaching* will be familiar with the female athlete triad (FAD), terminology which in years past described a women-only condition common to those who competed in sports that emphasized weight, leanness, and aesthetics. Wrestling, distance running, and gymnastics come to mind. Over time, as it became accepted that "gender is widely understood as a spectrum with dozens of recognized identities", it was also recognized that the triad could, and did, afflict all genders. To reflect this wider application, became known as relative energy deficiency in sport, or RED-S.

Because RED-S, which may be characterized by such clinical symptoms as disordered eating, amenorrhea, and osteoporosis, contributes to serious health issues, it is vital that coaches develop an in-depth understanding of this complex and potentially dangerous syndrome. The *Journal* thanks author M. Khonina for skillfully demystifying RED-S and for providing coaches with essential tools to help them support the health of all their athletes. — Sheila Robertson, *Journal* Editor.

How Coaches Can Recognize and Respond to RED-S While Supporting the Whole Athlete

As awareness of relative energy deficiency in sport (RED-S) grows among coaches and athletes, coaches need practical guidance on how to support their athletes effectively. Research suggests that only 15% of coaches are familiar with the so-called Female Athlete Triad—a concept that preceded and relates to RED-S—and knowledge of RED-S symptoms is likely even more limited. Several misconceptions also persist: Coaches and athletes may assume RED-S only affects very lean or underweight people, emerges only from disordered eating, or occurs only in women. As the following story illustrates, the reality is more complex.

Antón came to firefighting as a former competitive power athlete with strong nutrition habits, including understanding how to fuel training and recovery. Before beginning firefighting school, they planned ahead by preparing well-balanced meals, using carbohydrate-electrolyte drinks during training, prioritizing sleep, and eating as much as possible. In practice, however, this proved difficult. On training days, for instance, Antón might expend 4,500–5,000 kcal. Their day started with a gym workout, followed by 10 minutes for breakfast, then a full day of highly physical firefighter training punctuated by a quick lunch break, during which they were so exhausted they didn't really feel like eating. Antón watched their weight drop over weeks, joking wryly about finally seeing their abs. Within a few weeks, they felt depleted, with low mood and disrupted sleep. They also came down with a bad respiratory infection for the first time in years. Most troubling, they found themselves irritable and short-tempered with classmates and loved ones.

Antón was experiencing symptoms of low energy availability (LEA), compounded by overtraining and general life stressors. At the same time as fire school, they were managing a long-distance relationship, commuting and travelling, and supporting two close friends through a difficult period. Quitting was not a realistic option, so Antón pushed through, comforting themselves with knowing they only had a few weeks to go.

Antón's experience reminds coaches that athletes and tactical professionals rarely control their environments, such as their schedules or external stressors. Even people with strong habits and adequate resources can struggle in high-performance, high-stress environments. Supporting the whole athlete means recognizing that health and performance often involve trade-offs that must be anticipated, monitored, and actively managed—not simply attributed to personal choices or poor planning.

This article clarifies the concept of RED-S and explains how symptoms associated with low energy availability may be linked to factors beyond food intake, such as life stressors, training load, recovery, and environment. It offers practical tools for coaches to recognize and respond to athletes' symptoms and concerns without oversimplifying their causes or pathologizing athletes—particularly women. Finally, it proposes that framing athlete health in terms of cumulative stress, rather than focusing narrowly on energy intake, better supports the whole athlete with empathy and compassion.

What is energy availability and why is it important for athlete health?

Energy balance is the relationship between energy (that is, calories) taken in from food and drink, and energy expended on movement and basic metabolic activities. Energy availability (EA) reflects how much energy is readily available for bodily functions after energy is used for purposeful exercise and everyday physical activity. When an athlete's training and recovery demands are high, they may experience LEA.

LEA can be chronic, when it happens over a long period of time, or periodic, such as during intense training periods, or when "cutting weight" in weight-class sports such as wrestling or judo. LEA can be intentional—as in deliberate weight-loss dieting or food restriction—but it can also occur unintentionally when energy demands are very high and athletes are unable to replace the energy expended. Antón's story illustrates that unintentional LEA is not restricted to sport; it also occurs in physically demanding professions such as first responders and military service. For example, a recent study of wildland firefighters found that they may expend over 6,000 kcal per day while facing multiple additional stressors. LEA, then, is not always avoidable—and, as the following sections discuss, its health impacts are deeply intertwined with stress more broadly.

Sports where there may be a performance advantage associated with lower body weight such as distance running or gymnastics tend to have a higher risk of LEA. Typically, reduced energy intake with high expenditure through daily activity or training is expected to result in weight loss, but the relationship between LEA and body weight is complex. In fact, LEA can happen in all individuals, and not just those who are very lean or have a low body mass index.

The hypothalamus within the brain gathers information about the body's energy status via central and peripheral energy sensors such as within stored body fat and regulates the body's energy use via homeostatic (that is, physiological) and hedonic (that is, appetite-based mechanisms. The brain perceives the lack of energy from food as a stressor, which can have wide-ranging effects on physical and mental health. These can include lower bone density leading to more stress fractures, a higher risk of infections, mood changes, and lower production of gonadal or sex steroid hormones. Athletes who would otherwise be menstruating may have less frequent and/or irregular periods—or may stop having periods altogether. Research suggests that chronic LEA can lead to multiple health issues, which can be grouped under the concept of RED-S.

RED-S: What coaches need to know

RED-S is a syndrome (a collection of symptoms) where chronic LEA creates negative health effects across body systems, increasing injury rates and decreasing athletic performance. This concept was introduced in an International Olympic Committee (IOC) consensus statement on athlete health in 2014 and updated several times since. RED-S evolved from the Female Athlete Triad (FAT), which describes a combination of decreased energy intake, menstrual disturbances, and low bone mineral density. RED-S broadened the symptoms associated with LEA, recognizing that LEA can have many causes, does not always result from disordered eating, and affects athletes of all genders.

When RED-S was first introduced, some researchers argued that the model was insufficiently developed and might divert attention from the FAT—by then well-researched—and from health issues specific to women athletes. Later revisions have not fully resolved these concerns, and researchers continue to question the model's evidence base and whether RED-S symptoms are caused by LEA or by other factors such as overtraining, general stress, or underlying health conditions.

Signs and symptoms associated with RED-S include persistent low energy and mood changes, decreased athletic performance, increased stress fractures, menstrual changes, low libido, sleep disturbances, and delayed recovery from training or injuries. Providing an exhaustive list of symptoms is outside the scope of this article for two reasons. First, the syndrome's conceptual model continues to be revised and developed, and RED-S symptoms may overlap with other health conditions, overtraining, and stress. In fact, RED-S cannot be diagnosed based on a lab assessment, and existing assessment tools mostly screen for risk and may not be able to identify unintentional LEA. Second, the most practical approach for coaches is to recognize the symptoms of RED-S and stress, understand the challenges athletes face in meeting energy needs, and acknowledge that athlete health is complex.

Coaches are not expected to diagnose RED-S or identify its cause, but they play an important role in supporting athletes, referring them to specialists when needed, and fostering a culture that prioritizes athlete health and well-being. Effective prevention and management is multifaceted: ensuring athletes eat sufficiently for their training and recovery demands, modifying training loads when necessary, emphasizing rest and recovery, and helping to reduce overall stress. In short: coach the whole athlete.

Beyond RED-S: Supporting athlete well-being and coaching the whole athlete

Although diagnosing RED-S and addressing its health consequences fall outside coaches' scope of practice, the coach-athlete relationship plays an important role in preventing and identifying RED-S symptoms. Coaches are often the first to notice changes in an athlete's physical or mental well-being, eating habits, weight, and performance, and they directly influence training load and recovery support. Supporting the whole athlete—attending to physical, psychological, and social factors, building trust, and communicating values of health, well-being, and enjoyment alongside performance—is central to this role. The following three strategies offer practical ways to do this.

1. Build trust and show empathy

Athletes are more likely to share their struggles when they feel psychologically safe. Coaches can foster this safety through empathy, curiosity, and genuine interest in athletes' lives beyond sport. Asking open questions and acknowledging stressors outside sport—financial pressures, caretaking responsibilities, academic or work demands, and health challenges—allows coaches to account for an athlete's allostatic load, that is, cumulative stressors across all life domains, when planning training.

When you as a coach observe signs of excessive stress or patterns such as extreme calorie restriction, raise your concerns gently, compassionately, and in private. Encourage the athlete to consult a qualified professional and collaborate with that professional—as you would with a physiotherapist or athletic therapist—to support the athlete's recovery.
Developing awareness of your own stress, fatigue, hunger, and satiety cues, and recognizing cultural and social influences on eating and body image, deepens your empathy and models self-awareness for athletes. For women coaches in particular, reflecting on your own experiences in and outside sport can offer additional insight and strengthen your ability to coach with empathy.

2. Support athlete self-awareness and resilience

Stress resistance and resilience are important predictors of health and well-being. Coaches can help athletes build resilience by encouraging reflection, identifying stressors, and normalizing asking for help. Rather than monitoring calories or weight, consider prompting athletes to reflect on their recovery, mood, and motivation to train.

Practical support includes helping athletes to problem-solve how to meet food and rest needs within real constraints such as early or long training sessions, limited food options such as cafeterias or travel, financial pressures, responsibilities outside of sport, and shared living situations such as in student residences, with roommates, partners/spouses, or children.

Detach self-awareness from self-blame. Many pressures stem from structural constraints that individual athletes can’t control. Coaches can help by focusing on what is within an athlete's control. Fostering belonging, social connection, and community is an equally important—and often overlooked—component of resilience. This is why positive sport culture, including the language coaches use to talk about food, bodies, and training, meaningfully supports athlete well-being.

3. Cultivate a positive culture

While none of us can single-handedly change long-embedded patterns, coaches can help shift sport culture by resisting discrimination, using positive and affirming language, and discouraging the attitude of “toughing it out”.

Sport culture often carries mixed messages about weight and performance. Some of this is evidence-based, while other stems from longstanding beliefs about how athletes “should” look. These perceptions, especially for women, can be a source of added stress and pressure. Women coaches in particular can draw on their lived experience in navigating body image, messages about eating, and gendered expectations within the broader culture and sport. Coaches can use their self-awareness to bring empathy into their conversations with athletes while recognizing that every athlete’s background is unique. Reflecting critically on your own beliefs and continuing to learn from experts, as well as your own and your athletes’ self-knowledge and experience, can help you support the whole athlete.

Conclusion

This article has suggested ways in which coaches can support athlete health by building trust, supporting athlete resilience, and cultivating a positive culture. Of course, every coach has limited time and resources. Many coaches are volunteers with other demands and pressures and may not receive enough coaching education around eating and health. Women coaches face particular challenges—as this journal has highlighted—including heightened expectations, limited access to professional development, and greater demands for emotional labour, including the invisible work of managing others' feelings and needs, at work and at home. Athletes face their own challenges, from limited financial resources and access to specialists such as dietitians, to managing stressors inside and outside sport. As you read these recommendations, consider with self-compassion what's within your control—and your athletes'—and where you can collaborate or ask for help.

In summary, RED-S is a complex condition whose symptoms may reflect imbalances in energy intake and expenditure, as well as poor stress management and recovery. Although research is still developing, coaches can play a meaningful role by supporting the whole athlete and recognizing that factors beyond nutrition and training—such as life stressors—also affect health and recovery. Building strong coach-athlete relationships, encouraging athletes to reflect on their well-being, and fostering a sport culture focused on long-term performance and health can strengthen athletes' resilience, enjoyment, and longevity in sport.

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References available upon request.