

RED-S: When The Deficit Stops Working

It is common knowledge that in order to lose weight or fat, we need to be in a calorie deficit. This is true for the most part and you do need to be in a deficit to lose fat or weight but being in a deficit doesn't always equate to losing fat or weight. If this concept confuses you, this article will be a key resource for helping you to achieve your health and fitness aesthetics goals.

In the beginning, a calorie deficit feels like control. You're training hard, eating clean, watching the lines deepen across your physique. Progress feels mechanical and predictable. Eat less, train more, look better. Until one day, it stops working. You're still training, still eating less, still disciplined but your body composition stalls and strength falls off, you look softer, not sharper. The mirror, once your feedback loop, starts lying to you or at least it looks that way.

That's **RED-S** — *Relative Energy Deficiency in Sport* — a physiological lockdown triggered when energy intake can't cover the combined cost of exercise and basic biology. One missed meal, an underfed recovery day or a few too many "clean" food choices that leave you full but under fueled. Weeks later, performance and aesthetics start to slip in ways that feel confusing because, technically, you're "doing everything right" but the mirror or the tracking metrics you are using tell you different. This is where you can be in a deficit, but you aren't benefitting from it.

How It Happens

The body's priority is survival, not physique or performance. When energy availability drops below roughly **30 kcal per kilogram of fat-free mass**, the body begins reallocating resources. It doesn't care that you're an athlete or that you have a wedding dress to fit into — it assumes there's a famine and adapts accordingly.

The first cutbacks are invisible. Metabolism slows through reduced thyroid output (T3 and T4). Reproductive hormones (testosterone, estrogen, progesterone) downshift because reproduction is optional when food is scarce. The sympathetic nervous system takes the lead, heart rate drops, core temperature drops, sleep becomes lighter and more anxious. Cortisol rises to mobilize emergency fuel and raised cortisol also starts to negatively affect appetite, sleep, performance, libido and mood.

You keep training, but recovery shrinks. Muscles don't refill glycogen properly; inflammation builds; connective tissue starts to ache. Over time, you lose the very qualities you're chasing — power, explosiveness, tone, and fullness despite feeling like you're working harder than others around you and you're putting the work in.

To the athlete, it feels like mystery fatigue. To the body, it's simply conservation so whether you're an athlete or a recreational exerciser it is important to understand this concept to prevent and manage it if it arises in future.

What It Looks Like

Visually, RED-S wears a few distinct masks. The most obvious is flatness — the hollow look that reads as “smaller but not leaner.” That's glycogen depletion: the muscle has run out of stored carbohydrate, and with it, the three grams of water that accompany each gram of glycogen.

Muscles lose their curve. Veins disappear. The skin sits looser on the frame, but there's a film of softness that wasn't there before. You can weigh two kilos less yet look less athletic. You haven't lost fat; you've lost intracellular volume.

In training, everything feels heavier. You warm up fine, then fade halfway through the session. Sleep becomes restless, even when you're exhausted. You wake unrefreshed. Libido dips. Motivation thins. Sometimes, you start to fixate on food — scrolling menus, craving sugar, thinking about the next meal more than the next lift. Those aren't signs of weak discipline; they're survival mechanisms trying to push you back toward equilibrium.

Why the Deficit Stops Working

The biggest misunderstanding in physique and performance nutrition is that a deficit *automatically* equals fat loss. It doesn't — not once your metabolism adapts and this is where doubling down on the thing that isn't working won't make it work, it will make it worse.

When energy intake stays low for too long, the body responds by burning fewer calories. Resting metabolic rate can fall by 10–20%. Non-exercise movement (fidgeting, pacing, posture shifts) quietly drops. Hormonal shifts make you more efficient at using energy and worse at releasing stored fat. In short: the same deficit on paper becomes a smaller deficit in practice.

Worse, **chronic cortisol elevation** drives water retention and inflammation. The “soft” or “puffy” look you see in the mirror is often fluid, not fat — a side effect of stress chemistry, poor sleep, and under-recovery. Meanwhile, glycogen depletion and muscular atrophy make the underlying structure look smaller. The scale might move down, but composition shifts the wrong way. You’ve lost muscle and water, not fat.

This is why the “grind harder” mentality backfires. Every time you tighten intake further, the body tightens its defenses. It’s not being stubborn; it’s obeying biology.

The Role of Food Quality — and Why “Junk” Sometimes Helps

One of the great traps of the modern athlete is **over-purity**. Clean eating becomes moral and some people put themselves on a high horse or superiority. Sugar, fat, and processed food become sins and blow out or junk days are frowned upon, at best. Yet the body doesn’t understand morality — only fuel and necessity. When energy availability is low, it needs density and speed. That’s where the so-called “junk” becomes useful.

Simple carbs refill glycogen faster than oats and greens ever will. Dietary fats restore hormone synthesis and calm the nervous system. Salt and sugar together pull water back into the muscle. Psychologically, these foods also drop cortisol because they represent safety and a break from scarcity. One high-calorie meal after weeks of restriction can spike leptin, raise thyroid output, and reboot fat loss more effectively than another week of salads.

Used strategically around heavy training days, post-competition, or during refeeds fast, calorie-dense foods aren’t indulgence. They’re recovery tools.

How to Fix It

Reversing RED-S isn’t complicated, but it requires letting go of the illusion that suffering equals progress. Increase calories by 300–500 per day, emphasizing carbs and fats. Spread intake through the day instead of saving everything for dinner. Prioritize post-workout refuelling — that’s when muscles are most insulin-sensitive and ready to store glycogen. Expect a temporary 1–2 kg rise on the scale; that’s glycogen and water, not fat, and it means you’re refilling the system.

Training should stay consistent but not maximal. Drop volume slightly, focus on quality and recovery. Sleep becomes a metric, not a luxury. Mood, libido, and morning energy are your first indicators that the system is returning to balance.

Within a few weeks, the changes are obvious. The pump comes back. Weight stabilizes. Strength climbs again. The mirror stops punishing you and muscles regain their contour, skin tightens, the face brightens. You look better not because you've punished harder, but because you've finally fed the work. A deficit can be a tool or a trap. Used briefly, it sharpens. Held too long, it erases. RED-S is what happens when the pursuit of leanness outruns the biology that makes leanness possible. Feed enough to perform, perform enough to deserve it — and let the deficit serve you, not consume you.