

N A T U R A L R E S I S T A N C E

THE ULTIMATE GUIDE TO WEIGHTED RUNNING

Inventors of

 THE WORLD'S HEAVIEST FABRIC 

THE PHILOSOPHY

Our running philosophy in a nutshell:

RUNS SLOW TO RUN FAST

“Add weight to Zone 2-training to build stronger muscles, bones, and connective tissue while maintaining optimal heart rate for aerobic development relative to effort and recovery cost.”

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THE PHILOSOPHY IS SIMPLE: RUNS SLOW TO RUN FAST

1.1 Most runners run too fast, too often.

The most efficient pace for building aerobic capacity sits at or just below the stroke volume plateau (roughly 40–60% of VO_2max) The point where your heart pumps its maximum volume of blood per beat. Beyond that, your heart just beats faster without delivering meaningfully more oxygen to working muscles. That's where most easy runs actually end up: past the point of optimal return.

Our approach is built around staying in that window. Run 80% of your training slow, and use added weight to increase the training stimulus without increasing pace. The weight brings your heart rate back into the optimal training zone while strengthening the musculoskeletal system: muscles, tendons, ligaments, bones, and connective tissue. This forms your mechanical base, giving your body the structural capacity to perform better and stay injury-free.

The remaining 20% is reserved for faster running, which raises your VO_2max ceiling and pushes your lactate threshold upward. As your fitness improves and your stroke volume capacity grows, you increase pace accordingly and the cycle continues.

1.2 The result: more from the same run.

Stronger muscles, more resilient connective tissue, and a body that stays in training longer, without adding sessions, changing your route, or pushing past what feels good. The weight does the work. Over time, your mechanical base grows, your aerobic engine expands, and race day feels lighter than training ever did. That is the point: to carry your own body weight better than before.

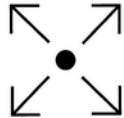
WHERE MOST RUNNERS F*CK UP (AND YOU PROBABLY ARE AS WELL)

INTRODUCTION TO: PREHAB & INJURY PREVENTION

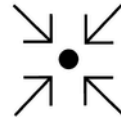
PREHAB & INJURY PREVENTION

1.1 Why weighted running is the ultimate prehab activity.

Running capacity is all about impact. The challenge every runner faces is optimizing the relationship between training volume and recovery cost: not too little to make progress, not too much to break down, but the perfect balance. Prehab is simple: proactively strengthening your impact tolerance before injuries occur. Weighted running is the most direct, controllable way to do exactly that in small increments, without changing anything else about how you train.



NOT
TOO LITTLE



NOT
TOO MUCH



THE
PERFECT BALANCE

1.2 The impact optimization problem

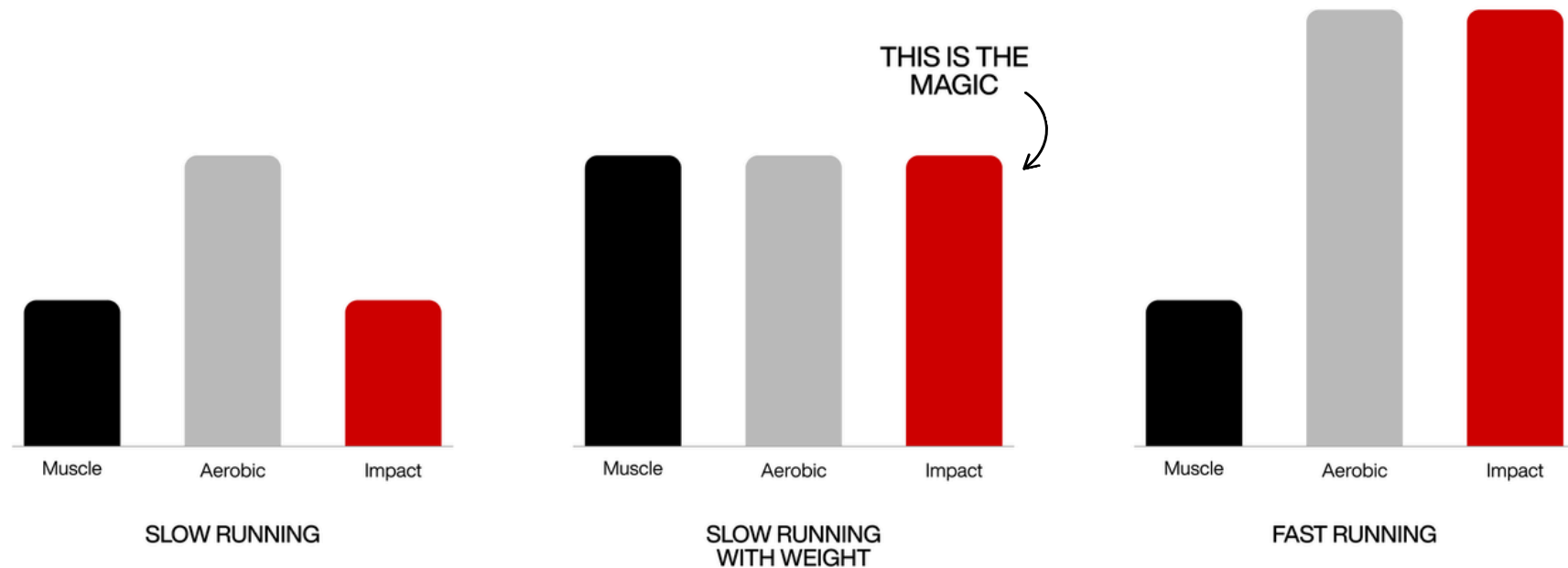
Every training decision is a trade-off between three things:

- Aerobic capacity
- Muscle strength endurance
- Impact cost (recovery cost)

The graph on the next slide illustrates these trade-offs in slow running, slow running with weight and running fast.

WEIGHTED RUNNING IS...

SAFER THAN RUNNING *FAST*.
MORE IMPACTFUL THAN RUNNING *SLOW*.
EASY TO DO ANYWHERE.



PART 1:

THE CARTILAGE BUFFER: BUILDING LIFELONG JOINT RESILIENCE

1.3 Myth vs. Physiology

- **The Myth:** Cartilage is like a rubber washer that thins out and wears down with extra weight.
- **The Reality:** Cartilage is a living, mechanosensitive tissue. It actively senses load and grows stronger to adapt to the pressure.

1.4 The Sponge Principle: How Joints Feed

Articular cartilage has **no blood supply**. It cannot get nutrients from your bloodstream. It relies entirely on movement to survive:

- **Compression (Foot strike):** Squeezes metabolic waste *out* of the joint.
- **Decompression (Flight phase):** Draws nutrient-rich **synovial fluid** *in*.

Takeaway: Your joints do not just tolerate impact, they depend on cyclic loading to stay fed and healthy.



PART 2:

THE CARTILAGE BUFFER: BUILDING LIFELONG JOINT RESILIENCE

1.5 Why Added Weight Builds a Protective Buffer

Running at bodyweight eventually hits an adaptive plateau. Adding a modest 3 kg load changes the biological signal:

- **Thicker Cartilage:** Extra weight upregulates proteoglycan synthesis, increasing the density, stiffness, and thickness of the tissue.
- **The Injury Buffer:** It builds a dense physical shield that protects your knees and hips on unweighted race days.
- **Safe Stimulation:** Keeping the pace slow on gear days delivers the necessary compressive load to feed the tissue, without the harsh shear forces of running fast.

1.6 Key Data Points

- 3.5% vs 10.2%: Recreational runners have a significantly lower rate of arthritis than completely sedentary people. Movement is protective.
- 90 Minutes: MRI studies show that any temporary compression of cartilage after a run fully recovers to baseline within 1.5 hours.

Conclusion: Introduced progressively at an easy pace, weighted running is the ultimate tool to actively strengthen your joints and build a bulletproof buffer for race day.

MASTER THE ABILITY TO STAY STRONG, COORDINATED, AND CAPABLE WHEN TIRED.

INTRODUCTION TO: ENDURANCE & PERFORMANCE

THE GOLDEN BENEFIT: BUILD MUSCLES THAT DON'T QUIT

2.1 Muscular strength endurance

The main practical, easy to understand difference between running without vs with weight is that running with weight gives you more muscular endurance.

The muscles, especially: calves, quads, glutes, and stabilizers, accumulate fatigue through repeated contractions. This kind of loading builds:

- Muscular endurance
- Connective tissue tolerance
- Work capacity
- Some hypertrophy (depending on load)

2.2 . How fatigue resistance is built

Especially for long distances of running, the added weight really adds up since step after step after step can be compared to yet another rep of low-bodyweight-weight strength training.

That means running with weight will help to build leg muscle, which in turn will help you to sustain higher volume, perform under fatigue, and ultimately allow you to run longer and faster when you're not wearing it.

- Speeds up recovery between sets and reps
- Achieve specific body adaptation
- Improves posture under fatigue
- Feel lighter during racing (when you take it off)

THE REAL LIMITING FACTOR

2.3 Train what matters

The limiting factor in races is often not maximal strength but the ability to keep producing submaximal force for a long time. (ENDURANCE). Weighted movement directly targets this “in the natural movement pattern needed (achieve specific body adaptation).

It trains structural durability. Extra load increases stress on:

- Feet
- Ankles
- Calves
- Knees
- Hips
- Connective tissue



PART 1:

IT'S NOT ABOUT CARRYING MORE WEIGHT

2.4 The biggest unique adaptation of carrying weight for endurance

Specific body adaptation would say that running with weight makes your body better at running with weight. And sure, that's true, and has benefits for a lot of specific scenarios where that is the case such as for military, firefighters, trail runners, etc.

What we are targeting in the end is the adaptation achieved for people running normally without weight.

We all carry natural weight; our body weight. Training with weight, and then performing with the weight off, therefore makes you more efficient at carrying your natural bodyweight, not just at carrying 'extra weight' "in our case (slim, tight, lower weight, as compared to weight vest), we don't argue that the specific body adaptation is that you get better at carrying extra weight, we argue that you get better at carrying your existing bodyweight"

The most unique thing weighted training develops is therefore →

1. More efficient, powerful and potent movement mechanics at your actual bodyweight (EXPLOSIVENESS)

and

2. The ability to maintain efficient movement mechanics while fatigued (ENDURANCE)

The ability to maintain posture, coordination, and force production when the body wants to compensate.

Explosiveness (1) is not really relevant for now in this main chapter focused on slow running. The adaptation you're really chasing is higher endurance (2):

- Not collapsing your hips late in a run
- Not shortening your stride excessively
- Not losing trunk stiffness
- Not rounding over during carries
- Not letting your knees cave
- Not turning efficient movement into survival movement

The real target is:

Movement integrity under fatigue.

PART 2

IT'S NOT ABOUT CARRYING MORE WEIGHT

You could also think of it as:

“The ability to keep moving like a fresh athlete when you’re no longer a fresh athlete.”

Fatigue-resistant movement efficiency: the ability to maintain posture, coordination, force transfer, and economy as physiological fatigue accumulates. That captures the whole package:

- Posture doesn’t collapse,
- Technique doesn’t degrade,
- Energy cost doesn’t spike,
- Force still gets transferred effectively through the body.

The underlying adaptation from weighted training could be framed as: **The ability to maintain movement quality and physical capability as fatigue accumulates.**

Or even more simply: **The ability to stay strong, coordinated, and capable when tired.**

That’s something almost everyone can relate to. So the adaptation isn’t: “Now I can carry 20 extra pounds.”

It’s: “I can keep functioning well when my body is under stress.”
(ENDURANCE)

That’s useful whether you’re:

- Running a race
- Hiking
- Playing with your kids
- Moving furniture
- Walking all day on vacation
- Working a physically demanding job

Weighted movement trains your ability to stay capable while tired, which is arguably the quality most people actually use in everyday life

BUILD A BODY THAT DOESN'T FADE

THE 10-WEEK WEIGHTED RUNNING PROGRAM
(FOR ALL LEVELS)

PART 1:

THE ENDURANCE EDGE

3.1 The endurance edge

The Endurance Edge is a structured, 10-week biomechanical layer that integrates seamlessly on top of your existing training plan. Without adding extra high-impact miles to your week, this protocol uses micro-dosed, progressive *Natural Resistance* to target two specific adaptations:

- **Injury Prevention:** It forces your tendons, ligaments, and stabilizing muscles to adapt to a higher structural load, building a resilient foundation that protects your joints from repetitive impact.
- **Endurance & Form Integrity:** It trains your nervous system to maintain a flawless, efficient running stride even under heavy muscular fatigue, preventing your form from breaking down when the miles get tough.

This program is not a race. By following this gradual, 10-week progression, you will systematically upgrade your tissue tolerance and movement integrity, ultimately unlocking a faster, injury-free stride.

3.2 The gear setup: the 3 kg principle.

True progression in this program does not come from constantly piling on more weights. Instead, we use a fixed, scientifically balanced 3 kg baseline setup that targets your biomechanics perfectly without overloading your joints.

- **The Hybrid Shorts (2 kg):** This load is placed directly at your center of mass (hips and thighs). It instantly activates your glutes, hamstrings, and core, forcing a more powerful hip extension and stride without altering your natural running mechanics.
- **The Forearm Sleeves (1 kg total / 500g per arm):** Placed on your upper extremities, this micro-load acts as a biomechanical lever. It forces a compact, efficient 90-degree arm drive, prevents your arms from crossing your midline when tired, and significantly increases your cardiovascular training stimulus (heart rate) at a safer, slower pace.

By keeping the weight locked at 3 kg, your body adapts purely through the progression of distance (volume) and density over the 10 weeks.

PART 2:

THE ENDURANCE EDGE

3.3 The 2 types of sessions you will run

THE RESISTANCE RUNS (Gear ON):

These sessions are always performed at a calm, controlled, aerobic pace (Base/Easy pace). The objective is **not** to run fast, but to accumulate time and distance under the 3 kg stimulus to upgrade your tissue tolerance and structural strength.

THE SPEED & CONTRAST SESSION (Gear OFF):

This workout is **always performed completely without equipment** once a week. This is where you intentionally turn up the pace. The objective is to unleash your nervous system and harvest the instant contrast effect of feeling completely weightless and explosive.

3.4 The intensity metrics: RPE & Pace

THE RPE SCALE (RATE OF PERCEIVED EXERTION)

- RPE 3–4 (Easy/Recovery): Comfortable, conversational pace. You could talk in full sentences without gasping for air.
- RPE 5–6 (Moderate/Steady): Working but controlled. Breathing is deeper, but you can still speak in short phrases.
- RPE 7–8 (Vigorous/Tempo): Comfortably hard. High focus required, conversation is limited to single words.

CHOOSE YOUR TRACK

Choose Your Track & Target Pace Guide

GREEN (BEGINNER)

GREEN (Beginner / Return to Play):

- Target Volume: 20–45 mins of movement (Controlled, continuous jogging). Focused on establishing running mechanics without over-striding.
- Baseline Pace: 5:45 – 6:30+ min/km
- Who it's for: Individuals new to Natural Resistance, absolute beginners to consistent running, or those returning from severe injury.

YELLOW (INTERMEDIATE)

YELLOW (Intermediate):

- Target Volume: 15–35 km of continuous running / week. Strong, everyday aerobic conditioning and progression pace.
- Baseline Pace: 4:45 – 5:30 min/km
- Who it's for: Regular runners who train consistently and want to upgrade their structural stamina.

RED (ADVANCED)

RED (Advanced / Runner):

- Target Volume: 35–60+ km of continuous running / week. High-volume elite aerobic base and workout pace.
- Baseline Pace: 3:45 – 4:30 min/km (Dropping sub-4:00 min/km during peak intensity)
- Who it's for: Competitive runners, high-volume athletes, or sub-elite marathoners.

PHASE 1 — WEEKS 1–2: ESTABLISH THE BASELINE

Goal: Let your nervous system and connective tissue register the 3 kg stimulus without adding high intensity. Wear your gear on easy, slow, or recovery efforts only.

TRACK	WEEKLY TARGET	INTENSITY & PACE	GEAR EXECUTION	WEEKLY FOCUS
 GREEN (BEGINNER)	2 x Easy runs (20–30 min) 1 x Faster run (20 min)	Easy: RPE 3–4 (6:30–7:00 min/km) Faster: RPE 5–6 (6:00–6:20 min/km)	Easy runs: Full Setup (3 kg) Faster run: NO GEAR (0 kg)	Expect mild muscle fatigue in your calves and glutes this is normal.
 YELLOW (INTERMEDIATE)	3 x Easy runs (5–7 km each) 1 x Faster run (5–6 km)	Easy: RPE 3–4 (5:30–6:00 min/km) Faster: RPE 6 (4:45–5:05 min/km)	Easy runs: Full Setup (3 kg) Faster run: NO GEAR (0 kg)	Run at a conversational pace on gear days. Do not push the speed.
 RED (ADVANCED)	3 x Easy runs (10–12 km each) 1 x Faster run (7–8 km)	Easy: RPE 3–4 (4:45–5:15 min/km) Faster: RPE 7 (4:00–4:20 min/km)	Easy runs: Full Setup (3 kg) Faster run: NO GEAR (0 kg)	Keep baseline miles relaxed. Let your body absorb the extra 3 kg load comfortably.

PHASE 2 — WEEKS 3–4: EXTEND TO THE LONG EFFORT

Goal: Build specific structural endurance over time by introducing the resistance to your longest session of the week.

TRACK	WEEKLY TARGET	INTENSITY & PACE	GEAR EXECUTION	WEEKLY FOCUS
 GREEN (BEGINNER)	1 x Short Easy run (20 min), 1 x Long Easy run (35–40 min), 1 x Faster run (20 min)	Easy: RPE 3–4 (6:20–6:50 min/km) Faster: RPE 5–6 (5:50–6:10 min/km)	Easy runs: Full Setup (3 kg) Faster run: NO GEAR (0 kg)	Keep a proud, tall posture during the longer weekend effort.
 YELLOW (INTERMEDIATE)	2 x Easy runs (5–6 km each), 1 x Long Easy run (8–10 km), 1 x Faster run (5–6 km)	Easy: RPE 4 (5:25–5:55 min/km) Faster: RPE 6 (4:40–5:00 min/km)	Easy runs: Full Setup (3 kg) Faster run: NO GEAR (0 kg)	Treat the long run as a slow strength session. Do not rush it.
 RED (ADVANCED)	2 x Easy runs (10 km each), 1 x Long Easy run (16–18 km), 1 x Faster run (8–10 km)	Easy: RPE 4 (4:40–5:10 min/km) Faster: RPE 7 (3:55–4:15 min/km)	Easy runs: Full Setup (3 kg) Faster run: NO GEAR (0 kg)	Focus on structural stamina. Ensure your hips stay high when tired.

PHASE 3 — WEEKS 5–6: THE PROGRESSION STEP

Goal: Challenge structural tissue tolerance. We step up your adaptation purely by increasing the weekly mileage or duration of the sessions.

TRACK	WEEKLY TARGET	INTENSITY & PACE	GEAR EXECUTION	WEEKLY FOCUS
GREEN (BEGINNER)	3 x Easy runs (30 min each) 1 x Faster run (25 min)	Easy: RPE 4 (6:15–6:45 min/km) Faster: RPE 5–6 (5:45–6:05 min/km)	Easy runs: Full Setup (3 kg) Faster run: NO GEAR (0 kg)	The initial weight adaptation from phase 1 should feel easier now.
YELLOW (INTERMEDIATE)	2 x Easy runs (6–7 km each), 1 x Long Easy run (10–12 km), 1 x Faster run (6–7 km)	Easy: RPE 4 (5:20–5:50 min/km) Faster: RPE 6 (4:35–4:55 min/km)	Easy runs: Full Setup (3 kg) Faster run: NO GEAR (0 kg)	Let the cumulative weekly mileage do the work. Keep paces easy.
RED (ADVANCED)	2 x Easy runs (12 km each), 1 x Long Easy run (18–20 km), 1 x Faster run (10 km)	Easy: RPE 4 (4:35–5:05 min/km), Faster: RPE 7 (3:50–4:10 min/km)	Easy runs: Full Setup (3 kg) Faster run: NO GEAR (0 kg)	Focus on a clean, controlled toe-off and relaxed arm drive.

PHASE 4 — WEEKS 7–8: CONSOLIDATE & EVALUATE

Goal: Settle the nervous system. Hold your training volume perfectly steady across all sessions for two full weeks.

TRACK	WEEKLY TARGET	INTENSITY & PACE	GEAR EXECUTION	WEEKLY FOCUS
GREEN (BEGINNER)	3 x Easy runs (30–35 min each) 1 x Faster run (25 min)	Easy: RPE 4 (6:15–6:45 min/km) Faster: RPE 5–6 (5:45–6:05 min/km)	Easy runs: Full Setup (3 kg) Faster run: NO GEAR (0 kg)	Focus on rhythm and relaxation. Your movement should feel smooth, steady, and light.
YELLOW (INTERMEDIATE)	2 x Easy runs (7–8 km each), 1 x Long Easy run (10–12 km), 1 x Faster run (6–7 km)	Easy: RPE 4 (5:20–5:50 min/km) Faster: RPE 6 (4:35–4:55 min/km)	Easy runs: Full Setup (3 kg) Faster run: NO GEAR (0 kg)	Stride mechanics should feel natural. Enjoy the lightness on Faster day.
RED (ADVANCED)	2 x Easy runs (12 km each) 1 x Long Easy run (18–20 km) 1 x Faster run (10 km)	Easy: RPE 4 (4:35–5:05 min/km), Faster: RPE 7 (3:50–4:10 min/km)	Easy runs: Full Setup (3 kg) Faster run: NO GEAR (0 kg)	Evaluate form. Your posture should remain strong despite the volume.

PHASE 5 — WEEKS 9–10: PEAK EFFICIENCY

Goal: Maximize strength in your stride, preparing the body to feel completely weightless, powerful, and fast when the resistance is removed on race day.

TRACK	WEEKLY TARGET	INTENSITY & PACE	GEAR EXECUTION	WEEKLY FOCUS
GREEN (BEGINNER)	3 x Easy runs (35–45 min each) 1 x Faster run (30 min)	Easy: RPE 4–5 (6:00–6:30 min/km) Faster: RPE 6 (5:30–5:50 min/km)	Easy runs: Full Setup (3 kg) Faster run: NO GEAR (0 kg)	Controlled, strong efforts. Your stride will feel noticeably lighter now.
YELLOW (INTERMEDIATE)	2 x Easy runs (7–8 km each) 1 x Long Easy run (12–14 km) 1 x Faster run (7–8 km)	Easy: RPE 4–5 (5:10–5:40 min/km) Faster: RPE 6–7 (4:30–4:50 min/km)	Easy runs: Full Setup (3 kg) Faster run: NO GEAR (0 kg)	Optional: Keep your gear ON during just the final 2 km of the Faster run.
RED (ADVANCED)	2 x Easy runs (12–14 km each), 1 x Long Easy run (20–22 km), 1 x Faster run (10–12 km)	Easy: RPE 4–5 (4:25–4:55 min/km) Faster: RPE 7–8 (3:45–4:05 min/km)	Easy runs: Full Setup (3 kg) Faster run: NO GEAR (0 kg)	Optional: Keep your gear ON during just the final 3 km of the Faster run.



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