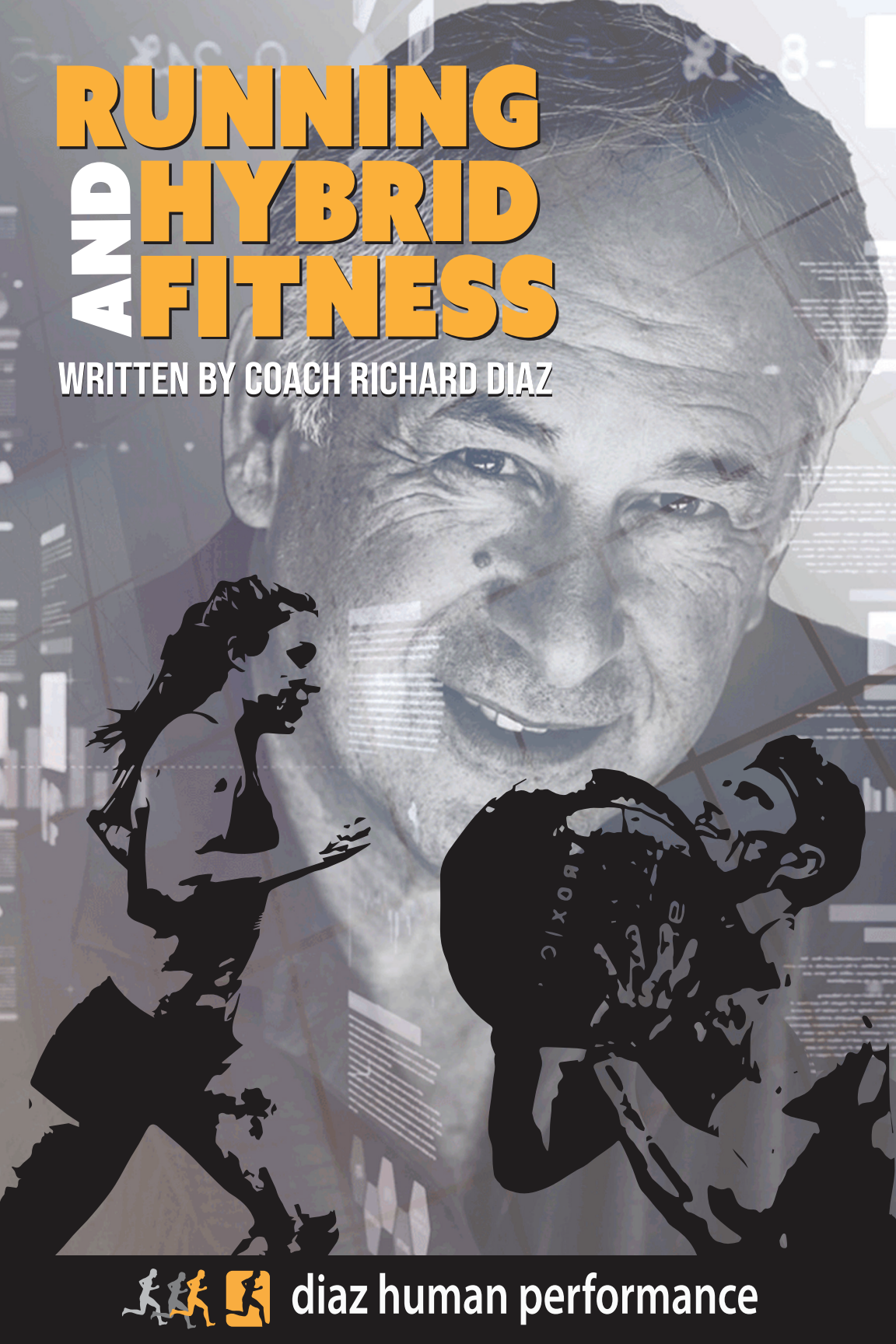
RUNNING AND HYBRID FITNESS

WRITTEN BY COACH RICHARD DIAZ



diaz human performance

RUNNING AND HYBRID FITNESS

What they are saying about Coach Diaz

I first met Rich Diaz in 2014 when I was already at the top of my Spartan racing career, running 5Ks in the low 16s and ranked number one in the world. I considered myself one of the best endurance athletes around—until Rich changed my perspective immediately. He bluntly told me I "ran like shit," then pushed me through some of the hardest workouts of my life. Six months later, I was running a sub-15-minute 5K during a half-marathon trail race, and I quickly became one of the most competitive runners in any race I entered.

Thanks to Rich's unparalleled skills and insights, I've since accumulated over 10 world titles and more than half a dozen world records. As someone who's always sought knowledge and truth in the high-performance lifestyle, I can confidently say Rich Diaz is at the pinnacle of that pursuit.

Hunter McIntyre - Hyrox World Champion

"Of all the recent science and literature around running, it's rare to find someone who cuts through the noise and offers something unique. Richard has an enormous depth of knowledge that can only be attained from decades of working one-on-one in both the lab and in the field with athletes across almost every sport.

But it's really Richard's tireless passion to tinker with the ingredients, to find cracks in our collective thinking or debunk archaic assumptions of sport physiology, that makes him an artist.

His flow training methods are an example of his ability to flip tradition on its head and find a whole other level for the athletes he works with.

Speaking from experience!"

Blue Benadum - Elite Marathon Runner

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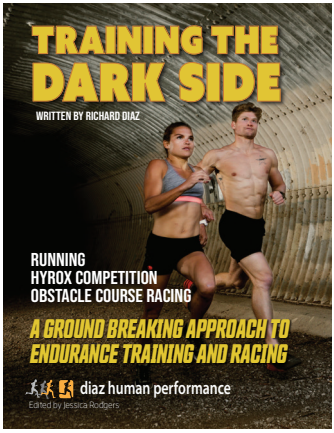
CONTENTS

RUNNING AND HYBRID FITNESS

The Evolution of Endurance and Functional Fitness

In the ever-evolving 21st-century world, we often refer to our continuous learning and refinement of concepts as upgrades. My previous work, Training the Dark Side, introduced a paradigm shift in training methods. The revolutionary idea of 'Flow' shattered the traditional approach to exercise programming, liberating us from the confines of rigid training intensity blocks. Instead, our training is characterized by its fluidity and remarkable effectiveness, offering a fresh perspective on optimizing our performance.



This book begins by addressing global factors that sabotage your efforts. We'll start by exploring fundamental concerns, such as our approach to training and mindset. The focus is on overcoming performance killers, like the increase in lactate production and rise in core body temperature with higher intensity—often overlooked causes of failure. Skill, which reduces energy costs, is essential; refining running mechanics and other movements is crucial for success.

Many athletes chase the notion of 'more and harder work' as a solution. Over 25 years ago, I shifted my focus to perfecting running talent, recognizing its importance for athletic excellence. 'Training the Dark

Side' introduced a revolutionary paradigm shift with 'Flow,' breaking traditional exercise norms by seamlessly integrating intensity. This approach to training is fluid, dynamic, and remarkably effective.

In this book, I'll share lessons learned from those who embraced these concepts, their feedback, and the self-realizations that helped me refine my work. As the author, no one scrutinizes my work more than I do. I see opportunities to enhance clarity and application, and this iteration aims to unleash improvements that will elevate your training and racing journey.

As we progress through this guide, I lean heavily into the interpretation and, ultimately, the true power of "Flow" training. This unique approach will transform your application, leading you to peak performance. It's time to step up, embrace the challenges, and harness the untapped potential within you. As you might expect, I will also dwell on what I believe to be the most crucial foundation: learning how to run. Don't make the mistake of glazing past this information before dipping into the training templates. The training templates are written based on the assumption that you invested the time necessary to finally get past the intimate details of how to run. If you overlook this function, your ability to realize the benefits of Flow will be far less rewarding.

The RUN chapter is a comprehensive tutorial that reveals the art of running like never before. Mastering this skill is vital to your performance and the gateway to becoming an extraordinary athlete.

When I first began revamping traditional training concepts, Functional Fitness competitions, especially in CrossFit, were at the forefront. Hyrox was just emerging, with limited momentum. Today, this industry has evolved into a global powerhouse. Reflect on the challenges we've faced—think back to the COVID-19 pandemic. The anticipation and effort invested in launching Dark Horse were met with worldwide closures of CrossFit and

fitness facilities. Our grand program launch was thwarted by a global crisis, causing immense frustration.

I had intended to relaunch Dark Horse now that life has normalized. Given deeper consideration, I decided that including the theories revealed in the initial program is better suited and addressed here as a relative approach to Functional Fitness Training. For those that are interested in the actual 8 week "Dark Horse" training plan it can be found here (https://diazhumanperformance.com/product/dark-horse-ii-crossfit-training/.

The future is uncertain, but I assure you that I remain deeply engaged in expanding my education and staying abreast of current and future revelations in sports science. The prospect of future upgrades is not off the table. I hope this second iteration into the concepts of Running, Hybrid Training, and Flow training serves you well.

~Richard Diaz

THE HYBRID ATHLETE

When I envision "The Hybrid Athlete," I'm drawn to the essence of Superman - as a young man, watching the series on television, opening with the slogan, "Faster than a speeding bullet, more powerful than a locomotive, able to leap tall buildings in a single bound!" It's a paradoxical fusion of traits that challenge conventional wisdom. Traditionally, the belief is that size and strength compromise speed and endurance, but that narrative fails to capture the essence of true athletic prowess. The 'Hybrid Athlete' concept is not about conforming to a particular physique but about embracing your unique strengths and abilities, empowering you to redefine what it means to be an athlete.

This book is not just a theoretical exploration of 'The Hybrid Athlete.' It's your practical guide, a road map to bridging the potential divide in physical capacities. Whether you want to become a better runner or push your performance in multidisciplinary competitions that rely heavily on strength, endurance, and speed, this book is for you. It's designed to help you understand and apply the principles of 'The Hybrid Athlete' concept, taking your athletic performance to new heights. You can trust that the strategies and techniques shared in this book are tried and tested, ready to be applied to your training regimen.

It's an exciting time in recreational sports, where competitions have evolved from simply running as a fitness pastime. These days, athletes are refusing to be categorized as just runners or, for lack of a better description, bodybuilders. To some degree, the vanity of a well-defined physique lends fitness enthusiasts to hybrid training. The question remains: which direction lends one to better fitness, and for that matter, what is the true definition of fitness? This is a call to rethink our traditional beliefs about athletic training and physique and to explore the possibilities of 'The Hybrid Athlete' concept.

As a coach who has stood on the sidelines, guiding athletes in their chosen sports, I've had a front-row seat to this evolutionary process. My research, education, and experience have led me to question what is truly realistic regarding athletic prowess. As highlighted in the chapter on "The 3 E's," Success isn't a magic potion; it's about focusing on the details that directly impact the outcome. Whether your goal is to become a better runner or embrace hybrid training, the key is to be effective, efficient, and economical. As the saying goes, 'The devil is in the details.'

It's crucial to recognize that we're all unique and that our response to training stimuli is fluid due to our composition and application. This understanding is a cornerstone of 'The Hybrid Athlete' concept, which encourages and celebrates your individuality. It urges you to tailor your training to your unique needs and goals, acknowledging that your path to success differs from others. It's not uncommon to have that champion that you look up to, but to assume that by following his or her path, you will achieve the same results is sorely misguided. Your journey is your own, and that's what makes it unique.

Size should only matter if the essence of that size is more significant than those of lesser stature. If you assume that because you are of lesser stature than your competition, you need to train smarter, build strength, and become a master of leverage. If you are larger and the stamina to move your mass is your challenge, you must develop your skills to move efficiently. It's too late to pick the body you were born with, but you can mold it to your will with a high degree of success.

THE THREE E'S

The foundation of your training

Every project you undertake is best served by establishing basic needs and organization. As an athlete, training is no different. Before you set foot in a gym or toe the line of a race, your success depends on how solid a foundation from which you began. I harp on my athletes to establish "The Three E's" as organizational guardrails, with the first "E" representing effectiveness. This means intentionally safeguarding against waste or misguidance in training. Many factors can impede effectiveness, so taking precautions is essential.

RULE #1: BE EFFECTIVE. Before you start your training, it's crucial to establish a foundational standard that keeps you grounded and shields you from distractions. This will ensure that your training remains consistently productive.

A great example of what can result from this consideration is best exemplified by the work of Sir Dave Brailsford, who developed what he referred to as "The 1% Factor,"- the Aggregation of Marginal Gains, which states that if you decide to improve on a particular skill by as little as 1% every single day, you will be better than at least 90% of other people who have that skill. The whole principle came from the idea that if you broke down everything you could think of that goes into riding a bike (and, in our case, training) and then improved it by 1%; you will get a significant increase when you put them all together.

Brailsford's approach involved measuring and monitoring key statistics such as cyclists' power output and training interventions targeting specific weaknesses. In 2010, Brailsford became the manager of Team Sky. In this role, he oversaw Bradley Wiggins', Chris Froome's, and

Geraint Thomas' victories in 2012, 2013, 2015, 2016, 2017, and 2018 Tour de France. He went so far as to have his team support staff arrange the specific bedding each rider was accustomed to sleeping on driven ahead of each stage during the tour to ensure that when they slept in hotels, they could get quality rest. Also, the material of their riding apparel was considered perfectly comfortable relative to weather conditions. In addition to looking at traditional components of success, such as physical fitness and tactics, it also entailed a more holistic strategy, embracing technological developments, athlete psychology, and everyday life.

He demonstrated that "The Aggregate Gains" earned daily, even by a mere 1%, resulted in incredible results throughout a training and racing season. When being effective first came to my attention, it seemed ridiculous. Of course, we want to be effective! Yet, do we think through the process of ensuring that from a training and racing perspective, the details, possibly unrelated to the act of training or racing, are met to ensure a successful outcome?

The first step in becoming effective should begin with a list and some severe thought... How do I approach my days, and how does my day affect my training? What things can I omit or rearrange to promote successful outcomes? What about the people around you that can quickly, even unintentionally, sabotage your training? A good practice is to schedule your training time in a visible journal or calendar. Sharing a Google calendar with significant others, co-workers, or anyone who might present distractions provides a transparent structure. For example, my wife, who also manages my business, uses this shared calendar effectively by ensuring commitments are well-coordinated. Committing plans to a schedule has been proven to improve compliance.

Research indicates that people who write down their goals are 42 percent more likely to achieve them than those who don't.

It's essential to closely examine the time available for exercise per session and week. Most athletes and fitness enthusiasts have limited time for training, so it's necessary to trim the excess from your exercise routine.

Regarding being effective with training, “sport-specificity” is crucial because it directly contributes to your desired outcome and ability to reach it. For example, If your goal is to run your first marathon, set a PR for a 5k race, or even enhance your running skill for a Hyrox competition, aside from anything else you do, you need to run.

Running will be your principal training influence. This may seem obvious, but you may be surprised at how many athletes do all they can to avoid the obvious, hoping that some other training mode will compensate for the sorely needed. And then some feel that an increased volume of training, regardless of pace or dedication to proper running skill, is all that matters, logging countless junk miles. All of the side gigs we could discuss take you away from what is essential and ultimately effective.

In cases like the Hyrox Functional Fitness Competitions, where specific challenges are outlined, the ratio of direct influence leans heavily toward the need to run well. Thus, this realization should significantly impact your training plans. Some exercises may not directly influence your performance but can indirectly improve your mobility, strength, or muscular compliance. The way we move is related to the elements of our integral makeup. For instance, if you have tight ankles, every joint up the kinetic chain will be influenced. Efficient movement relies on integrating each joint along our support system, known as our connective tissue, and mechanized by our musculature.

Gray Cook, MSPT, OCS, and CSCS explain these essential roles straightforwardly—the joints of the body alternate in responsibility from the ground up. When your great toe has mobility, your midfoot is stable, which promotes ankle mobility, and the knee is stable. Knee stability promotes hip mobility, providing lumbar spine stability, which offers thoracic spine mobility, and so on, right up the kinetic chain. Any dysfunction in these processes can lead to injury, either below or above the joint.

Exercises isolated in nature, such as bicep curls or tricep extensions, fail to meet dynamic function’s direct or indirect requirements. This

principle extends to endurance running sports, where exercises promoting upper body muscularity become excess baggage. Contrary to the catchphrase "Biceps Win Races," I would argue this is untrue. Rule #1 is clear: focus on being effective!

RULE #2: BE EFFICIENT - emphasize correctness. While the saying "slow down to go fast" is common, my suggestion is different—proper technique equates to efficiency. Physics plays a significant role in our efficiency, with its irrefutable elements like gravity, leverage, and functional range of motion. There are right and wrong ways to execute movements, whether running, lifting weights, or transporting loads. Aim for perfection in every exercise challenge before focusing on the volume and intensity of your efforts.

Observe athletes who excel - they prioritize impeccable execution over sheer force, and you should do the same. The more collective muscle we can recruit for a given task, the more efficiently we can produce work. Think of this concept as "sharing in the responsibility"; a harmonious activation of task-specific muscles can profoundly reduce fatigue.

RULE #3: BE ECONOMICAL, this rule is more of an outcome due to adhering to the first two rules. Economy results from being effective and positioning yourself so that all you do is thought out, so there is minimal waste of time and energy. Think of economy in terms of energy management. As outlined in great detail in the chapter on managing energy, everything we do comes at some expense. I often tell my clients, "I prefer to pay wholesale for retail outcomes." This should be the overriding strategy in your training - be economical.

Effective vs. Efficient - Doing the right things is effective vs. Doing things right is efficiency. "There is no point in doing something well if it's something you should not be doing at all." "A small shift in BEHAVIOR produces a large shift in results."

WHY WE FAIL

Now that we have outlined the fundamentals of success, it's time to identify the enemy. When all you've done to prepare, for one reason or another doesn't result in the outcome you had hoped for. As you reflect on what went well and what didn't and begin to rationalize why things did not go your way, some may suggest these are just a list of excuses.

I will argue that what happened was beyond your control. There is a short list of instigators of failure, some of which seem glaringly obvious: You didn't put in all of the training you had intended. Maybe you had to cut things short due to family commitments, illness, or work. You may have been recovering from a training-related injury or nursing one that kept you from offering 100%. You are sure to reflect on the culprits of failure. Still, all said, the true enemies are insidious and unrelenting if you are ill-prepared to meet them head-on or are adequately prepared to overcome their influence. In the coming chapter, I will reveal what I believe to be the masters of disaster and explain what you must do to overcome their influence over your performance.

"If you know the enemy and know yourself, you need not fear the result of a hundred battles."

Sun Tsu - The Art of War

You may know the things that matter most but need help figuring out what to do about them. Collectively, these enemies band together to create what is globally termed "Fatigue." You could not unite your resources to overcome this, ensuring performance killer. Fatigue is almost always behind failure, so I bring it to your attention early in this writing. We must address it and determine how best to dispel it as a chief adversary.

Fatigue - The true enemy of performance

Fatigue is the chief adversary of any athlete. Before we can effectively combat fatigue, we first need to understand its cause. Much has been written on this topic, and in all the years I have worked with athletes, research aside, I have come to appreciate the complexity of this adversary. As of this writing, no one or any research has been able to pinpoint the direct cause and relationship of fatigue definitively. However, we know that intensity, heat and energy depletion plays a heavy role in the onset of fatigue, but they are not the sole cause. Other factors, such as neural mechanisms that control contractile forces and psychological and even environmental influences, are all crucial concerns that are best considered as we seek solutions to the critical deterrents to athletic performance. Because this book focuses on teaching you to become a successful athlete, all of the points and conclusions moving forward will be to this end. The base information provided will be helpful and relative to various enduring activities, but the paramount concern is the ability to run and face other challenges as efficiently as possible.

Heat

All work produces heat; the cost of running faster is incremental heat production. There is an inverse relationship between overheating and reduced performance, which results in fatigue. This is why endurance athletes of smaller builds have greater success in longer-distance events than their larger counterparts; they generate less heat.

Realize that the domino effect of work + heat = demand on cardiac output, which is a vicious cycle. The more work the heart produces to meet these demands, the more heat is produced. Ultimately, the solutions are twofold: slow down or learn to become more economical. As the body works to abate the rise in core temperature, blood flow is initially shunted from our extremities to conserve supply in service to our working muscles. Then heat-laden blood is carried away to our surfaces, like refrigerators. Heat is also evacuated via sweat, which reduces the viscosity of our blood plasma, causing more work for the

heart to move the "sticky" blood through the appropriate channels of the cardiovascular system. As the body becomes hotter as work persists, a conflict arises in allocating blood flow. The need to continue work pulls nutrient-rich blood to the working muscles, and some of this blood flow is reallocated to the cooling process and drawn to the skin surface to release heat, leaving the athlete in a compromised state.

Combating heat is something that all endurance athletes must be concerned with. An average athlete sweats between 1-2 liters per hour during exercise; this sweat loss will increase your working heart rate by as much as 10% and an associated decrease in performance. Having an intelligent plan for rehydration and paying attention to how you dress to regulate your body temperature are both important. Different materials have wicking properties that allow sweat to be drawn from the body's surface; the color of these garments is also essential due to their radiant effects. For example, dark colors draw heat; light colors reflect heat. The decision to wear a hat or other head coverings relative to climate change all plays a part in the thermic regulation of the working body.

The amount of time spent in various climates causes a natural adaptation to associated temperatures and should be considered when competing in areas outside your habitat. An excellent example of this is the Ironman in Hawaii. A prudent competitor will come to the Big Island, sometimes even months before the competition, to acclimate to the volcanic rock fields' severe heat and unusual environment.

The pavement temperature has been commonly recorded as more than 130 degrees during that race. Think of the consequence of traveling from a cool climate into this course's natural ovens and spending 12 hours or more racing! It won't matter how well you prepared for the race; if you have not taken time to acclimate to the heat, it will bring you to your knees if you are not correctly prepared.

With the recent introduction of Hyrox competitions, which are mainly indoor events, I began investigating the potential for overheating in this environment relative to the time it takes to complete the event. I

found from interviewing several of the top-tier athletes that they felt that overheating was a problem. The problem increases exponentially relative to the number of competitors and spectators that occupy the building. The more popular the event, the more bodies will occupy the space; collectively, the temperature and humidity become more challenging. If an athlete hopes to maintain peak performance throughout the event, being prepared to deal with this accelerating heat is a critical concern

Lactic acidosis

Lactate, or lactic acid, and the associated byproducts of lactate production can be an insidious monster; it can creep up on you and lead you to ruin. This is why it is critical to know your metabolic turn point accurately. You must keep up with your training responses to establish workloads relative to the appropriate intensity. We tend to adapt to the sensations we are chronically exposed to; in so doing, we run the risk of over-developing the wrong responses.

I have worked with many top-level athletes who spend too much time in the "pain cave." Being uncomfortable is what they believe to be expected or a badge of honor. Indeed, there is a time to be challenged, leading to varying degrees of discomfort and even downright pain. If it becomes a daily theme, the potential to control specific adaptations will be lost, and all the hard work will be counterproductive.

Why is lactate so crucial in metabolic regulation?

Lactate, in contrast to glucose and other fuels, is smaller and better exchanged between tissues. It moves across cell membranes by a rapid process called facilitated transport. Other fuels need slower carrier systems, such as insulin.

Dr. George Brooks, a California State University Berkley professor who heads up the Department of Integrative Biology, described lactate's dynamic production and use in metabolism in his "Lactate Shuttle Theory." This theory explains the central role of lactate in carbohydrate metabolism and its importance as a fuel for metabolism.

The body uses lactate as a biochemical "middleman" for metabolizing carbohydrates. Carbohydrates in the diet are digested and enter circulation to the liver mainly through glucose (blood sugar). However, instead of entering the liver as glucose and being converted directly to glycogen, most glucose from dietary carbohydrates bypasses the liver, enters the general circulation, reaches your muscles, and converts into lactic acid. Lactic acid then goes back into the blood and travels back to the liver, where it is used as a building block for making liver glycogen.

-Dr George Brooks

A metabolic process is known as the CORI CYCLE (named after the discoverers Gerty and Carl Cori). The term refers to the anaerobic metabolic pathway in which the liver takes up lactate produced by anaerobic fermentation instead of accumulating inside the muscle cells. In the liver, gluconeogenesis* occurs by converting lactate into pyruvate and finally back to glucose. The glucose is then supplied to the muscles through the bloodstream; if muscle activity slows well enough, the glucose replenishes glycogen supplies in the working muscles.

The caveat is that if the intensity is too great, fatigue will overcome you before you can benefit from this lactate-to-glucose conversion.

**Glyconeogenesis is the term used to describe the formation of glucose from precursors other than carbohydrates, especially by the liver and kidney, using amino acids from proteins, glycerol from fats, or lactate produced by muscle during anaerobic glycolysis. The recycling of glucose does not serve as a net source of glucose. All body carbohydrates are derived from dietary sources, and in fasting, they are derived from tissue proteins.*

Lactate on the move

I will highlight a critical piece of a few lactate/fatigue-reducing mitigators to simplify a highly complex physiological process. Pay attention; it is essential to remember a rarely discussed system responsible for vacating lactate out of the working muscles, which are Monocarboxylate transporters (pronounced Mono-carboxy- a-lit).

These transporters have, two specific counterparts, “MCT1 and 4,” which assist in transporting lactate out of our working muscles. MCT1 shuttles lactate towards regions of the body that are less active, and the lactate resides in less active tissues. This lactate eventually moves into the liver, converting it to glucose via gluconeogenesis. This re-purposed energy is further shuttled back into the working muscles as glycogen. I like to refer to this as an energy rebate.

MCT4 transport differs in that its purpose is to evacuate lactate quickly from the muscles (in a matter of seconds) but does not shuttle lactate to the liver to be re-purposed. You may have deduced from this already that MCT1’s ability to convert lactate to a working fuel is highly beneficial to those training for endurance events where carbohydrate depletion is of great concern. On the other hand, those participating in high-intensity, short-duration events are less concerned with energy depletion and more concerned with lactic acidosis and associated fatigue, which is what MCT4 transporters provide.

How do I promote access to these specific transport systems?

The answer is two-fold: 1.) You may be genetically gifted with a specific muscle fiber type, or 2.) Your training promotes the increase of these allies. The tip was where these transporters reside relative to your unique fiber type. In humans, type I, or slow-twitch fibers, possess slower contraction speeds and are relatively fatigue-resistant, so they reward you with endurance. Type IIa fibers, or fast oxidative glycolytic (FOG) fibers, present higher “twitch” (contraction) speeds than type I fibers but are less fatigue-resistant. Type IIx fibers, or fast glycolytic fibers, possess the fastest twitch speeds and provide short bursts of energy but are highly fatigable.

All of us were born with a varying percentage of these muscle fiber types. I don’t believe anyone has a muscle fiber composition that is 100% at either end of the fiber typing spectrum. You or possibly someone you know who seems uniquely gifted to achieve feats of profound endurance, speed, strength, or power points to the muscle composition they earned from their heredity.

I've often said, "If you want to know how to get to the Olympics, pick your parents."

Beyond genetics, there is training adaptation. Your approach to training points to the adaptation you earn. I am not suggesting you can turn slow-twitch fibers into fast-twitch fibers. However, you can create a very favorable shift by utilizing your muscle structures. The level of intensity habitually applied over time encourages the facilitation and enhancement of the specific muscle fibers stimulated. For example, high-intensity weight training stimulates fast twitch fibers and enhances the production of MCT4 transporters. The opposite is the case with low-intensity, long-duration training, which will enhance MCT1 transport. It is tough to identify how much change occurs here. However, know that your ability to perform in either setting is partly due to the underlying increases in metabolic transport encouragement.

If the goal is to develop a more enduring body capable of long-duration events such as marathons, you will spend more training time at the lower end of the energy spectrum.

This does not suggest avoiding anaerobic training; you will leave no stone unturned in Flow. Training at an aerobic pace is easy; just slow down. Winning is never done aerobically in events short of a marathon. Your competition will not likely allow you to stroll across the finish line. Anaerobic training is tricky, and perception of effort will play an important role during these efforts. The dosage between each stimulus, low and high-intensity training, is where the magic lies. Somewhere in your training, you will need to visit an uncomfortable pace. This discomfort relates to the ensuing lactate production and the inability to evacuate the associated lactic acid from your working muscles. To effectively train the anaerobic pathways, it's best to approach these intensities with "gentle persuasion" rather than to rush in like a bull in a china shop.

Aerobic training causes cardiovascular adaptations that increase oxygen delivery to muscles and tissues. Better circulation also helps speed lactic acid transport to tissues that can remove it from the blood.

Regular training above your anaerobic threshold, such as high-intensity interval training, can increase the body's ability to handle lactic acid. This increases your sustainability above the lactate threshold or when you experience fatigue, meaning you can work out harder for longer.

The scientific community rightly stated that dominant exposure to aerobic training increases muscle blood supply and mitochondrial capacity. Mitochondria are structures within the cells that process fuels, consume oxygen, and produce large amounts of ATP (Adenosine triphosphate, the energy currency for use and storage at the cellular level). More significantly, muscle mitochondrial capacity increases the use of fatty acids as fuel, decreasing lactate formation and slowing removal. However, in Hybrid training and racing, there is simply no way around being anaerobic from start to finish, accessing fat stores, or hoping for a significant shift in your metabolic turn point is just wishful thinking and potentially a waste of training time to try and achieve this end.

Over the past few decades, I have experimented with my athletes to try and determine the most efficient mix of intensity over recovery to gain the upper hand on this lactate tolerance/conversion puzzle. Given all the research done by clinicians far more intelligent than me, it all comes down to trial and error. The problem is the unique individual capacity to contend with this mysterious substrate from athlete to athlete. In control studies, we can look at metabolic structures, muscular compositions, and current traits of training and competition, but the depth of analysis is commonly over brief timelines. So many variables are at play that finding a definitive path to athletic success is nearly impossible.

The first and most crucial step in establishing a plan to wrangle this insidious energy pathway is to measure the metabolic turn point. Once we identify the level of work that causes the precipitous rise in lactate, we need to keep tabs on the athlete's unique sensitivity to the acidic nature of its production. Having performed VO2max tests (via direct gas analysis) on thousands of athletes from various sports, I've witnessed varying responses, generally due to training habits and

genetic predisposition.

Lactate accumulation left unchecked is the governor of effort. There is no standard approach to developing the ability to cause lactate to become an ally vs. foe. Of course, there are some steadfast considerations; if too much lactate is left resident in the muscle, it becomes problematic. Everyone has a theoretical sweet spot when it comes to dealing with lactate. A certain lactate level in the bloodstream results in a "lactate threshold," beyond which performance will eventually be compromised. We are all unique creatures; some inherently do a better job with this lactate accumulation than others. We can use these clinical analyses as markers, but they alone are not definitive in the potential outcome.

Generally speaking, most athletes gravitate to the sports with which their body types are most agreeable. Sprinters sprint because that's what their physiological makeup is most inclined towards, as with long-distance athletes. Competitive athletes are not interested in generalities; they seek an edge.

As a competitive athlete, you should get tested by an experienced clinician. Trust the data initially, and give it time to convince you how effective it can be before you toss it aside, assuming that it can't be true and that you were right all along. What's interesting, where perception and training anaerobically are concerned, is that some athletes can do an amazing job with energy conversion. Their bodies, either hereditary or through training, allow them to access supplemental energy gifted to them via the Cori cycle (the process in which lactate is converted to glucose). While seemingly aerobic, the athlete may run under the false assumption that fat is the energy path supporting the work.

Mind you, if this were the case, this would be a wonderful gift and an outcome all endurance athletes should aspire to achieve. However, it's crucial to identify the mechanisms (intensity, duration, and volume) that are productive rather than destructive.

Athletes who race in events that take an hour or less to complete are not concerned with energy conversion. Even if the intensity pushes

you 100% into your carbohydrate stores, regardless of caloric expense, you won't run out of energy. The new problems, as stated earlier, result from excessive heat production, lactate, and the inability to clear it from the working muscles fast enough. What happens then is your performance falters, lactic acidosis increases and your muscles become toxic and dysfunctional as a result. Under these circumstances, clearance and tolerance are far more critical than energy conversion. You need to train your body to clear the ensuing lactate production as quickly as possible while working to mitigate overheating to maintain motor function.

Energy depletion

Humans depend heavily upon the energy we can store and access. Our principal energy sources come to us through fat and carbohydrates. Protein consumption plays a very small part in the energy model, primarily in muscle maintenance, repair, and development. How much energy we can store and efficiently liberate for fuel is relative to various considerations, including but not limited to muscle mass and thermogenesis.

As we exercise, the rate at which we draw from these energy sources increases, and the pool of energy we pull from (fat vs. carbohydrate) highly depends on how much oxygen we can deliver to the working body. We know there is a precarious limit to the amount of glucose/glycogen we can store within the bloodstream, liver, and musculature. This energy comes to us as carbohydrates consumed in our meals and is assimilated into the bloodstream as glucose and ultimately stored in the liver and musculature as glycogen. Glycogen is the fuel required for sustained high-intensity exercise. The near absence of muscle glycogen in exhausted endurance athletes explains why they cannot maintain, let alone increase, their exercise intensity at exhaustion. We also know we can store an almost limitless energy supply from fat. Unfortunately, as the intensity of exercise increases, the amount of oxygen we can deliver to the working muscles is limited by our cardiac output and associated VO2max. As the delivery of oxygen begins to fall short of the demand created by the working muscles, this causes a shift away from our

infinite fat stores and places a high demand on our carbohydrate stores. Then, it's only a matter of time and intensity before we fatigue.

The wildcard in all of this, and what has been an inexplicable curiosity, is how heavily lactate production plays in energy demand. While most coaches and athletes associate lactate with the deterioration of athletic performance, many don't realize the importance of lactate as an energy source. Lactate is one of the most important fuels for exercise and is involved in two of the three major energy systems we use for training and athletic performance. An athlete would have difficulty finishing a race if lactate produced in one muscle wasn't used as an energy source in other muscles. Because lactate is used by other muscles as fuel, it moves out of the muscles where it is produced, thus easing the problem of acid build-up in the producing muscles. Controlling lactate is one of the keys to good performance. It is improbable that a normal functioning athlete could completely deplete his or her carbohydrate stores, which would cause exhaustion. During long endurance events, It is believed that as our carbohydrate stores fall dangerously low, the brain's motor cortex signals the working muscles to reduce output to protect us from potential doom. This consequence is identified as energy depletion, which is also a cause of fatigue.

Muscular recruitment and fatigue

The more collective muscle we can recruit for a given task, the more efficiently we can produce work. Think of this concept as "sharing in the responsibility"; a harmonious activation of task-specific muscles can profoundly reduce fatigue. There is growing evidence that the production of elastic energy from the stretch reflex generates an action potential of contracting muscles that reduces fatigue and enhances locomotion. This component of fatigue resistance has been at the forefront of my training programs over the past few years, and I feel very strongly that the focus here is significant concerning athletic achievement. The action/reaction opportunity that is presented by contractile forces has the potential to not only reduce overall work but also provide free energy. Movement inefficiency also presents a high degree of fatigue. These theories lead us to identify with what has been

coined as The Central Governor Theory*

**by Dr. Timothy Noakes of the Bioenergetics of Exercise Research Unit of the Medical Research Council and the University of Cape Town, Sports Science Institute of South Africa, Newlands, South Africa.*

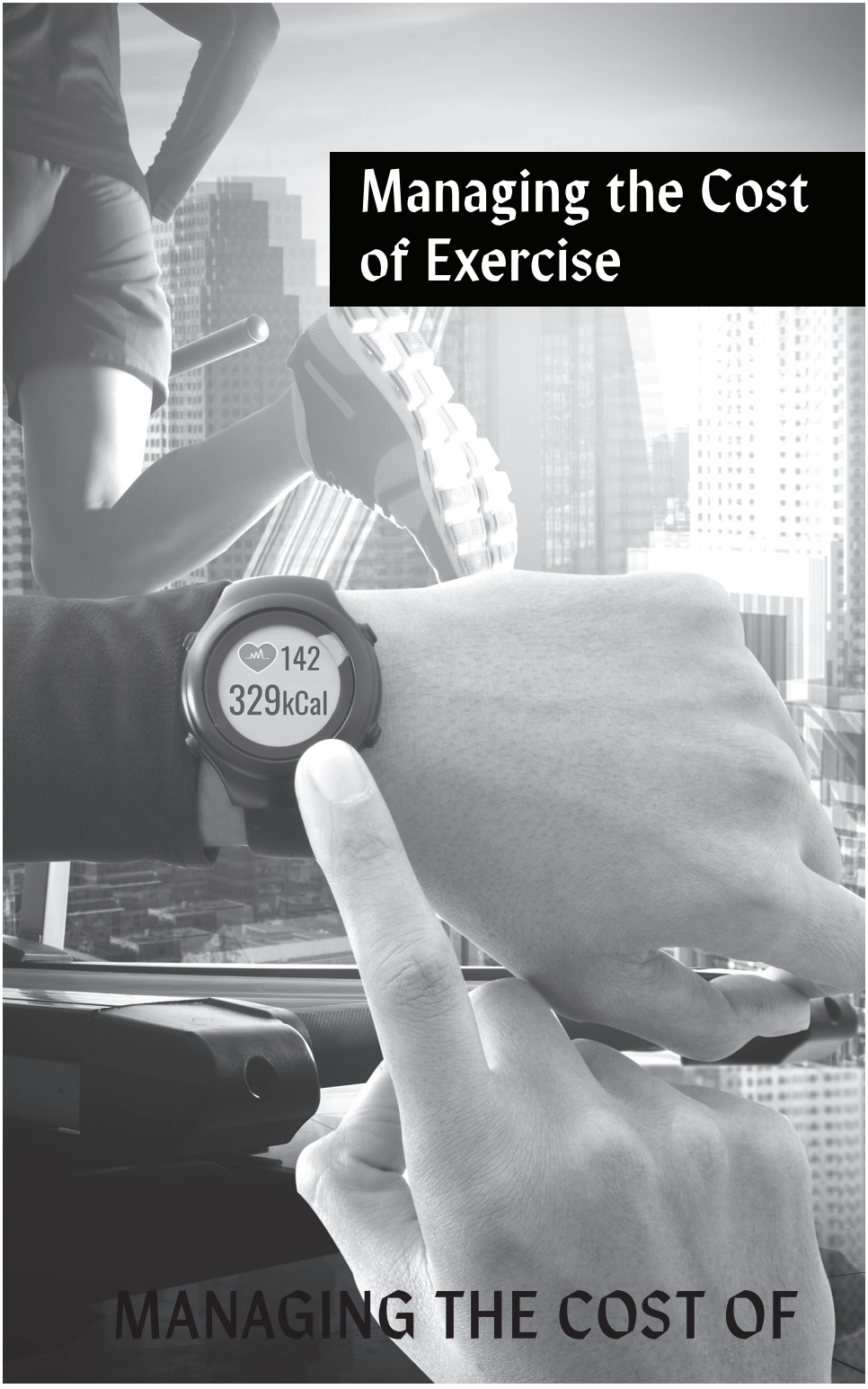
In short, Dr. Noakes theorized that we do not merely run out of gas; we do not only overheat or fatigue due to sheer muscular exhaustion. The consequence of fatigue may materialize for various reasons, and as these episodes result, the "Central Governor," the central nervous system, decides how to act on these consequences. Generally, the result is a reduction in the number of contractile forces generating the problem. The CNS is believed to act on information and react accordingly to protect us from ensuing danger. This theory's sidecar is that motivation has the potential to override these protective measurements. Ultimately, If you believe you can and push beyond physiological warning signs, you may be able to bend effort to your will. The question is... should you heed these signals of distress or try and shove past them in hopes of success beyond?

While it is true that motivation has now been incorporated as an important input into the workings of the central governor, motivational override is thought to only occur during life-threatening situations or other extreme circumstances such as Championship competitions. However, the consequences of motivational override are so extreme—including torn muscles, ruptured tendons, and even death—that override should occur rarely and only in extreme circumstances. Yet, to some degree, leveraging neural muscular signals can result in positive adaptations. With time, the body develops some adaptability under these chronic training states. It is more capable of sustaining efforts, and fatigue becomes less of an issue, even due to extreme environmental exposures. It is also likely that with training, one could adapt to less energy availability during prolonged training efforts without succumbing to energy depletion. The common thread in this relates to our unique capacity to adapt to physiological, psychological, and environmental stressors given the appropriate training influences. All of which are related to how tightly our central nervous system governs us.

Over the past few decades, exercise scientists have closely monitored athletes who compete in the grueling Ironman World Championship event in Kona, Hawaii. To this day, the scientific community is at a loss for explaining the ability of an athlete to not only endure but to compete at exceptional energy outputs for more than 9 hours under the rigors of intense exertion without succumbing to fatigue as a result of collective variables, heat, energy depletion, etc. We know that the athletes who are winning or competing at these high levels of work cannot store enough energy to endure and supplement these high levels of work for this great length of time. There are speculations that with training, these competitors develop greater efficiency in accessing fat stores and even the ability to call upon lactate production for energy. But all the same, whatever the specific pathway or mechanism, the body has shown to be capable of an unbelievable amount of adaptability under the appropriate training scenarios to combat fatigue.

So, the take-home message is that we are challenged by many variables that we must learn to overcome, prepare for, or adapt to resist fatigue. Each of us is at odds with our specific demons that work to hold us back from our most outstanding performances. To succeed, we must understand these demons better, cope with them, and bend them to our will.

Managing the Cost of Exercise



EXERCISE

Exploring the Role of Heart Rate in Training

Every action we take as humans comes with a metabolic and neurological cost in our daily activities—success in training and racing hinges on effectively managing these costs. Heart rate monitoring during exercise is crucial, revealing our metabolic expenditure from restful sleep to intense workouts.

Our resting heart rate is a valuable indicator of readiness for activity. Imagine this: if your typical resting heart rate is 60 beats per minute and suddenly jumps by 10-15 beats one morning, it signals something might be wrong. This could indicate an impending illness or inadequate recovery from previous training, helping you avoid overexertion and adverse outcomes.

From a training standpoint, heart rate indicates intensity and energy expenditure, leading to fatigue. Athletes often use the term "engine" when discussing training, typically referring to their cardiovascular capabilities. The notion of "building your engine" can be interpreted in various ways, but I prefer to avoid jargon that may confuse my audience. As someone who conducts VO2max tests on the athletes I work with, the performance of someone's "engine" becomes crystal clear through data that doesn't lie. There is no need for ambiguity; the data provides precise insights. I have learned through countless athletic assessments that many athletes I meet outperform their metabolic footprints. The scientific standard for determining one's lactate threshold is the point at which, through a graded exercise test, the athlete's blood sampling reveals four millimoles of lactate. This indicates that the muscular system will soon become acidic and incapable of producing more work. This lactate threshold is commensurate with the anaerobic threshold determined by a direct gas analysis in which carbon dioxide production is weighed against oxygen uptake. This information reveals a ventilatory response through respiration being captured by specialized equipment commonly known as a metabolic cart.

Heart rate monitoring for recreational and athletic training was Polar Sport Tester PE3000, first introduced in 1984 by Polar Electro. The heart rate monitor had an integrated computer interface, allowing athletes to view and analyze their training data on a computer for the first time. Zone training, a groundbreaking method introduced by Sally Edwards in her influential book "The Heart Rate Monitor Book," revolutionized the approach to heart rate training. This method, segregating training intensity into five "zones," ranging from very light to sparingly and infrequently intense efforts, laid the groundwork for heart rate training methodology that persists today.

ESTABLISHING HEART RATE LIMITERS

Determining max heart rate - First, there's no need to punish yourself by attempting to determine your maximum heart rate. The old standard of subtracting your age from 220 will bring you into the ballpark. Women tend to have a 5-to-10-beat higher maximum HR than men, which should be accounted for. Remember that this formula focuses on the 'theoretical' maximum heart rate. The maximum heart rate an athlete can reach will vary across different sports. For example, running involves more muscles than cycling, and the maximum running heart rate tends to be slightly higher. At the same time, the maximum heart rate while swimming is lower due to a cooler environment and mainly using upper body muscles, which are smaller in size.

Can I go over my estimated max heart rate?

The answer is yes. Your heart won't explode if you exceed your predictive measures, even if you opt to field test your potential max heart rate through a series of intense interval repeats; subtracting your age from really any recommended factor can only generalize people and tends to get imprecise for very fit athletes and people of older age who are very active. Maximum heart rate decreases with age, but not nearly as much as for fit people. Trained athletes don't generally see a drop in maximum heart rate until they reduce training volume or intensity. It's not uncommon to see a 40-year-old athlete with a maximum heart rate of 195 bpm where a formula would suggest only 180 bpm.

The core of your training intensity will revolve around your metabolic turn point, which indicates a shift in energy utilization. I deliberately use the term "metabolic turn-point" instead of lactate or anaerobic threshold to avoid confusion. What's important is the metabolic turn point in intensity indicates where lactate production begins to impede the sustainability of your effort. For clarity, the anaerobic and lactate thresholds are essentially the same intensity. These intensity points arrive at the same outcome; all that differs is how the information is obtained.

The anaerobic threshold is identified by measuring the ventilatory response to work, usually done with a metabolic cart that measures gas exchange (oxygen uptake relative to carbon dioxide production). The lactate threshold is determined by blood sampling, but the results typically align closely with heart rate response.

If you ever visit me or any other lab conducting these assessments, we can provide a VO2 max test that precisely delivers this information. Without this, several equations have been developed to help you find this elusive threshold. Subtracting your age from 180 will provide a reasonably safe, albeit conservative, estimation of your metabolic turn point or, if you like, your threshold.

As mentioned earlier, the key to performance is progressive sustainability—how much effort you can sustain before things go awry.

The best way to determine this is through comparing intensity to sustainability over time.

The data table here loosely depicts developing training intensity based on a reasonably reliable equation.

Remember that you may need to adjust these values up or down based on the type of exercise you are monitoring.

1. DETERMINE THRESHOLD / 180-AGE = CONSERVATIVE AEROBIC.
2. ESTABLISH AN AEROBIC TRAINING RANGE.
3. PREDICT MAXIMUM 1 MINUTE SUSTAINABLE EFFORT / AKA VO2 MAX HR.
4. ESTABLISH SUSTAINABLE PACE AND POWER RELATIVE TO TASKS.

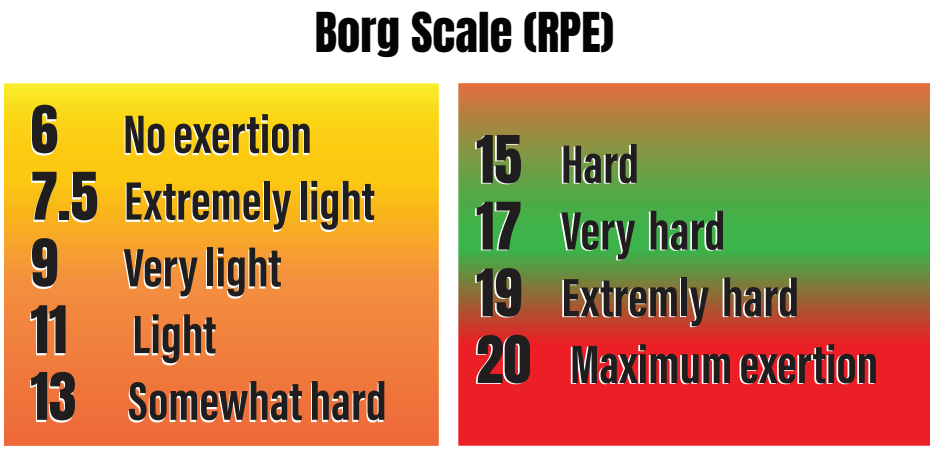
30 YEAR OLD MALE 220-AGE= PREDICTED MAX OF 190 BPM
180-AGE = THRESHOLD OF 150 BPM

Perceptive Identification of Intensity

The Borg Rating of Perceived Exertion (RPE) scale is a tool that measures effort, exertion, breathlessness, and fatigue during physical work. Swedish researcher Gunnar Borg developed it, and RPE measures how hard the body feels when it's working based on physical sensations

like increased heart rate, breathing rate, sweating, and muscle fatigue.

The scale is a numerical list from 6 to 20. Participants rate their exertion on the scale during the activity, combining all sensations and feelings of physical stress and fatigue. They are asked to focus on the whole feeling of exertion and disregard any one factor, like leg pain or shortness of breath. This number indicates the intensity of the activity and allows the participant to adjust their movements accordingly. During training, I often use a similar approach to identifying effort. I



ask athletes to rate their perception of effort from 1 to 10, with 1 being no effort and 10 being intense effort that can't be sustained for less than a minute. This helps me understand the athlete's perception of effort, which may not match their heart rate response.

Perceptive Training is a valuable tool when determining the sustainability of effort in athletes. This is supplemental information that often trumps technology. Clients train perceptively, keeping mental notes of sensation relative to where they are time-wise in an effort and reviewing the data obtained from their heart rate monitors afterward. By avoiding becoming slaves to the information

on their monitors, they compare the cost to the perception of cost. Interestingly, running or training by feel often provides better outcomes than relying solely on technology.

An excellent way to hone your perceptive skills is to compare the clinical assessment results of your threshold to your perception of effort. For example, through testing or even predictive measures, let's assume that your metabolic turn point is 150 bpm. Go out and run or, if you prefer, possibly indoor training equipment such as a Concept 2 Rower or Ski erg. Bring yourself to this level of intensity (150 bpm) and try to determine this level of intensity based on the Borg scale. Are you at 13? Higher, lower? What is your perception beyond the scale? Is it hard, sustainable, and or for how long? More importantly, has your perception of effort dropped relative to the same heart rate over time? Can you hold a greater pace for longer? This is incredibly insightful feedback that will help you refine your racing strategies.

While data doesn't lie, an athlete's ability may supersede the clinical conclusions. After a VO2 max test, I take the athlete out for a run where I monitor heart rate, perception of effort, pace, and mechanical efficiency. I push the athlete to see what is genuinely sustainable before assembling an approach to training.

I call this testing protocol "Trust but Verify," a term used by the late President Reagan in nuclear disarmament discussions with the Soviet Union. The idea is to identify the expense and sustainability of efforts while training, leading to confidence and more effective adaptation to specific energy pathways. Duration plays an integral part in this subjective evaluation, and other factors like hydration, feeding, and core temperature considerations come into play for athletes challenged by extensive distances, time, and environmental differences.

In the cycling world, power reigns supreme regarding pacing strategy and capability. FTP, or Functional Threshold Power, is a reliable metric that measures maximum sustainable effort over time. The longer the distance of competition, the longer the distance of the threshold test, and the lower the threshold result. Under these circumstances, I

compare heart rate to the outcome (threshold power or pace).

Knowing the expense of greater performances in yield (pace or watts) is crucial to avoid derailing training and potential fitness. With the advent of Hybrid Racing, such as Hyrox, I have effectively utilized power compared to heart rate on the Concept2 Rower and Ski ergs. These devices do an excellent job of revealing output in watts, aka real-time power.

During a VO2 max test, we will incrementally introduce an increase in watts relative to heart rate while collecting gas exchange to establish a base line for training.

Time Trials in Training

A Time Trial, commonly known as "The Race of Truth" in cycling, is a solo race against the clock. The objective is to measure your endurance level under the conditions you plan to face. As a runner or Hybrid competitor, it's just you, the clock, and the challenge ahead.

The fundamental rule in any training system is to start with simple exercises and gradually move towards complex ones. For this reason, I recommend my athletes begin with an aerobic trial. This involves running or doing any other exercise to test at a steady state heart rate, identified as aerobic.

In the early stages of training, you may trial over shorter distances before progressing to longer ones, testing various approaches and intensities to determine the "Functional Threshold Pace." Long distance athletes such as marathon runners, the time trials will get progressively longer to as much as 20 miles (32K).

Once you've completed the initial aerobic trial, subsequent trials may involve negative splits, where you run half the distance at your predicted aerobic pace and then increase the pace by as much as 20 bpm for the remainder. Another approach may be to increase the intensity to a maximum sustainable effort.

If successful, you'll finish in a shorter time, or, the intensity may prove

RUN TRIAL #1

RUN 1600 METER TIME TRIAL

1600M AeT Pace

First trial - Time your Run for 1600 meters holding pace to as near your determined aerobic effort. You should record elapsed time and heart rate for future comparison.

This tends to be a good measure of improvements in your running form and transitional adaptations for those moving off of heel striking and over striding.

Second trial - Now the goal is to identify when you are able to press the pace, Being ever mindful of proper running form.

"Do not toss the baby out with the bath water!"

1600 M Race Pace

These trials should be seperated by about 20 minutes the same day.

too high, which is also a valuable lesson. There's no right or wrong; each trial offers a lesson, and knowledge is power.

I take Time Trials a step further with my running athletes by including hydration and feeding strategies—how often to fuel, replenish electrolytes, and hydrate. These, too, are crucial considerations.

In the #3 Trial I introduce "Flow" this is where you allow your perception of effort weigh heavily into the outcome. This is new to

RUN TRIAL #2

RUN 5K X 5K TIME TRIALS

5K AeT Pace

First trial - Time your Run for 5K holding pace to as near your determined aerobic effort. You should record elapsed time and heart rate
for future comparison.

Perform an active recovery walk /jog for 5 minutes, rehydrate before your next trial.

Second trial - Time your Run for 5K at your best race pace and record average heart rate for future comparison.

5K Race Pace

The goal is to determine what your base sustainable aerobic time to compeletion is and what could be construed as your functional threshold pace which should be very close to your average heart rate for this distance. Both bits of information will assist you in determinging pacing strategy for this distance.

most runners, those that have been following my work have reported to me how much they enjoy the freedom and ultimately the performances they have experienced by learning these methods.

RUN TRIAL #3

RUN 10K "FLOW" TIME TRIALS

10K 70/30

First trial - Time your Run for 10 kilometers flowing above and below you predetermined aerobic effort. Undulating based on perceptive effort. Running exclusively on how it feels, whats attainable when it becomes less comfortable, allowing yourself to retire and recover to an intensity that is more forgiving. You wear your monitor to collect the data but not become a slave to it.

Second trial - 60% Aerobic/30% Anaerobic/10% VO2max effort. Now the goal is to identify when you are able to press the pace, apply what you learned in the previous trial strategies allowing yourself to visit the entire energy spectrum at will to achieve your best finish time.

10K 60/30/10

These trials should be seperated by about 4 days, on the same day and time of the week you intend to race. This middle distance serves as the bread and butter for races 1K to as much as 20k.

In Hyrox, the challenge consists of eight individual 1k runs interspersed with eight unique exercise challenges. This complexity offers interesting options.

Attempting to trial each challenge individually is futile, and repeatedly attempting the entire event in the early stages of training isn't as effective as breaking it down into smaller efforts.

I recommend cycling through different approaches, such as Run-Ski-Run, Run-Sled-Push, Run-Row-Run, Run-Sled Pull-Run, etc.

RUN TRIAL
#4

RUN 32K TIME TRIALS

32K AeT

First trial - Time your Run for 32 kilometers holding pace to as near your determined aerobic effort. You should record elapsed time and heart rate for future comparison.

Be mindful of your nutritional and hydration needs on the run. Being undernourished at this distance can easily cause you to fatigue early due to energy depletion and electrolyte imbalance.

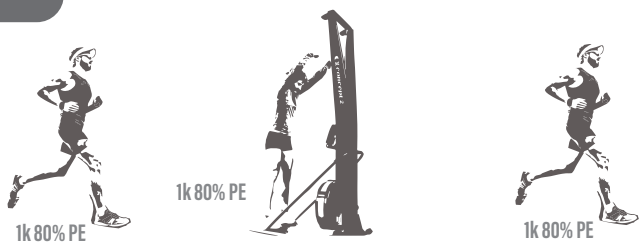
Second trial - Now the goal is to identify when you are able to press the pace, apply what you learned regarding feeding and hydration strategies and at what point can you begin a closing pace to achieve your best finish time.

32K Race Pace

These trials should be seperated by about 2 weeks, on the same day and time of the week you intend to race. This should be your longest trial leading into a marathon and the final trial should be no closer than 2 weeks from your actual race.

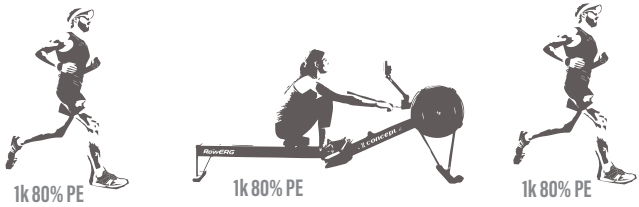
TRIAL SYM #1 is a great way to assess your stamina and endurance. The runs, one before and one after the exercise to test your sustainable pace.

TRIAL SYM #1 HYROX RACE SPECIFIC TIME TRIALS



Trial #1 - Time your Run for 1K with a PE* of 80%. Move directly into the Ski erg, time yourself and record average watts and heart rate, move to your final run. Record split times and overall time and heart rate for future comparison.

Recover for 5 minutes, rehydrate before your next trial. Also record recovery heart rate at 1 and 2 minutes.



Trial #2 - Run for 1K with a PE* of 80%. Move directly to the Row erg, time yourself and record average watts/heart rate, move to your final run. Record split times and overall time and heart rate for future comparison.

*PE is Perceived exertion.

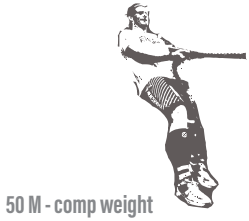
Sym #2 Introduces overload for those challenged by the weight of the sleds. This sym is a great way to measure your progress with this type of challenge.

TRIAL SYM #2

HYROX RACE SPECIFIC TIME TRIALS

Trial #1 - Time your Run for 1K with an average PE of 80%. Move directly to the Sled Push, time yourself, then move to your final run. Record split times and overall time and average heart rate for future comparison.

Recover for 5 minutes and rehydrate before your next trial. Also record recovery heart rate at 1 and 2 minutes.



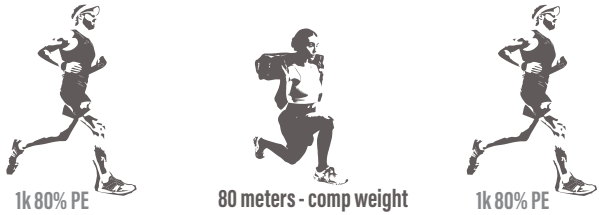
Trial #2 - Time your Run for 1K with an average PE of 80%. Move directly to the Sled Pull, time yourself, then move to your final run. Record split times and overall time and average heart rate for future comparison.

I think it's important to mention that for many of the clients I work with, the true challenge is gaining access to the equipment organized as it would be during an actual event. In some cases, half of the equipment may be further away from other pieces, or you may need to run on a treadmill. What's essential is relative improvements under these less-than-ideal circumstances. As with any time trials, repeat the efforts as

closely as possible to the previous efforts. This approach will reveal how well you are doing and what you must work on moving forward.

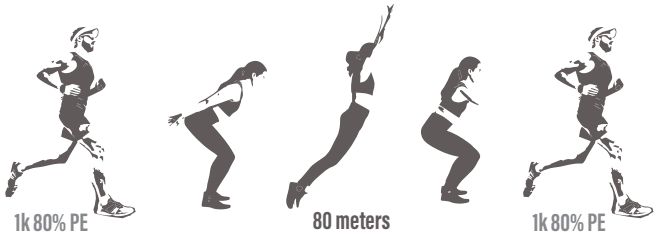
TRIAL SYM #3

HYROX RACE SPECIFIC TIME TRIALS



Trial #1 - Time your Run for 1K with a PE of 80%. Move directly to the Lunges (w/66 lbs), time yourself then move into your final run. Record split times and overall time and average heart rate for future comparison.

Recover for 5 minutes and rehydrate before your next trial. Also record recovery heart rate at 1 and 2 minutes.



Trial #2 - Time your Run for 1K with a PE of 80%. Move directly to the Burpee broad jumps,, time yourself then move into your final run. Record split times and overall time and average heart rate for future comparison.

Another thing to consider is that the trials call for a 5-minute recovery between each set. This time should allow for an adequate recovery from the previous trial. Take this time to recover and hydrate. Try to stick to this recovery timeline for more precise future comparisons.

These trials may seem redundant, they are with the exception of testing various exercises against the run. I suggest that you try them all at different times in you programming and revisit them to measure your progress.

TRIAL SYM #4

HYROX RACE SPECIFIC TIME TRIALS

Trial #1 - Time your Run for 1K with a PE of 80% .
Move directly to the 200 meter Farmer Carry, time yourself and record average heart rate, then move into your final run. Record split times and overall time and heart rate for future comparison.

Recover for 5 minutes, rehydrate before your next trial.
Record recovery heart rate at 1 and 2 minutes.

Trial #2 - Time your Run for 1K with a PE of 80% .
Move directly to the 100 Wall Balls, time yourself and record average heart rate, then move into your final run. Record split times and overall time and heart rate for future comparison.

You may be surprised to learn that your pacing strategy has a profound effect on your overall time. To the point that actually slowing down may provide energy for the exercises that was sorely needed.

ADAPTATION

The dynamic process in which the behavior and physiological mechanism continually change to adjust to varying living conditions. The change process by which an organism or species becomes better suited to its environment.

-The American Heritage® Stedman's Medical Dictionary

The subtitle here best represents the intent and outcome I hope to portray. The focus of all training stimuli should be employed in such a manner as to achieve a desired goal. A bodybuilder trains the muscle to achieve symmetry and size. However, too little effort will not provide the desired outcome. Similarly, an endurance athlete trains to improve stamina and endurance. The desired goal becomes more complex if they wish to cover any given distance at a quicker pace. The path to speed vs. endurance is contrary to our physiological outcomes. Anyone trained to develop strength for some time and then goes out to test their endurance will immediately notice that endurance and stamina are sacrificed. If one focuses on running, strength is compromised, and vice versa.

The challenge in the sport of Hyrox is finding a winning training formula for optimal power, strength, speed, and endurance. It's a complex balancing act that requires dedication and refinement of the process. The focus of this book is to shine a light on these complexities, which all tend to lead back to the metabolic response to work.

Each of us responds uniquely to the training stimulus we apply. Trusting the process and maintaining consistency can be challenging but are crucial for success. This challenge becomes particularly apparent when comparing training methods focusing on heart rate versus perceived effort. Our individual experiences and adaptations heavily influence our

sense of effort. For example, if you were to run while listening to your favorite playlist set at 180 bpm (beats per minute) for an hour, three to four times a week, you would inevitably adapt to this consistent routine over time. This adaptation improves physical endurance and enhances mental resilience, as the rhythmic beats at 180 bpm help entrain a proper running cadence, optimizing your performance and reducing the risk of injury.

Often, I'll interview an athlete before and after a VO2 max test, and they will share their exercise habits. Most of these athletes are shocked to hear that these seemingly aerobic treatments were anaerobic. An hour of moderate-intensity exercise will go a long way to maintaining a fitness level. However, there may not be much progress without variation in volume and intensity. The most challenging workouts for an average recreational athlete with a 3-4 hourly training regimen were at the beginning of their fitness journey. Each concurrent workout becomes more effortless. As a matter of fact, without progressive intensity or volume, the gains in fitness will plateau once the initial adaptations have occurred. Then, a slow regression in fitness will begin.

In 1936, a Scientist named Hans Selye introduced his groundbreaking research, which he coined "The General Adaptation Syndrome." Hans, recognized as "the father of stress research," explained that when the body is exposed to external biological stress, this stress is met with a biological response to attempt to bring the body back to internal homeostasis. According to Selye, when the body is exposed to stress, it goes through a series of stages to regain stability and balance.

Training provides a challenge to our homeostasis. Chronic influence causes our body to find balance under these newly imposed stressors, whatever they may be, to create a newly adapted you, be it fitness, adaptation to the environment, cold, or heat. It's all a matter of time and exposure. Of course, as in all things, life is cyclical; if you continue to overstress the body, you will encounter maladaptation. You fall out of balance in your training and lose the desired effects. In the best case, you'll need some time off. In the worst case, you may encounter an injury or illness as the body begins to break down.

Training success depends on how well you manage the variables of volume and intensity. The Flow training models described in this text are plausible options for different tasks. Most people who follow these examples will likely see positive results. I believe in evidence-based science and only recommend processes tested and proven to work. However, no method is 100% foolproof, so be wary of anyone who claims otherwise. Remember that all your training efforts will lead to some form of adaptation. Avoid impatience and taking on too much work simultaneously, which can lead to adverse outcomes. The key is to monitor your responses, not just your progress, speed, or pace but also what it costs you to achieve your goals.

How long does it take?

When athletes ask how long it will take to see positive changes, the answer is always... it depends. Is that not the answer you were looking for? Sorry. That is the best and most honest answer. However, if we can further qualify the question, we can arrive at a more reasonable conclusion. Here are the factors that can lead to a far more intelligent response.

- How long have you been training consistently?
- Aside from consistency, have you been training specific to your goal?
- Are you currently applying the correct influencer's in your "consistent" training?
- How long have you been able to train without injury holding you back?

Once these answers are in front of us, let's dig deeper into your responses. Let's assume you've been training consistently, but your training has been random, with no specific intent other than to be exercising. Maybe you try and squeeze in a run a few times a week and hit the gym as often. Has this approach been EFFECTIVE?

Going out for a run because you know you need to show dedication... you may even have gone into the run with a theme, e.g., an aerobic or

anaerobic, interval-based, etc. Were these workouts effective in leading to your goal? Yes, being consistent is excellent. Being effective with the time and design of your workouts is efficient. You can get good at exercising that has little benefit for your goal. You are effective if you are on point with your workouts and doing the right things at the correct times. Add this critical consideration to your dedication, and you'll be far more efficient.

Effective + Efficient will lead to Economy. The economy suggests that everything you do now comes to you at less expense. Read into this how you might but know this... Every competition comes down to you're being able to get through a task with less expense. If it costs less, you can do more over time. Winner!

Furthermore, more work is not always better work. You should never pride yourself in outworking your competition in training. Your focus should be to outsmart your competition in training. Do not put in junk miles or perform more exercises that have zero value towards your goal. If we start with these concerns in mind, working smarter, effectively, efficiently, economically, and consistently, all that's left to factor is time until adaptation.

Adaptation mostly speaks of physiological improvements, the positive changes that all athletes hope for, but many never find the correct path to this outcome. You have a plan and an education in front of you. I cannot be there daily to help you make the proper decisions. You have unique life commitments, any of which will undoubtedly get in your way from time to time. What matters is how well you manage these circumstances.

Assuming you are still on board with this logic, I can now provide you with a pretty solid answer to your initial question... it will take between 6 and 8 weeks to become a much better athlete. You can reflect on the weeks you invested to get to this place and be proud and satisfied with your results. Take into consideration that this can mean different things to different people. If your goal is to get on the podium in your age group, that is possible. If you started from zero, it's not likely. 6 to

8 weeks is not a goal; it is a point at which you will realize considerable gains and adaptations that may represent the beginning of the next level of your journey. The sharper you become, the more incremental improvements will be more challenging.

I am frequently asked: Do you think I have what it takes? The legendary athletes that many of the athletes I meet look up to have come a long way over years of challenging competitions and long hours of training. You have to earn your stripes!

A good friend and an impressive athletic specimen told me that developing what he calls "Real strength" takes at least two years of dedicated training. I was taken aback by his statement. No one wants to hear that potential reward is far out of reach. The more I pondered this idea, the more it made sense. Developing the type of bone density, marked increases in tensile strength of connective tissue, and muscular gains is not something to expect in a few weeks of training. Ultimately, your desire to stay the course will define you as an athlete and competitor! The initial rewards will show themselves in about two months, but this is not your destination or end product. You will have identified your capabilities, and from this 6-8-week investment, you can build. You are only limited by your willingness and determination; I give you a path to follow, and it is about to unfold.

FLOW

A BETTER WAY TO TRAIN

Have you ever experienced a moment when everything seemed to align perfectly? Like effortlessly sinking consecutive foul shots in basketball or feeling a sense of ease while running. This sensation, often called a "runner's high," is what flow training aims to capture. It's that fleeting feeling of effortless performance, where every movement feels perfectly in sync.

Elite Kenyan runner Geoffrey Mutai, record holder of the Boston and New York Marathon, refers to this culmination of precise movements as The Spirit.

> ***"The moment in time when movement (running) is perfect. The calm in the storm, so to speak, when the body becomes quiet, effortless, and seemingly capable of flight. It is not an illusion; it is an attainable state of being that can only be experienced with a dedication to the task and an understanding of what one hopes to achieve and the path that leads us there."***

After three decades of training clients with carefully planned methods, I've realized the importance of trusting your instincts. Our bodies constantly send us signals, like pain, that we often ignore. Instead of pushing through discomfort, we should listen to these signals and adjust accordingly. While scientific metrics like heart rate monitoring are essential, they should complement rather than override our perceptions. My approach now is to mesh perception and validation. "Trust but verify" has become my mantra.

Once athletes understand their body's signals and metabolic responses to intensity, they can effectively train perceptively. This involves regularly checking in with their physical and mental state to make informed decisions about pace and intensity. "Flow" is all about this: a blend of perception, awareness, and scientific validation.

In my original offering of Training the Dark Side, I shared the concepts of flow training compared to traditionally periodized training paradigms. The stark difference between the two is how work is assembled over time. In traditional training schemes, such as Periodization or Polarized Training, workout intensity and duration are progressive/regressive. Initially, the volume of work is progressive while holding back on intensity. The goal is to establish a "base" of aerobic adaptations. This approach commonly dedicates as many as ten weeks of training before shifting into a new "phase" training block where the duration of workouts is shortened as the intensity is progressively increased for a predetermined block of time, generally 4 to 6 weeks. From there, the time domain of the training organization leads to a peak, which is orchestrated by a shorter training block that leads to competition.

The intent is to manipulate the metabolic structures into a desirable, greater endurance result with a higher aerobic capacity while pushing resistance to lactate production to as much as 85% of maximal effort to prolong endurance and stave off fatigue for as long as possible.

This systematic approach to training, which is widely used today, originated in the early 1960s and became the primary training paradigm for runners. Later, Coach Arthur Lydiard adopted it and coined it the "Lydiard system" of training. This approach to training is still practiced worldwide today with a reasonable amount of success. Credit is due for systematically organizing training rather than simply training as hard and as often as possible. However, this training system was limited to endurance athletes, specifically runners and, eventually, cyclists.

Before Lydiard, there was little systematic training. Tudor Bumpa, a Romanian exercise scientist, introduced Periodization training to the

West in 1963. Collectively, these processes meld together with pretty compelling results. Other sports, such as triathlons and CrossFit, were not considered, leading to a lack of direction for athletes in these areas. It's time to expand our knowledge and open our minds to novel concepts built around today's sports. Relying on theories developed in the past is essential, but we also need to consider current technology and challenges to make training efficient.

It's been seven years since Hyrox, a hybrid competition, was introduced in 2017. Even today, many people are not aware of this sport. From my experience coaching athletes to success in the marathon, triathlon, CrossFit, and now Hyrox, I firmly believe that a simple alteration in programming, operating in a theme of inclusion rather than segregation, is a game changer. This approach results in a more confident pacing strategy, the ability to shift gears on demand, knowing that you're in command of the energy system, and the freedom to rely on your perception of effort to guide you. The evidence is compelling.

"Why Flow Training Works So Well"

My simple explanation begins with a few questions. We know that to perform work, we must consume energy - "Energy in, Energy out." We are also commonly aware that our energy needs are met by ingesting carbohydrates, proteins, and fats, which make up our daily meals. However, it is essential to balance and fulfill our energy needs daily instead of consuming carbs on one day, fats on the next day, and protein on the third day. Instinctively, we know that this approach is not efficient week after week. Now, let's consider how to introduce intensity in your training scenario. Why would you segregate your training influences daily or weekly to achieve a winning balance of adaptations eventually?

Many of these training concepts need to be revised. During a coaching symposium, a cross-country coach posed a question that invoked a reality check for me and many others in the coaching industry. He asked, "Why would you invest 10-12 weeks of dedicated training to base development only to lose the benefit when you escalate intensity in your next training block? You just wasted up to 12 weeks of precious

training time!" Flow Training meets all of the "needs" in each training bout. It enables you to visit all points of your energy system from low to high intensity with a predetermined dedication to each level of intensity progressively and regressively predicated on your end goal. Also, instead of being a slave to any particular "script," you allow your perception to weigh heavily into your decisions of when and how much you introduce these energetic shifts in intensity.

Let's take an example of a rowing machine instead of running. The goal is a 10k training target. If we were to assume that your metabolic turn point is 150 bpm. On your info screen, you are monitoring heart rate vs. watts over distance in meters. You begin with a light effort, concentrating on your form and rate of pull. Your pace is 140 bpm within the first kilometer, producing 120 watts.

You are now starting to sweat and feel adequately prepared to escalate your effort. You gradually push up to 155 bpm and are now generating 160 watts. You hold this pace for what results in 500 meters, and your perception tells you it's time to regress and take a bit of recovery, dropping your workload back to 145 bpm, which takes about 1 minute.

Once again, you decide to charge up to 155 bpm, and interestingly enough, 155 bpm is now showing a yield of 180 watts. The effort seems more comfortable than the previous interval. You can hold the pace twice as long as before but decide to reign back, but this time, you row at 150 bpm and stay there for another 1500 meters. You feel the itch to press the pace and push up to a new high of 170 bpm with peak production of 350 watts and feel the need to back off in 250 meters. You need more recovery this time, so you drop the pace to 140 bpm.

You are not concerned with watts during recovery; you're more concerned with how long it takes to get back to work effectively. It takes 90 seconds, and then you chase after the last assault. This time, you're interested in yield; how many watts can you generate before recovering? Again, within 250 meters, you top out at 375 watts, even at the same expense of 170 bpm. You back off to 140 bpm for 250 meters, then escalate to 150 bpm, pulling 180 watts, which you hold for 3k.

By now, you have forgotten about the intensity of your visit earlier. You decided to press the effort to a manageable 160 bpm and hold it for 1500 meters to conclude with an easy 500-meter recovery. All said and done, nearly 70% of the work provided aerobic influence, about 25% anaerobic, and around 5% put you near maximal effort or VO2 max influence.

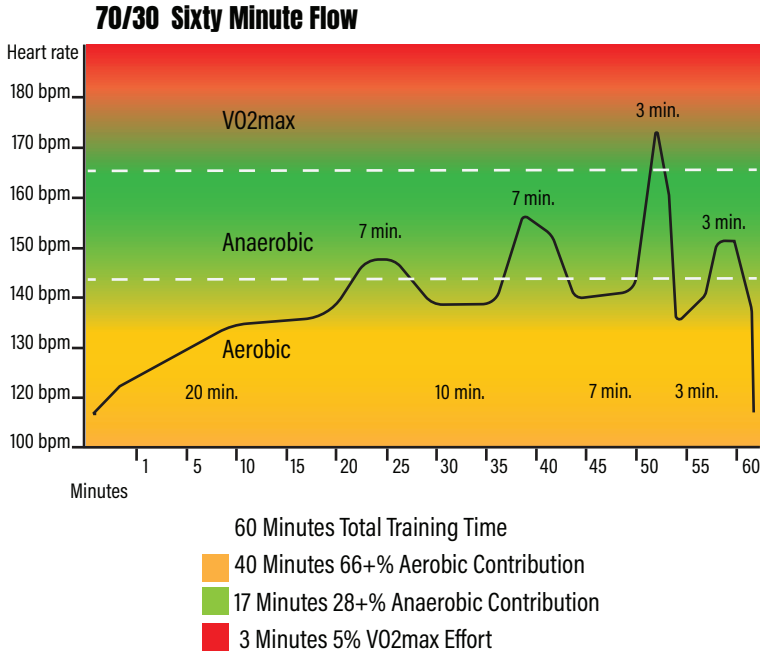
This "Flow" approach provides a wide range of benefits, with aerobic stimulation being the dominant influence, followed by a sprinkling of anaerobic treatment and a heart-pumping workout for your myocardium (the muscle surrounding your heart).

This is just an example of a never-ending arrangement designed to provide a dose of all the critical elements of an athlete's development. You may be identified as a highly aerobic/endurance athlete but must fare better when the pace goes into an anaerobic challenge. You could quickly arrange the workouts to help you turn your weaknesses into strengths.

Compared to traditional training methodology, what's interesting is that by week's end, if you need to arrive with a dominant influence from aerobic conditioning, you can blend a greater dedication to aerobic treatment in your flow. The polar opposite approach could also be imposed if more anaerobic stimulus is needed.

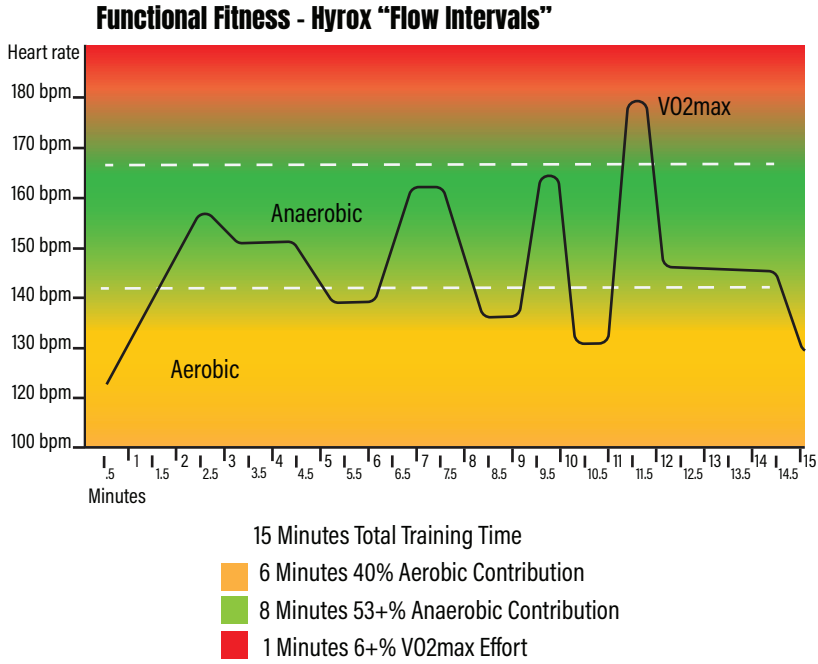
Instead of applying the work step-by-step, aerobic training is first followed by progressive intensity; you can undulate in and out of the aerobic stimulus blended with higher-intensity influences and arrive at a more effective training model.

Here are a few examples of effectively employing Flow in various scenarios for specific adaptive responses.



As you can see in the first example, 66% of the training bout was dedicated to aerobic influence. Yet, some anaerobic and even near-maximal efforts were included to ensure that all energy systems were stimulated. This workout could have been conducted on any cardio device, not just running, with the same result.

Here is a good example of an approach to preparing for a Hyrox event: the intensity is greater, and the contribution from anaerobic influence is now dominant.



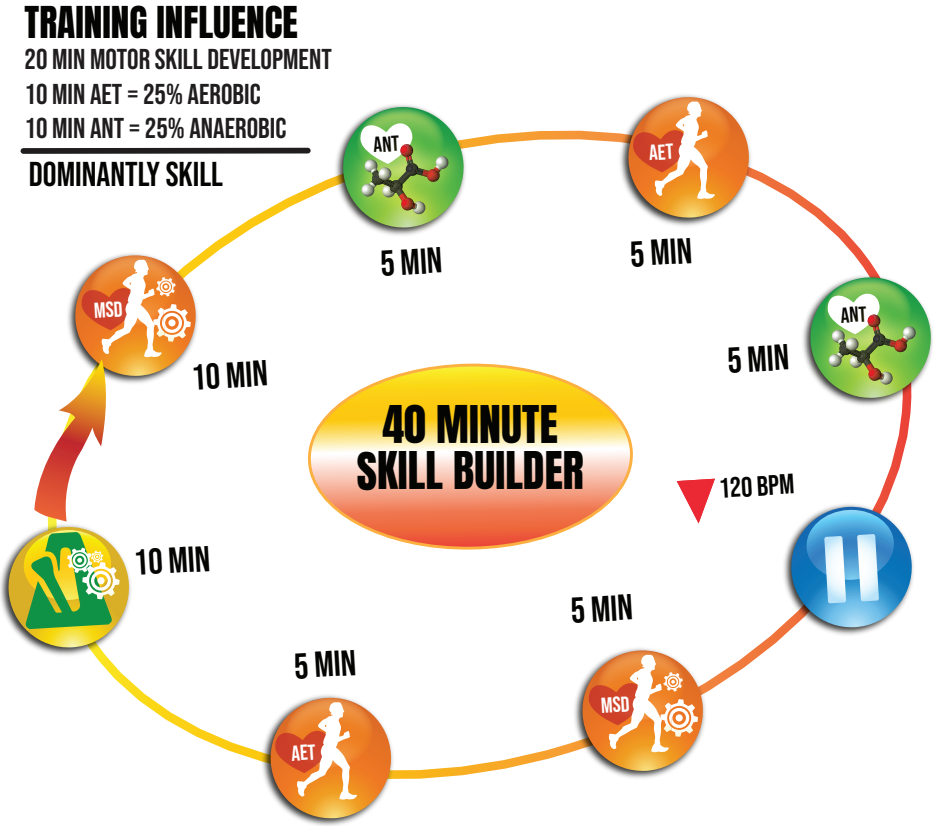
Flow training is very liberating, and the fluid nature of the applications is virtually limitless. The following few images depict how creative you can be.

Let me be perfectly clear... Flow training is based on how you react to effort; we are all unique creatures. When I indicate a timeline, it is for sample purposes. It is not a script to follow verbatim. Will it work for you if you do? Possibly.

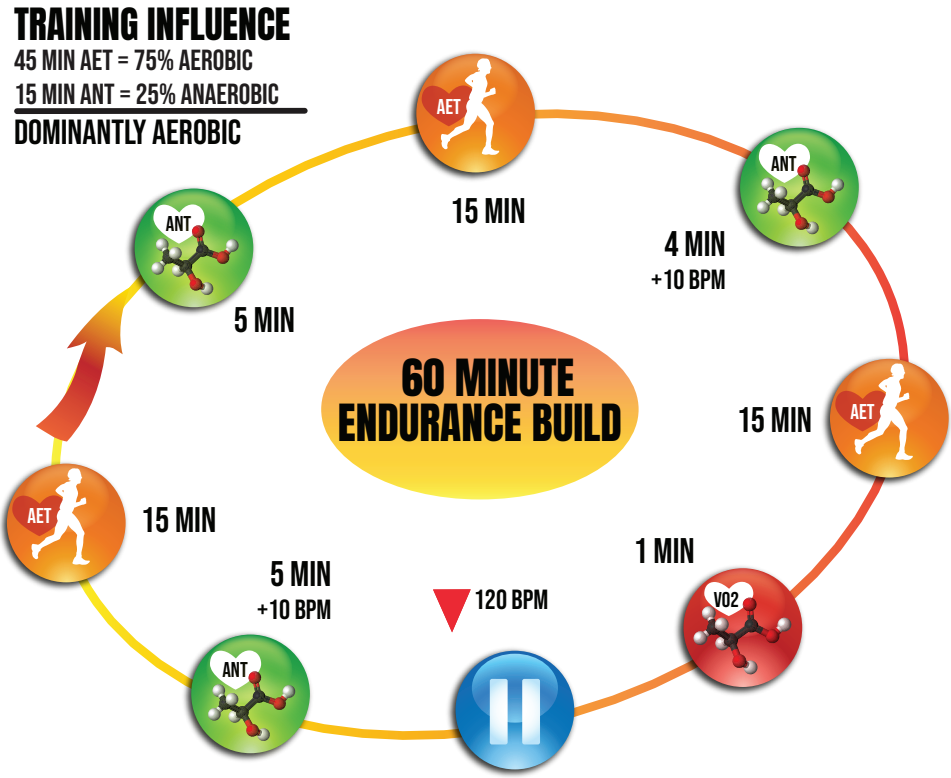
One of my favorites for those not as adept in running is the 40 minute "The Skill Builder", a powerful way to perfect your running form.

The template below represents a highly effective approach to enhancing your skill sets as a runner. It begins with a 5-minute specific cadence warm-up. Think of this as tuning your instrument and getting your ground contact on point for what will follow.

This is a critical piece of the gait refinement process and should not be overlooked, especially in the early stages of your education to become a better runner.



This next example represents a 60-minute flow cycle fashioned to encourage improvements in endurance. It begins with 15 minutes of aerobic influence and increases in pace to anaerobic effort, recovering and revisiting intensity with shorter assaults at progressive efforts.



If you follow my templates, it will likely result in improvements you are not currently seeing, but learning how to guide your body through this newfound relationship between you and your efforts will be a game changer in all of your endeavors.

Again, there is no right or wrong way to do this. You need to pay very close attention to how you feel.

THE TRAINING ICONS

If you have read any of my previous training plans, you are familiar with using icons that depict various efforts. Years ago, I launched my symbology to represent different components of training. I hoped that through this symbology, I could write a training plan that was extremely easy to follow while also being incredibly practical.

The symbology in this text, for lack of a better way to describe it, is an evolution over my initial offering. If you are new to these symbols, I highly recommend that you don't blow past this chapter; if you do, everything you read will be Greek to you (no offense to my Greek friends).

The first icon represents Cadence (CAD). This is a new edition to the original set. I felt that there needs to be a dedicated time to focus on "tuning" gait frequency, as most athletes begin reaching for speed; frequency errors generally lead to injury, more effort, and less result. As you'll see in the coming examples, the early stages of training will often bring you back to this lesson, and I feel that there is never a wrong time to revisit fundamentals.

When you see this icon, your focus should be on ground contact and timing. It's a time to ensure that you place your foot onto the ground in precise order, scheduled to precisely 180 steps per minute. You should not be concerned with heart rate as this is a mechanical skill drill.

The next icon represents Motor Skill Development (MSD). You'll find it often follows cadence. The difference is that with motor skill development drills, you focus on creating speed without sacrificing

stride frequency or form or what I typically refer to as “minus error.” Allow me to take you through a “virtual set” to try and effectively paint the picture of how to conduct these drills properly. Over the many years of teaching this drill, I have found that the learning curve can get a little blurred, and making a mistake here is an utter waste of your time, and the results will never manifest from doing them wrong. On the flip side, when you better understand and approach these drills, as I explain, they are, without question, the most powerful asset in your training.

Use the cadence drills as your warm-up. I will set this up in the flow cycles, and if you follow the sequences correctly, all elements will fall into place very neatly. Once adequately warmed up, begin working towards “peak velocity.” To be clear, this is where you run as fast as possible. There are strict rules to follow along this path. Anywhere along your attempt to achieve speed, if you identify a flaw in your mechanics, you MUST back off, reset, and make another attempt. The flaws I am speaking of are over striding, increased or decreased stride frequency, heel striking, or faulty arm swing and posture.

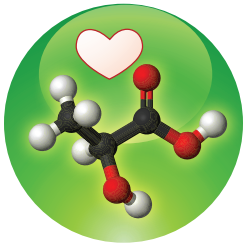
Under these restraints, you will initially become frustrated with your inability to generate reasonable speed. The desire to create speed generally overrides the discipline to back off, knowing you are cheating! Motor skill drills are problem solvers, as you focus on doing things correctly, and each time you repeat them, you’ll get a bit more efficient.

The more efficient you become, the fewer errors you make, and the faster you will become. When you reach this ability level, you need to start using heart rate as a governor to control fatigue between intervals. In most cases (depending on age or fitness), about 120 bpm is a good governor. When your heart rate falls to this point, you should be ready for another interval. Never go into these drills with a specific number of intervals in mind. I rarely ask an athlete to spend more than 45 minutes, including total time, warm-up, and recovery. As you become a better student of this drill, you will become faster before you make mistakes,

and everyone, given the speed they generate, will make a mistake. If you keep pushing as the wheels fall off the bus, I promise it will one day end badly if it hasn't already. High-intensity training unguarded leads to incredible soreness, if not injuries.

Aerobic training represents low-intensity, typically long-duration activities, is a staple in most training systems, and is indicated by our AET icon. Absent a clinical assessment, subtract your age from 180, and you will arrive at a conservative, albeit effective, aerobic heart rate. As you will learn soon, with a glance at the flow cycles, you'll know precisely what to do when this symbol appears. So much is written regarding the importance of aerobic conditioning; don't be surprised to see this icon appear dominantly in most templates, certainly in the early stages of training.

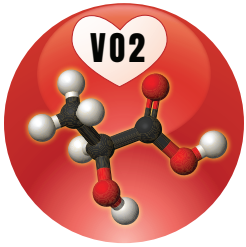
The short list of benefits of aerobic training is that it helps increase the number of red blood cells responsible for carrying oxygen to the working muscles, builds mitochondria stores that help increase energy availability from fat and is chiefly responsible for building endurance.



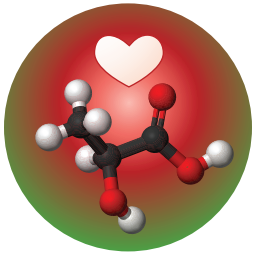
The Anaerobic icon (ANT) represents the most mysterious training component and possibly the most crucial weapon in your arsenal. In the context of this icon, when it is shown in a flow cycle, the intent is to approach your anaerobic threshold carefully. It bears repeating that in the absence of a clinical assessment, a male should subtract age from 180 and add 10bpm. This, for many, will place you just over the threshold. Unfortunately, this sensation is not like a light switch. When you get there, the lights don't go out. It may not appear as taxing as you assume being anaerobic should feel.

This next Icon speaks for itself in that there is a mountain as the center of attraction.

This does not mean you will be running in the mountains but it does represent running at an incline. Be it a treadmill or any moderate to steep grade. Obviously, the steeper the grade the more intense. It could also represent rolling hills or moderate hill repeats. It's up to you. The chief take away is that all of these activities are anaerobic in nature. There is, however, room for creative license here, especially since, during a flow cycle, you will be encouraged to retreat when necessary. This icon does not represent an untenable intensity that will shut you down if exposed for too long.



As the term suggests, the VO2max icon (VO2) is an intense, short-duration effort intended to tax your heart and lungs. Think of this effort much like a three-rep max in weight lifting. It is so heavy that your body cannot muster the strength to give you that fourth repetition and requires significant rest between sets. This effort is essential in the flow cycles, especially when training for shorter-duration races.



The Maximum Lactate Steady State icon (MLSS) is a level of anaerobic effort held at the most intense effort that can be sustained for the intended duration. In most race scenarios, all elements indicated in this series of icons are essential to help you achieve this end product. The ability to hold pace is the reward for diligently integrating this host of training components correctly. Fatigue resistance is the outcome of appropriately conditioning your body to mitigate out-of-control heat production, flush the toxicity associated with lactate production, lower your working heart rate, and develop a far more efficient and economical performance.

The Time Trail icon (TT) represents a means to check your progress. All you do represents "Training" and hopefully to arrive at positive adaptation. Time trials are a perfect way to determine how effective your training is going. They can be done in several ways, as a steady state effort, either aerobic or anaerobic, or how you intend to approach a race to see if your strategy holds water. I like to sprinkle these trials into training every few weeks under various conditions.

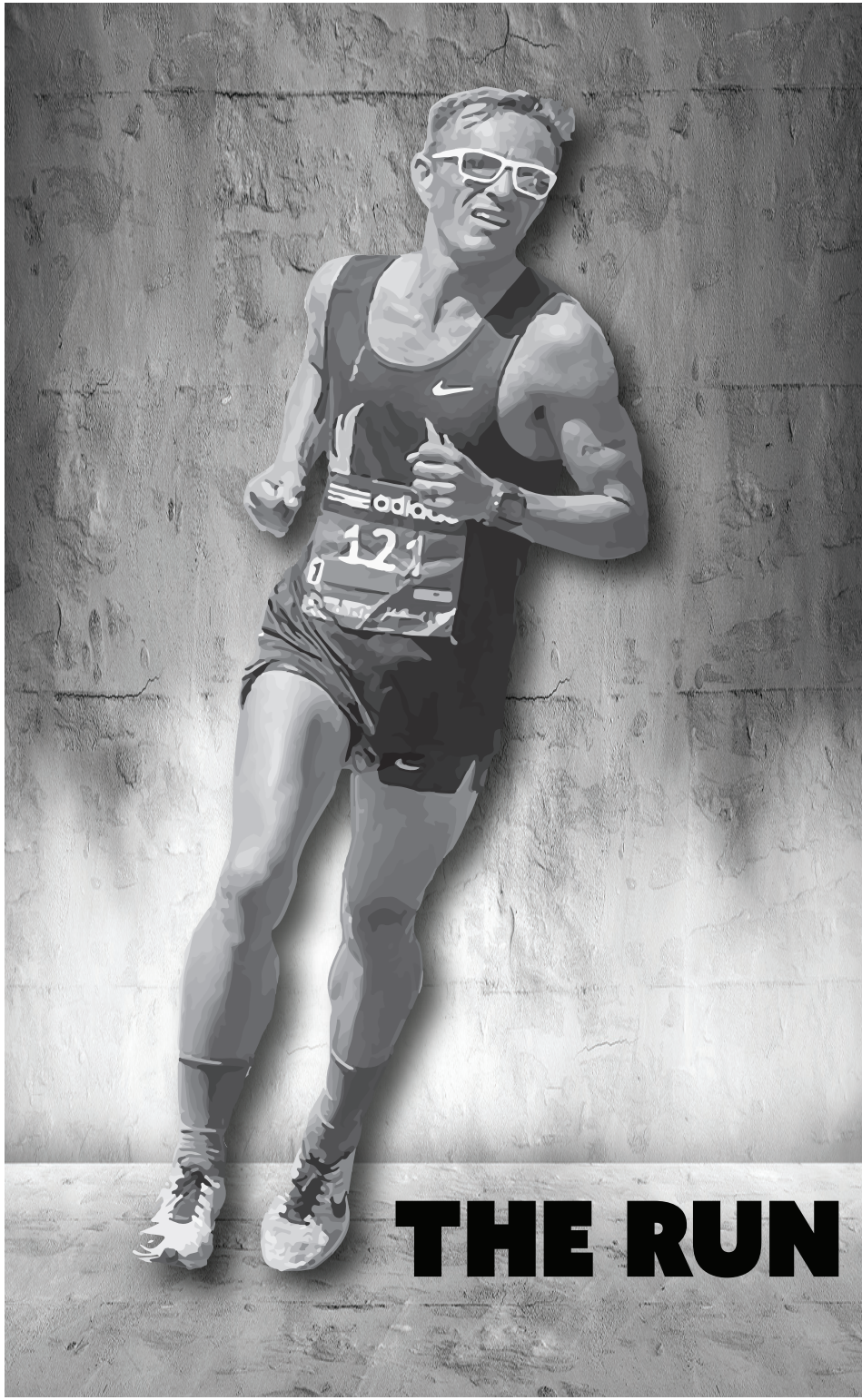
Later in this book is the chapter on Heat Block Training and these sessions are unique in that they are not driven by heart rate but held to a specific body core temperature for a specific time. I thought due to the importance of this function, it too deserved it's own Icon.

Last but not least is the Recovery icon (R). They appear in a flow cycle and represent an active recovery component. Recovery is an integral part of a training plan. There are three types of recovery - Working recovery, which means the time or heart rate it takes to recover tells us how our response to work is doing. Active recovery is unrelated gentle exercise to help the body recover; and complete recovery, which typically represents a day or a few days off entirely from exercise. To schedule training days without consideration for the need to recover is like riding a hell-bound train. You will eventually fail. I see athletes who do not like taking days off ultimately end up over-trained or, worse, injured.

When I write programs for athletes, they are commonly more aggressive than one would expect. I feel it's better to hold the performance bar too high than too low. Those that cannot complete the work will set completion as a goal. You cannot undue workouts that are too easy.

I always build workouts around planned recovery days. In summary, as you look at this set of icons, think of them as you would sheet music. Organized correctly, they create harmony. If you leave anything out or out of sync, they create chaos. The meat and potatoes revolve around each training element's serving size and timing. Once you achieve a solid foundation of skills, they become less of an addition to your training sessions.

After you have earned your stripes, all that's needed is a careful assessment of the challenge. Are you preparing for a long, enduring event or a multifaceted, high-intensity competition? Carefully orchestrated, each of the aforementioned elements contributes to your desired adaptation.


121
THE RUN

RUNNING

The Lynch Pin to Functional Fitness Competitions

It might seem to those who know me that I am obsessed with running mechanics. Frankly, running form is an essential component in optimizing performance. While some argue that our running style is natural and that altering it is unwise, I advocate for a balanced perspective. Recognizing that we're not all molded from the same form, I acknowledge the challenges some may face in mimicking others due to their unique physicality. However, I draw the line in leaving shoddy running form unaddressed, investing little to no energy in making crucial improvements.

My exploration into gait analysis and correction began unexpectedly during my education as a bike fitter—a critical element in enhancing performance.

Having spent years in the triathlon world, conducting dual VO2 max assessments on triathletes, I observed a significant disparity between assessments on the bike and those while running. The anaerobic threshold on the bike was often as much as 30 bpm lower than what we measured during running, indicating a pronounced inefficiency on the bike. Athletes' backgrounds played a crucial

role, with those from cycling backgrounds showing a tendency toward greater metabolic capacity.

The conclusion was clear—these triathletes needed to refine their biking skills, possibly by hiring a cycling coach. This realization, however, came at a time when the training acumen of recreational athletes was not as sharp as it is today. The turning point occurred when a seasoned cycling enthusiast training for a triathlon requested a bike fit. Until then, my knowledge of bike fitting revolved around adjusting the seat post for adequate range. It wasn't until I connected with a renowned bike fitter in Southern California that my understanding deepened.

This expert, considered "The go-to guy" for professional bike fits, required a minimum of three clients for a visit. Eager to fulfill my client's request, I found two more customers for the day. Unfortunately, my busy schedule prevented me from observing the pro-fitter at work. Since I was actively racing, I asked him to check my cycling shoes for cleat adjustments. By day's end, as he was about to leave, I inquired about my cleats, to which he confidently responded, "Yup, got them."

Understanding the value he brought, charging $175.00 per fit for three of my clients, I decided it was time to acquire this skill. After scouting the country, I found one of the most respected bike fitters/educators living in Washington. I offered him a tempting package—California weather, a guest house stay, and poolside cocktails. He agreed, and we began fitting triathletes in my lab, learning the art of configuring an athlete to a bike for the most efficient union of man and machine.

The revelation during this process was profound. Identifying the five points of contact between a rider and a bike—two hands on the handlebars, two feet on the pedals, and one's posterior on the saddle—was the key to instant improvement. Comfort took precedence, and performance naturally followed suit. The beauty lay in the fact that from that day forward once the newly fitted athletes mounted the bike, they assumed the correct position for optimal performance.

My other revelation through my education was that a so-called "pro-fitter" could not have properly adjusted my cleats without my feet being in my shoes and me on my bike! I was duped! This lesson alone served me well in the coming years: "Provide beyond expectations no matter how seemingly simple or complex the task."

That was my 'aha' moment. I recognized that, unlike a bike fit, a closed-chain exercise, running—a complex open-chain activity—presents a more intricate challenge. While learning to run correctly is paramount, constant vigilance over form remains necessary. The more dedication you invest, the less you'll need to worry about the details. Running is a skill that demands diligence like any other. Athletes I've trained over the decades often share, "When discomfort arises during a run, I know my form is slipping and precisely how to correct it." This kinesthetic awareness is an invaluable asset. Untrained runners are often confined to the belief that running more frequently and intensifying their efforts will lead to improvements—resulting in unnecessary soreness and potential injuries.

This is my WHY, knowing that proper running mechanics, no matter the experience, will enhance performance while minimizing the potential for injury. Runners get injured more often than in any sport. The science points to running too frequently without proper skills. It became abundantly clear to me that I needed to learn as much as possible about the art of running in my profession. This brings me to one of the key elements of this book. How to Run and how important it is that you take the necessary steps to get it right and keep it right so that your future in the sport, whatever it is if it includes the need to run well, you can check that box, every time!

Transitioning from Heel to Forefoot Running

The Why, How, and When - Many runners find it challenging to shift from what they are most accustomed to doing, often with good results. The age-old adage is, "Why fix it if it ain't broke?" Of course, there are those runners who have spent several years racing while heel-striking, seemingly unfazed by what I deem a corrupt gait. Making changes to what has worked for many is a tough sell. I'll share that in my personal

experience, when I began running, actually participating in races from 10k to Marathon distances, I was guilty of the flaws that I now find... forgive me when I say this. Absolutely unforgivable. It took me a long time and a lot of heartache to finally work towards the correct running method. Yes, I said it. The "correct" way to run. It is a powerful statement, but I intend to back it up before you finish this chapter.

Here is WHY I am convinced that if you are heel-striking and over-striding, you owe it to yourself to transition to the correct way to run. Let's start with irrefutable facts. Running is an open-chain exercise, which means there is a point in time when a runner is in flight (no foot is touching the ground). Gravity dictates that what goes up must come down. What results next is either a landing or a collision. If you are overstriding and making initial contact with your heel first, your forward momentum and the braking force that occurs as your leg is stretched out ahead of your body results in a collision. This collision generates as much as 3 to 5 times your body weight in impact forces, sending shock waves from the point of contact up your leg and into your skeletal system. At the point of contact, because you are reaching well beyond your center of mass, you are colliding onto an unstable pillar (pillar representing your stance leg).

Your momentum will keep your body moving beyond this collision until your center of mass finally arrives above your foot, and for that brief moment, you become stable. The analogy I like is that you toss out the anchor and draw your body towards it. Another way to view this circumstance is to paw at the ground to drag yourself forward.

No matter how you color it, you pull your body forward, which places tremendous stress on your posterior chain, namely your hamstrings; in so doing, you are operating at a disadvantage. Ask anyone who runs this way how much they enjoy fast 400-meter intervals at the track. The

consensus is they hate them. If you ask why, they will likely share how sore they get... you guessed it - Hamstrings! Typically, at the points of origin or insertion of the hamstrings. These points of origin represent a hot spot just beneath the butt cheek or just behind the knee.

Let's delve a bit deeper. When you land on the heel first, this point of contact is met with your calcaneus (heel bone). There is little protection on this surface to absorb the impact forces effectively. Again, this leaves you with the shock waves emanating from the ground into your body.

If you have been duped by a slick-talking running shoe salesman who recommends a cushy stack height design, I have some terrible news... it does not work; scientific research will support my position on this. You will feel like you landed on a pillow, but this does not eliminate the shock from the pillow up to the ankle, knee, and hip.

The true culprit behind injuries and potential loss of performance is the overstriding. Instability is a performance killer. Landing precariously ahead of your body results in instability. Leading off an unstable pillar can cause your hip to drop, your knee to fall valgus (fall inward), and eventually, like a house of cards, you collapse. I will admit that how many breakdowns you face is impacted by your structural integrity, meaning your strength-to-weight ratio. I have met many athletes whose running form was terrible, yet they perform well and never seem to get injured.

My takeaway from this observation is, what if? What if they were to improve their gait pattern and harness force production they never had access to? If they were confident there would be this reward, would not all runners seek this solution?

So, what is the selling point beyond the opinion of potential performance? Why is it so much better to run forefoot and stop overstriding? Let me give you a brief anatomy lesson. Our feet are fascinating in design; they provide support via 26 bones joined by 33 joints, ligaments, tendons, and muscles working harmoniously to propel us over the ground and mitigate impact forces. If you were to dissect a foot, you would learn that there are four layers of structures from the bottom to the top.

Every joint, muscle, and connective tissue has a principal role in how the foot articulates and supports our entire body. All neatly wrapped underneath the foot is our plantar aponeurosis (commonly referred to as our plantar fascia). This thick connective tissue supports and protects the underlying vital structures of the foot. These collective structures provide lateral stability, longitudinal stability, and the ability to twist and rotate from side to side. This entire network relies on the information obtained by a vast array of afferent mechanoreceptors located under our forefeet that transmit feedback to our central nervous system, which facilitates conscious and reflexive control and has been shown to alter the control of gait and standing balance.

As mentioned earlier, this collective system depends on information gained from the mechanoreceptors. It's how we find balance; it signals our brains which muscles to contract or relax and when to do so. In the

years I have conducted running clinics around the country, I have often directed my students to remove their shoes and have them run over natural surfaces. We would do an assortment of running drills unshod, and never once has anyone complained of pain or had to opt out due to discomfort.

On many occasions, I had students who were nursing a running-related injury, and running in bare feet did not present further distress. It's also interesting that the heel strikers did not run on their heels without shoes. Why is this? Our bodies know what to do if we just let them function as our design intended. Being barefoot lights up the information highway from the ground to the brain and back within milliseconds. Once our feet get a taste of the surface we are running over; they quickly adjust the system to respond efficiently and better... rather than being reactive, the entire system becomes proactive!

A shoe is the great disrupter to these finite processes, and the more material you place between your feet and the surface you are running over, the signal we expect from our nervous system is dampened.

It's like wearing noise-dampening headphones; you can't hear what's happening around you. To be effective, we must set ourselves up for a good line of communication. When we land forefoot first, our toes flex, and as a result of this flexion, the plantar fascia (the material on the bottom of our feet) tensions. This tensioning of the plantar fascia provides stability, both laterally, longitudinally, and torsionally. All of which happen almost simultaneously. This chain of events cascades from the ground up into your pelvic floor. It results in an isometric moment, stiffening the entire system: foot, leg, hip, torso, harvesting energy from the ground eccentrically before launching you into the direction your force was intended.

These responses include skipping or jumping, as these actions are similar to the same outcome as running.

When a runner lands heel first, the events I shared are bypassed. The plantar fascia is left relaxed, leaving the foot arch unstable. This momentary lapse of stability can lead to excessive pronation as the arch collapses under the body weight load. Chronic sufferers of excessive pronation find themselves battling with injuries from the foot to anywhere along the kinetic chain as far as the spine.

A visit to a medical professional, typically a podiatrist, ends up with a prescription for an orthotic appliance that holds up the arch for you. This supplemental support can only lead to further reliance and weakening of the musculature that is naturally responsible for this support. Add to this the idea that you need more cushion and arch support since your feet are failing you. This never ends well.

How to make a safe transition

By now, you realize that the long game will lead to longevity in your chosen running sport. I said it before, and it bears repeating: whatever drama you must go through to come out on the other side of a successful gait transition is well worth your effort. Reduced to the simplest terms, running is a momentary flight and a return to earth.

This flight can result in a collision or a safe landing. It's a short trip that results in either smooth forward momentum or momentary impact forces that can traumatize your musculoskeletal structures. That said, where the successful running form is concerned, I tell my clients and all who care to hear it to run well, first, you must stick to the landing!

#1. STICK THE LANDING! Land correctly, and your musculoskeletal system can absorb the impact and harvest the elastic energy to aid progress. Collide with the earth improperly, and the skeletal structure and joints, such as knees, hips, and back, abruptly take on the load. There is excessive stress on connective tissues like plantar fascia, iliotibial bands, etc.

Runners are typically divided into two camps: heel strikers, those who make ground contact as they run heels first, and mid- or forefoot runners, those who make contact with the front of their feet first. In recent years, we've learned that heel striking is ineffective.

Realize that tossing our body skyward leads to the consequence of what occurs when we return to earth. An over-striding runner can easily magnify ground contact force to as much as 3-5 times body weight. When a runner collides with the ground heel first, there is little in the anatomical structures to abate this collision.

The success or failure, injury or not, is generally tied to the runner's strength-to-weight ratio. In essence, a runner that is slight in build yet is structurally strong may be capable of enduring these collisions far better and longer than a larger runner who may not have the same structural integrity. Overstriding forces a runner to momentarily depend on an unstable pillar for support under significant load. Stability is compromised because the body lags behind the stride at ground contact. In short, pitching the body skyward only to collide with the earth with up to 5 times body weight onto an unstable pillar (the forward leg) of support is tantamount to disaster.

The value of a well-orchestrated landing results in an increase in stability. This is principally why cadence (step frequency) is so important. Those that heel strike vs. forefoot landing also tend to overstride. Overstriding is when your contact with the ground as you land is further away from your center of mass, and the byproduct of the ensuing collision is instability.

The most effective way to control overstriding is best accomplished using an audible metronome. There are many downloadable metronome apps available on the Internet free of charge. Set the metronome to 180 steps per minute. Adjusting your step frequency to 180 ensures that your landing is near your center of mass. Initially, this will seem too fast for most heel-striking/overstriders. Indeed, this is the case at slower paces. While in the transition phase, running on a treadmill is a wise approach.

You can set your phone on the treadmill console, turn up the volume, and entrain your running gait to the audible beats. This approach is highly effective in helping athletes initiate proper gait transitions.

Step by step...

- Before starting your run, be it outdoors or by using a treadmill. Stand with your feet directly beneath your hips, with your feet pointing forward. Draw one of your feet off of the ground carefully and slowly heel first. Once your foot clears the ground, set it back down in reverse order (forefoot to heel). Alternate this careful step pattern for a few minutes. Be mindful not to allow your knees or toes to splay outward or deviate from the initial path. This lesson provides a neural muscular re-education. Tip: It's helpful to conduct this drill in front of a full-length mirror if possible.
- After you sense that the first step was effective, begin a more aggressive approach by marching in place and being careful to land correctly. Then, turn this march into a jog in place. The next step is to begin running in place. Realize this shift turns marching into running, meaning instead of one foot always being posted on the ground, running momentarily brings both legs into flight. This shift typically causes you to kick your heels up and behind you. Instinctively, you are trying to create hang time to allow the stance leg to get back to the ground for support. Avoid this flaw by leading up and forward at the knees, similar to what you did while marching. Perform this phase for a few 30-second to 1-minute intervals.
- You're now primed to begin running. With the metronome chirping at 180 steps per minute, repeat the run in place long enough to create a step frequency in concert with the metronome. Now, begin carefully moving forward. Instinctively, you will attempt to begin reaching forward with your stride. Avoid this; if you move to the beat, you should be able to move correctly.

FAQ: Should the stride frequency always be set at 180 spm? The

answer is not necessarily. Think of 180 spm as home; it's where you are safe and most efficient. However, there will come a time when you have exhausted your potential for speed at this controlled frequency, and all that's left is for you to increase your frequency, but beware. An increase in stride frequency comes at a higher metabolic cost. You had better be aware of how much longer you need to maintain this expensive intensity because you will likely blow up if you are not careful. So, again, yes, you can press your pace and cadence, know what it will cost you, and know if you have what it takes in the bank to spend.

- A good arm swing should assist in guiding the body forward and "righting the ship" in travel. I like to see the hand lightly cupped, the thumb resting over the cupped hand, the palms facing inward, and the elbow bent at about a 100-degree angle. A side view would show that the cupped hand should be held at an angle above the crease of the elbow. This angle should be maintained and locked in place. As the hand is drawn back to the hip, the tip of the thumb should be pointing toward the ground. The thumb tip should not raise above the chest as the arm swings up and forward. The sensation should initially feel like you are tugging at the pectorals at the shoulder. It is akin to elbowing someone behind you rather than punching your fist skyward.
- An inefficient arm swing is the most challenging flaw to correct in a runner. Most runners must realize how much a lousy arm swing can influence running gait. I see many runners who are not swinging their arms; they are swiveling their shoulders. This translates to a hip twist and can cause the feet to cross the body upon ground contact, leading to the varus edge of the foot (lateral edge) and delaying effective propulsion and degrading stability.

  Common flaws-

  - Arm crossing the body and rotating shoulders
  - No arm swing at all, arms held tight "T-Rex."
  - Tight fists or "Jazz hands."

Once you find yourself landing with less stress from impact, begin pressing your pace (carefully). You should come into a sweet spot where the increased cadence seems much more agreeable. Hang out there for a while and then purposefully take a break. Not because you are too tired but because you want to have a chance to allow your brain to digest what just occurred. Set out again, with the same patience, and increase the pace bit by bit until the pace is beginning to exceed your ability to maintain good form. I'm speaking of you beginning to reach forward and pawing at the ground to pull yourself forward, which is precisely what we hope to avoid. Or, you find yourself exceeding the stride frequency beyond 180 steps per minute to garner more speed. These are clear signals that you are beyond control or, as I refer to, "The wheels falling off the bus."

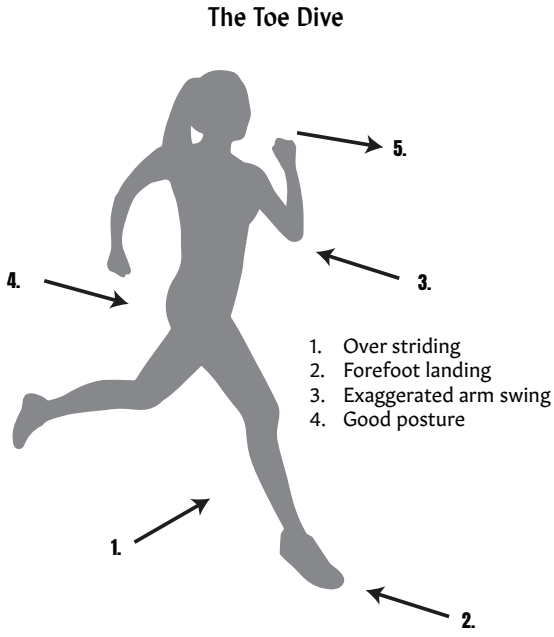
Renowned physical therapist and gait specialist Jay Dicharry once said, "You can't fire a canon from a canoe." His reference was to the inability to generate force when your landing is unstable. The number of steps you take per minute determines how close to your body you will land. The closer you land relative to your center of mass, the more stable you are. A stable landing is key to force production.

#2. STABILITY IS KING! Making changes to the way you run can be deceiving. As I teach runners to transition away from poor mechanics, the perception of these changes doesn't always result in actual change. This is a severe problem! If you think what you are doing is correct and the mistakes made manifest into injuries, you may assume that these changes have resulted in your injury. You are either doing something painfully wrong or have not changed at all!

The most common flaw I see in those working to transition from a heel strike to a forefoot is they tend to present their landing forward enough to confirm that they changed to a forefoot landing visually.

Two things result from this perceptive error: first, they tend to land too sharply, with a spear-like angle toe. Add to this that seeing what you've done causes you to over-stride. Knowing that you are no longer heel-striking seems rewarding.

The truth is, you are highly likely to generate unrelenting soreness in your calves and Achilles tendons. Not to mention the potential for distress in the metatarsals (the long bones in your feet). If these errors continue, injury is right around the corner. Because everything you've learned or read has convinced you that this transition is necessary, you end up perplexed as to why it hurts so badly! You were doing it wrong!



#3. ALTER YOUR PERCEPTION! Altering your perception requires that you do so correctly as you initiate change. You know what it's supposed to look like when you run; you must validate that you are executing a proper landing. You can do this by video capturing or having a friend shoot a video of you running from a side view. I have found that those who spent time running correctly quickly identify when they are no longer running correctly and set about re-correcting the errors. These runners transition much quicker and do so with far less discomfort.

Don't do too much too early

Remember that you are significantly altering your gait pattern if you've been a heel striker all your adult life. This shift loads musculature, ligaments, and tendons not used to taking this hit. A heel striker typically loads the skeletal structure and avoids loading soft tissue; this is why the damage is so debilitating. I had a client frame this outcome nicely; he said: "I'll trade sore calves for a torn meniscus in my knee every time." I recommend focusing on time, not mileage.

Running is ranked as the most injurious sport! Over 75% of recreational runners end up injured, and the principal cause is poor running mechanics! When things seem to be going well, most runners will push too hard, trying to run fast, and sooner or later, it ends badly! It may be a matter of too much volume, too much intensity, or a combination of both.

In all my years of guiding runners to run injury-free, I have learned that being impatient is what results in demise. When you are early in transition, run no more than 10 minutes every other day in the first week. If everything has gone well, increase it to 20 minutes for every other workout. The key is gradually adapting legs and feet over the week rather than trying to gut out longer runs over the weekend.

You may only realize that you are overworking once you have a problem. Then, you'll have to miss workouts, and the transition time will take longer.

The good news is that making a significantly positive change in your running mechanics is not a death sentence. If you stick to the details and apply the correct changes without flip-flopping from old habits to new ones, it takes less than 3-4 weeks to reap the benefits of your investment. This investment can allow you to enjoy running and the recreational sports you love! Don't feel put out because you had to back off to correct how you run. In the big picture, it's only a week or two of corrections, and you'll be running far more efficiently with less potential for injury and greater performance.

#4. RUN WELL, THEN FAST! All said, this is the reward you seek. When you get to this place where running is no longer a love-hate relationship, when you feel like running more often because it feels so good, your volume will naturally increase, and your sustainable speed will soon follow. In the beginning, this sensation of "Flow" will be fleeting; it will come and go. With time, the feeling of ease while running will become more rewarding.

Training the Dark Side's nucleus revolved around what I call "Flow," which is how you approach your energy system in this context. You

can effectively do this with a heart rate monitor. First, identify your metabolic turn point (or, if you prefer) and lactate threshold. Lactate, for decades, has been given a bad wrap. The misconception is that lactic acid is the root of delayed onset muscle soreness, which is untrue. Appropriately approached in training, lactate can provide what I like to call an energy rebate!

Trained improperly, the excessive lactate production will cause you to slow or stop to allow for regional clearing of the excessive lactic acidosis. Think of flow as a progressive, harmonious ebb and flow of intensity that takes you up to and, eventually, well over your threshold, followed by a careful retreat to clear ensuing congestion through aerobic respite. Flow training, as you will so learn, is a novel approach to taping your energy system and gaining control of what happens when you're in it to win it! #5. LEARN TO FLOW!

As a coach, I look forward to this revelation with my clients. It is when I am no longer correcting how you run and now more focused on the duration of a workout and the infusion of intensity, testing speed, and sustainability. This, for me, is my reward.

Structural inhibition

With the best of plans and knowledge gained, you still find it challenging to meet the cadence of 180 steps per minute. When you do, it feels incredibly odd. Your stride is short and choppy, and you're ready to toss in the towel! I cannot tell you how many conversations I've had with clients convinced they could not achieve this goal and wanted to negotiate with me, "Hey, I'm able to settle in nicely to a cadence of 174. Is that okay?" My answer is always NO! When the frequency is slower, the stride lands further from the sweet spot, indicating potential instability and loss of force production.

Is it better than previous efforts? In many cases, if the stride frequency was slower, it's not premium. Before I am prepared to respond to these requests, I want to ensure that something out of the ordinary is not the cause. In an ideal scenario, after learning about proper running techniques, most people should be able to run correctly within a few

weeks. However, there are some whose bodies don't cooperate.

What if structural inhibitions exist, such as tight heel cords, hip flexors, or short hamstrings? These structural inhibitions can lead to compensations that can significantly impact your running technique, making it harder to achieve your goals, especially if you've had a past injury. So, it's crucial to identify and address these structural inhibitions. I recommend you identify where these inhibitions stem from and begin working to ease these disruptions to your performance. From the ground up, perform a range of motion assessments to ferret out these imbalances. You can either focus on stretching techniques or enlist the support of a qualified body worker to help you improve the areas where you find these resistant structures. Still, any improvement will bring you closer to correctness, and as I have been saying, any improvement or frustration in achieving "better" is worth it.

Types of Stretches

Static - A static stretch involves moving the limb or appendage to its end range of motion, pressing a little beyond as long as the stress is tolerable, and holding the stretch for 2-4 minutes. This seems like a very long time, but if you want to achieve some gains, you must hold the

stretch long enough for the connective tissue to provide a reasonable release length.

PNF- A PNF stretch (proprioceptive neuromuscular facilitation) involves holding the stretch at the end range for 10 seconds, then releasing and reapplying it. PNF stretching may be the most effective technique for increasing the range of motion. You could apply this technique, but having a knowledgeable partner to assist your stretch is more effective.

Dynamic stretching - involves moving rather than holding a position. It simulates functional movements and helps prime the body for more intense training. To prepare for a run, you could perform leg swings forward and back and across the body to warm up the hips, adductors, abductors, and flexors or simply hop up and down or skip rope to warm up the calves and Achilles.

There is no right or wrong way to stretch. If you find resistance from muscle and connective tissue that surrounds a joint that requires attention, any approach that you find effective is a good stretch. The good news is that if you are consistent, you will see results that will benefit your training and enhance your ability to run more efficiently. I could spend another 100 pages on this topic, but I don't think it's necessary. Stretch if you feel you need to, where you need to, and if you are a rare person who doesn't need to stretch, research shows that you are better off not.

SHOE SELECTION

Pick the right tool for the job

Choosing the right shoes for your training is crucial but often confusing. The athletic shoe industry focuses on selling its products and investing billions in marketing. Unfortunately, much of the shoe design is driven by marketing strategies rather than what's best for your feet. Terms like motion control, stability, and cushioning are often used to sell shoes but can lead to weakness and injury.

When clients ask me about which shoes to buy, I always advise against shoes that alter natural foot function, which can limit your choices, especially if you've been wearing overly controlling shoes. Simply reducing heel lift, cushioning, and arch support can make transitioning back to natural function difficult.

Before rushing out to buy new shoes, it's essential to understand how to regain natural foot function. I often start by explaining the natural foot function using a simple example. No one lands on their heels when asked to step off an 8-10 inch treadmill. This instinctual behavior protects us from injury. Landing on the forefoot engages a system that absorbs impact, starting with the big toe flexing to stabilize the midfoot. This stability then affects the ankle, knee, and even the lower back, all in response to initial contact with the ground. This instinctual response is part of the ground force reaction (GFR), where the nervous system quickly learns and provides solutions to protect the body from impact. Landing on the heel, however, bypasses this sequence, leading to direct impact on the heel bone and a reactive, rather than proactive, response from the nervous system.

Lesson learned… landing forefoot first protects.

The latest trend in shoe design is tall stack height, which refers to the thickness of the sole between your foot and the ground, measured in millimeters. These shoes are marketed for their cushioning, which is claimed to absorb impact regardless of how your foot lands. However, by dampening the ground force reaction (GFR), these shoes leave every joint from your foot to your head unprotected.

To illustrate this, imagine I tell you I'm going to punch you in the stomach. You instinctively tense your abdominal muscles in preparation. This act is termed "pre-activation." Now, imagine I tell you I'm going to punch you in the nose. Instead of ducking, I hit you in the nose, and then you duck, which is "reaction." This delayed response is similar to how cushioned shoes can affect your body's natural protective mechanisms.

Before the stack height trend, the popular shoe design was the zero-drop "minimal" shoe, inspired by the best-selling book "Born to Run" by Christopher McDougall. This book highlighted the legendary running abilities of the Tarahumara Indians of Mexico, who ran barefoot or in minimal sandals. Many runners tried the "5 finger boat shoes," which were not designed for running but gained popularity due to the book's influence. However, this shoe design often led to injuries, as heel strikers continued to heel strike and forefoot strikers tended to overstride, causing issues like metatarsal stress syndrome and shin splints.

While some runners corrected their gait and succeeded with these shoes, many faced injuries. Ultimately, these shoes forced runners to strengthen their feet and improve their running form, leading to injury-free running for some.

A recent study demonstrated that the more time individuals spend running in cushioned shoes, the more likely they will be heel strikers. This is because the cushioning allows landing on the heel without the pain that would be experienced if landing on it barefoot and places less demand on the calf musculature.

However, heel striking has consequences; it results in an abrupt, characteristic impact transient in the vertical ground reaction force-time curve that is typically missing in forefoot running.

Impactful loads have been shown to damage cartilage and bone. Increased loading rates have been associated with some of the most common running injuries, such as tibial stress fractures, patella-femoral pain, and plantar fasciitis.

Every study examining the effect of minimal shoes on intrinsic and extrinsic foot muscle size or strength has reported increases and are 2.4 times less likely to develop a running-related injury when transitioning gradually to minimal shoes.

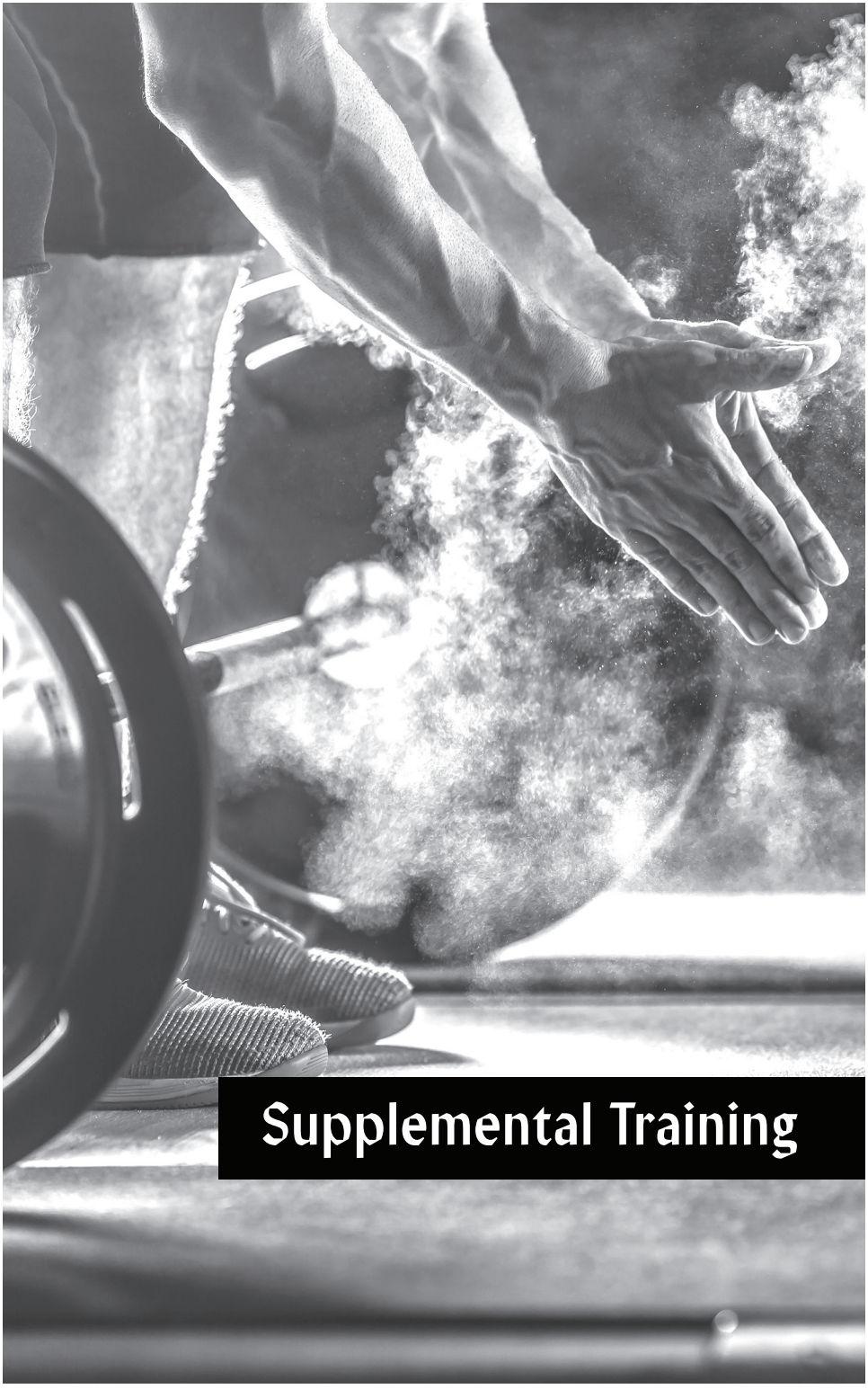
The primary concern surrounding minimal footwear is the risk of transition-related injury. It is recommended that those accustomed to wearing conventional footwear transition slowly into minimal footwear, especially for higher-level activities such as running.

Foot orthotics do support the foot but are often over-prescribed for long-term use, which can negatively affect the foot. Orthotics reduce the foot's intrinsic muscle demand as they support the arch. Just as minimal footwear that removes support from the foot has been shown to strengthen muscles, adding chronic support to the arch will weaken them.

The takeaway is this: it takes time to correct poor running form and to develop strong and naturally functioning feet. It's worth it! As you educate yourself through some of what I teach you here in this book and other resources, changing your natural running function is worth every step you take. I am 71 years old and went through a long period of uneducated running. Having run marathons and competing in triathlons,I learned to correct my flaws and regain the ability to stave off low back, knee, and shin problems. I wear a shoe with a broad toe box so my toes are not cramped and can splay naturally under load. The shoe is a zero drop, meaning the forefoot and heel are equal. The shoe's sole provides enough protection not to be concerned with the surface I run over but not so much that I lose the information I spoke of. Try lots

of shoes on. Look for the same features I just listed.

Do not allow yourself to be duped by a shoe salesman or an ill-informed friend who doesn't know what they are talking about. Most importantly, invest in yourself, strengthen your body from the ground up, and learn to run the way you were born!



Supplemental Training

SUPPLEMENTAL TRAINING

The Indirect Influence

There's no doubt that strength training can significantly improve performance. As I mentioned in the first chapter, 'The 3 E's,' there are tasks that directly impact performance, and then there's training that indirectly influences your performance. I stressed the importance of being 'Effective,' doing the right things and doing them well. I've organized a series of workouts that cater to both Running and Hybrid Functional Fitness Competitions. Each workout is designed to progress from your starting point, enhancing your performance.

The clear distinction between those focused on Running and those focused on Hybrid training is that runners identify that adding mass is contrary to performance, and hybrid athletes do not want to sacrifice mass as it can detract from performance. Some argue you can maintain a larger, muscular frame and run well. The current (as of this writing) Hyrox World Champion, whom I have consulted, trained, and performed clinical evaluations for over the past decade, is a great runner with an average weight of 91 kilos (200 lbs). His 5k speed hovers between 15 and 16 minutes, which for a big man is remarkable. He has competed in Ironman events and has run a marathon in the 2:30 range, which is also astounding. All of which while maintaining a considerably larger frame than most runners. Hybrid competitions fell into his lap as it is the perfect competition style for an athlete with good strength, stamina, and speed. That said, if he hoped to become a world-class athlete as a runner, without question, he would need to drop a considerable amount of weight.

On the flip side, if a world-class runner had hopes of competing in almost any Hybrid fitness competition where a good many of the

challenges require a great deal of strength, he or she would need to gain a considerable amount of muscle mass and spend a great deal of time in the gym developing the strength required to compete.

This brings me to the exercises I selected for runners and those I selected for Hybrid athletes. Exercise selection presents many options, but when you get down to the needs, you can effectively include supplemental exercises that will indirectly enhance performance without overdoing it.

The running templates I provided will include timely and effective exercises. Keep in mind that the goal is to become a better runner. Running must dominate your training. It is ineffective if you struggle to recover from a strength workout that keeps you from a planned run. The same holds for the Hybrid Training Templates. For obvious reasons, the workouts I included here will present much more overload than the run workouts. In both circumstances, the goal is to develop a favorable adaptation relative to the task.

The workouts are offered for eight weeks. This does not guarantee that these workouts are all you need to compete at a high level; they are intended to sample how you might conduct yourself along your athletic journey.

If I were to write a workout that suggests a beginning and an end, what then? What do you do when you reach the end of the training plan? Do you begin again? What direction should you take from there if you intend to compete again? I support the notion that teaching you to fish is better than providing you with fish. Following the templates, whichever you choose should serve as an experiment. You may decide to do both, beginning with the 10k run templates before delving into the Hybrid template; your running skills may need a boost. You might approach the templates Hybrid first; there is no wrong approach.

Interestingly enough, appreciate that your need for supplemental strength will not change relative to your goals. An exercise that enhances strength for a specific muscle group will always be effective. You must increase the intensity or volume as your strength develops to

achieve greater adaptation. Based on this premise, the supplemental workouts comprise a short list of proven effective exercises. If you decide to roam elsewhere in the gym, possibly goaded into exercises your friends are doing, you may find that you have lost your way and are encouraging maladaptation. According to your plan, you may have a vital workout scheduled for the following day, which could suffer, or worse, not happen due to the bravado you shared with your friend in the gym the night before as you left the reservation!

Many people overlook the value of maintenance-oriented exercise. Every day, we wake up aware of our physical state. The training we did in the past few days has had an impact. Tension, soreness, and elevated stress are signs that our bodies need care. Instead of taking a day off, you might need some light-intensity bodywork.

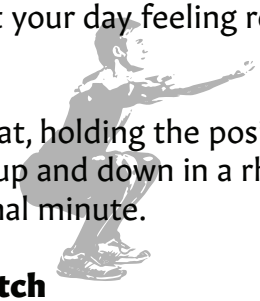
The Good Morning Session

To address this need, I often recommend The Good Morning Session. As the name suggests, this is training you can do right after getting out of bed. This is usually when your body signals that it needs attention to relieve discomfort.

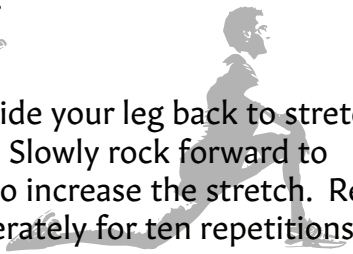
Some people prefer Yoga; if that works for you, go for it. I'm not a Yoga enthusiast. As mentioned in my opening chapter, my priority is effectiveness—addressing the issues as quickly as possible. Everyone has their way of dealing with delayed onset muscle soreness; this is what I commonly recommend.

Good Morning

Good mornings are a great way to wake up your body and loosen stiff joints and connective tissue. Follow this sequence of movements to start your day feeling refreshed:



Deep Squat Hold
Begin with a deep squat, holding the position for about 30 seconds. Then, move up and down in a rhythmic, full range of motion for an additional minute.

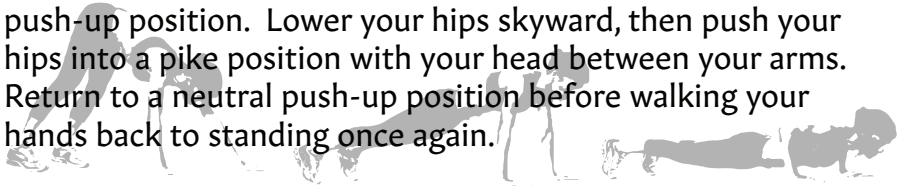


Kneeling Lunge Stretch
Step into a kneeling lunge and slide your leg back to stretch your inner thigh and hip flexors. Slowly rock forward to release tension, then rock back to increase the stretch. Repeat this movement slowly and deliberately for ten repetitions before switching legs.

Elbow Plank
Drop into a plank position on your elbows, keeping your spine neutral. Hold the plank for one minute while consciously breathing into your diaphragm.

Glute Bridge
Roll onto your back, draw your heels beneath your knees, and press your hips skyward. Squeeze your glutes at the top of the movement and hold the contraction for 10 seconds. Lower your hips near the ground and repeat for 20 repetitions.

Inch Worm
Roll back onto your stomach and walk your hands back to your feet until you can stand. Retrace this pattern to return to a push-up position. Lower your hips skyward, then push your hips into a pike position with your head between your arms. Return to a neutral push-up position before walking your hands back to standing once again.



By following this routine, you'll effectively wake up your body and prepare for the day ahead.

"The Glute Bridge"

We all tend to harbor tension along our frontal plane. Our quadriceps and hip flexors are commonly tight, which can lead to issues with our lower back. This is where I like to start: Lay down on your back with your knees bent and your feet flat. Your feet should be hip-width apart with your toes pointed straight ahead, and your heels should be about 6-8 inches away from your glutes. Place your arms by your sides with your palms pressing downward. Squeeze your glutes and abs as you lift your hips toward the ceiling.

Raise your hips as high as you can go without arching your back. The goal is to raise your hips until your body is straight from your knee to your hip and shoulder.

Squeeze the glutes as tightly as you can in the top position while you hold for two seconds. Slowly lower the hips to the floor, keeping tension in the glutes and abs as you lower. You should feel your glutes the most during this exercise. If you feel your hamstrings working the most, move your feet back, closer to your glutes.

If you feel the muscles in your lower back working the most, return to the starting position and reposition your back so that your hips are tucked under, and your abs are engaged. When you raise your hips, maintain a neutral core position to avoid arching the lower back. Hold this position isometrically for about 5 seconds, recover to the start position, and repeat for about ten repetitions.

"The Plank"

To perform a plank, start on all fours as you did for the forearm plank. Instead of placing your forearms on the ground, place your palms shoulder-width apart and extend your arms fully. Lift your knees and push your feet back as you extend your legs straight behind you. Pull your navel in towards your spine and contract your abdomen for 1 minute.

"The Inch Worm"

Move up from your elbows onto your hands and walk your hands back towards your feet until you are standing erect. Once there, walk your hands back to the pushup position from where you began, and then walk your hands back until you are standing again. Now walk your hands back out again, but this time "Inchworm," your feet to your hands while keeping stiff legs. When you get as far as you can with as stiff-legged as possible, walk your hands back out and repeat.

"The Deep Squat"

Hold this position for 1 minute before returning to a standing position. Begin squatting up and down at a fluid pace from a deep squat position to a fully erect position, shifting your hips forward at the top of each repetition. About ten repetitions will suffice, but there is no fixed number to achieve.

"Kneeling Lunge"

This position stretches the psoas muscles, which are responsible for hip flexion and highly involved in strengthening the lumbar spine and maintaining good posture. From this position, press your hips forward, hold the tension at your end range, pulse slowly, release, and return to the end range for approximately five repetitions, then alternate legs.

The Good Morning routine is represented by five exercises that should meld together into a seamless movement pattern and should not require more than 5-10 minutes. Incorporating this exercise into your daily routine can set the tone for your plans for the coming day. I might add that it does not necessarily need to be reserved for your morning exercise.

If you get your workouts in later in the day or evening, this routine has the same benefits as they might in the morning. Ask yourself how many times upon waking, your stiffness and soreness began to dissuade you from training that day. Your initial impression set about sabotaging what could have easily ended up being a fruitful training day. The Good

Morning is simply that. The kick in the pants you needed to stay on point.

MY Hot List of Supplemental Strength Exercises for Runners and Hybrid Athletes

I keep referring back to my #1 Rule—be Effective. As earlier stated, we can become very effective at grossly inefficient exercises. Athletes are different from bodybuilders. A bodybuilder's exercise selection tends to focus on single-lever movements. Exercises that promote regional hypertrophy. The goal is size and symmetry.

All exercises included in our training must be functional for an athlete. As I often said: "Stay away from exercises that don't pay the rent!" Because in nearly all sports, our legs are dominantly involved in our activities. It may surprise you to hear this, but the exercises that are highly beneficial for a runner are no different than those for a Hyrox athlete, with a few exceptions.

As indicated earlier, the prime instigators of adaptation are volume and intensity. Athletes who aspire to improve endurance from a broad stroke must focus on volume vs. athletes that require more power and strength. This does not suggest that the type of exercise needs to be entirely different.

A runner will benefit from squats, lunges, deadlifts, and exercises that would be ideal for Hybrid athletes. The key considerations are organization and dedication to task-specific intensity while keeping a handle on endurance-promoting activities. This approach to training for either discipline simplifies programming.

At the risk of kicking a dead horse, effectiveness should always precede efficiency if you hone in on training that leads to success in your chosen sport. You will shave off precious time from training, recover more rapidly, and begin to realize a clear path to your goals.

All that said... here is my must-do Hot List of exercises

Do the Good Morning regime daily...

1. Single-leg Romanian Deadlift
2. Devil Press
3. Split Squats
4. Bent over rows
5. Lunges
6. Glute bridges
7. Plank-to-shoulder tap pushups
8. Skip Rope

Skip Rope

Skipping is an excellent complement to your running routine because it targets many muscles and the upper body (which many runners neglect). It complements running quite nicely because it uses many of the same muscle groups. This activity puts the leg muscles in constant motion. It is excellent for working the calves, quads, core, and glutes (which are very important for running) and the shoulders, biceps, and triceps, which runners sometimes ignore.

As you become more proficient, work towards accomplishing double unders (passing the rope beneath you two times per skip). Double unders are a supreme plyometric exercise that jacks up the heart rate.

It's known to be one of the most intense exercises you can do (if you can sustain the work for more than 1 minute). Double unders adds the benefit of neurological adaptation, demanding precision, rhythm, and timing.

Lunges

The lunge is a multi-joint exercise that affects the quads, hamstrings, glutes, and calves.

Your hip flexors are stretched during the lunge, which improves flexibility and counteracts the shortening that can happen when you sit for long periods. Compared to other lower-body exercises, such as squats, the split stance used in lunges changes the load on your body, allowing you to work each leg independently.

Bend the knees and lower your body until the trailing knee is a few inches from the floor. At the bottom of the movement, the front thigh is parallel to the ground, the back knee points toward the floor, and your weight is evenly distributed between both legs. Push back up to the starting position, keeping your weight on the front foot's heel.

Weighted Lunge Walk

Place a barbell across your upper back or grasp a dumbbell in each hand. Stand with your feet about 8 inches apart, toes facing forward.

Lunge forward, keeping your abs drawn in and your upper body straight. Slowly lower one knee as if kneeling while keeping your other knee bent at a 90-degree angle. Lower your forward knee a few inches above the floor and hold before pushing off with the back foot.

Step through and repeat the exercise with the other leg. Avoid touching your knee to the ground.

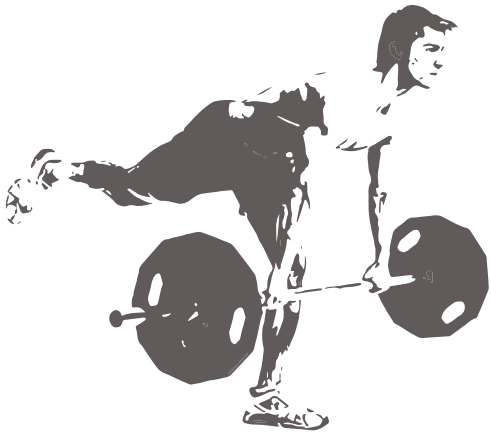
Single-Leg RDL's (Romanian deadlifts)

The single-leg Romanian deadlift (single-leg RDL) is a vertical hip-hinge exercise in which you balance on one leg, hinge at the hips, lower your torso until it's almost parallel with the floor, and then reverse the movement to return to your starting position.

The single-leg RDL with body weight works the posterior chain, including the hamstrings, glutes, back, and calves. Add weight, and you'll also challenge your lats, traps, and forearms and increase strength in your erectors, scapula stabilizers, and anterior core.

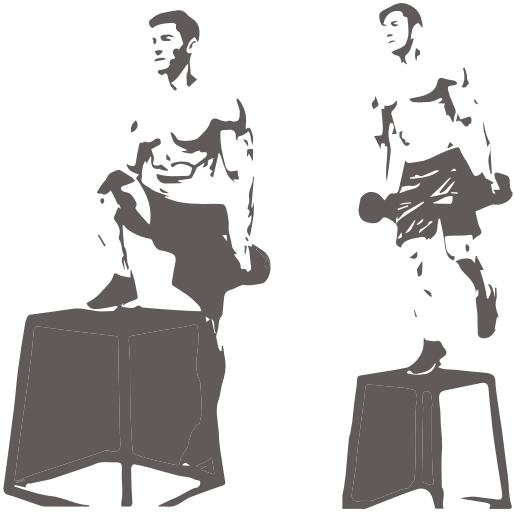
The single-leg RDL requires a lot of stability in the ankles, knees, and hips.

Single-Leg RDLs Weighted.



Hold a kettlebell in one hand and perform a single-leg RDL, similar to the dumbbell variation. The kettlebell's shape allows you to complete the exercise with a different grip than a dumbbell, adding variety to your workout routine.

Additionally, the kettlebell's asymmetrical weight distribution challenges your balance and coordination, making this variation an excellent choice for improving stability.



Step Ups (20" F / 24" M)

Stand facing a box or bench. Place your entire right foot onto the step. Shift your weight onto your foot to step up onto the bench.

Instead of bringing the other foot onto the box, lift your knee to hip height so the hip and knee are both bent at 90-degree angles. Keep your posted foot on the bench, lower your swing leg back to tap the floor, and repeat the knee-up sequence rhythmically for ten repetitions—alternate posted

legs and reps for the desired number per set.

Weighted Step-Ups (20" F / 24" M)

Stand facing a box or bench. Step up onto the bench, holding your load at shoulder height (dumbbells, barbells, sandbags, etc). Repeat the knee-up sequence rhythmically for ten repetitions—alternate posted legs and reps for the desired number per set. Remember that all exercises that place a demand on your legs in Hyrox are bilateral (moving one leg at a time). Pushing a sled, lunges, and running are good indirect benefits.

Squat

Stand with feet about shoulder-width apart, toes facing front. Engage your core and hinge at the hips. Drive the hips back, bend at the knees and ankles, and press your knees slightly open as you sit in a squat position, keeping your heels and toes on the ground, chest up, and shoulders back. (Strive to eventually reach parallel, meaning knees are bent to a 90-degree angle.)

Press into your heels, engage your glutes, and straighten your legs to lift back to a standing position.

During the descent, the hip and knee joints flex while the ankle joint dorsiflexes; conversely, the hip and knee joints extend, and the ankle joint plantarflexes when standing up.

Squats vs. weighted step-ups? Squats are bilateral exercises where you use more weight to add muscle mass and strength to your quads, glutes, and adductors. Step-ups are unilateral exercises that promote bilateral balance. You may alternate between squats and step-ups to achieve strength and balance.

Split Squats

Split squats mainly target your quads and glutes. They challenge your muscles differently than a regular squat because they work one side of your body at a time—a better range of motion. The up-and-down movement of this exercise can help with knee and hip mobility.

A Bulgarian split squat is a variation of a regular split squat with the back leg elevated. It could also be considered a variation of a single-leg squat. When you do a standard single-leg squat, you put your stabilizing leg in front of your body while balancing and squatting on the loaded leg.

WHY? This single-leg exercise requires all the same muscles as a traditional squat but focused on unilateral balance. It's not unusual to favor or have more strength on one side than the other. Concentrate on one leg at a time with a single leg exercise like this, which means you can't rely on the stronger leg. The weaker leg has to do the work and gets stronger. Balancing exercises work and strengthen the core, which makes you more stable overall.

The Bulgarian split squat works several muscles and improves stability and core strength; split squats are a better option for anyone with lower back pain. Traditional back squats put a lot of load on the back, but Bulgarian split squats do not.

Standing Calf Raises

Stand upright on a step or a few weight plates, holding a dumbbell or kettlebell at your side. Brace yourself on a wall or other means to keep your balance, keeping the ball of your foot firmly on the step.

Raise your heel off the floor and contract your calves with your toes pointing forward. Slowly return to the starting position.

Decelerate to the lowest position without touching the

floor and repeat for the number of reps prescribed. More weight, less reps, less weight, more reps. Alternate between sets.

Hip Thrusters

Lie face-up on an exercise mat with your arms by your sides with your palms facing down. Your knees should be bent, and your spine and pelvis should be neutral. Slightly tuck your pelvis and bring your ribcage down.

Your chin should remain tucked throughout the movement as if you were holding a tennis ball under your chin. Contract your core and lift your left leg off the ground, extending it straight. Your right leg should be bent, and both knees should remain next to each other. All repetitions should begin from this position.

Begin the upward movement, squeeze your glute, and push your right foot into the ground. Continue squeezing your glute as you move your hips toward the sky to achieve full hip extension.

Keep your ribs down; your pelvis should be level and slightly tucked at the top. Pause at the top of the movement. To begin the downward movement, hinge from your hip and slowly return to the starting position.

WHY? Hip Thrusters provide total engagement of the "glutes," a group of three muscles in the buttocks: the gluteus maximus, gluteus minimus, and gluteus medius.

The gluteus maximus is the largest muscle in the gluteals and is responsible for hip extension, which is the movement of the thigh backward. The gluteus minimus and medius are smaller muscles located on the outer surface of the pelvis. They are responsible for hip abduction, which is the movement of the thigh away from the body's midline. In addition to the glutes, Hip Thrusters involve the hamstrings, which are responsible for knee flexion and hip extension. They also engage the core muscles—the rectus abdominis, obliques, transverse abdominis, and erector spine—which stabilize the spine and pelvis during movement.

This region of the body is principally where your driving force comes from while running and pushing a sled.

Plank to Shoulder Tap Push-up

Planks with shoulder taps work several muscle groups, including hip flexors, abs, back, glutes, hamstrings, and quads.

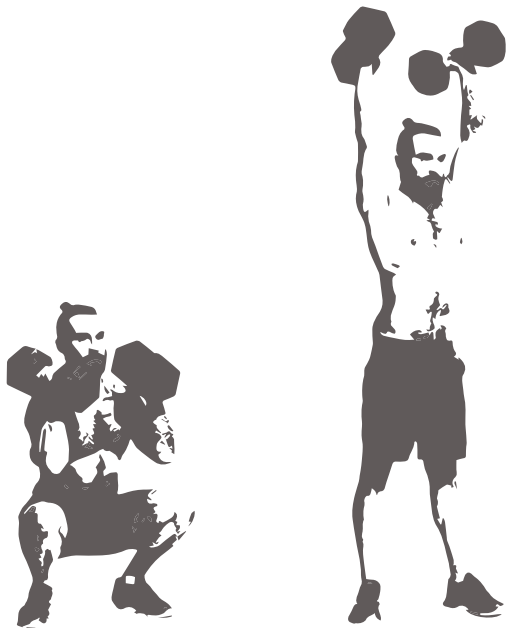
Start in a straight-arm plank position, keeping your core tight. Lift your right hand off the floor, touch your left shoulder, and return your right hand to the floor. Do the push-up.

Lift your left hand, touch your right shoulder, and return your right hand to the floor. Do the push-up. Repeat for Amrap (as many reps as possible) or a maximum of 20 reps.

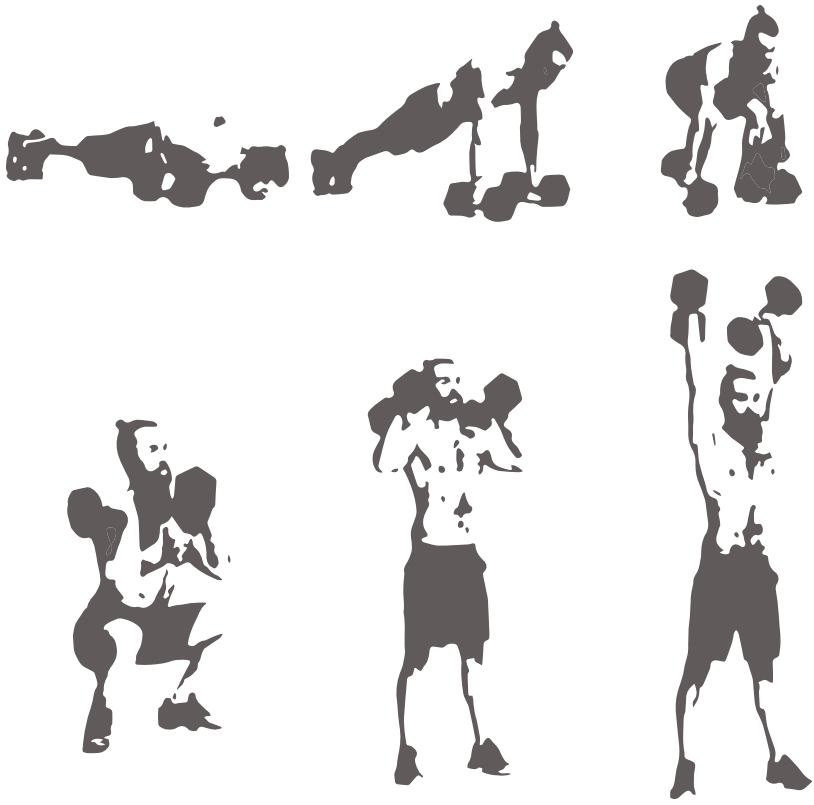
Avoid rotating your shoulders or hips during this movement. The goal is to keep your body in a straight line. To increase the difficulty, bring your feet together. This makes it harder to maintain stability.

Thrusters

Begin with feet shoulder-width apart, holding dumbbells at shoulder height. Ensure your grip is firm and elbows are pointed forward. Squat down, keeping your back straight, then explosively rise and extend your arms, pressing the dumbbells overhead. Repeat the movement



Devil Press



The devil press is a functional compound movement that combines a burpee with a dumbbell snatch. It is a full-body exercise completed with two dumbbells. It targets the whole body to develop strength and endurance.

Begin in the push-up position with your hands gripping the dumbbell. Push up to begin the movement. Transition the push-up into the burpee, jumping your feet forward to either side of the dumbbells, allowing you to lift them between your legs, ready for the snatch. Keeping a neutral torso and proud chest, squeeze your glutes and fire your hips forward while extending your legs. Use this momentum to get the dumbbells into an overhead position. Return to the start position. This is one rep.

WHY? Loaded Burpee into thrusters improves cardiovascular endurance, explosiveness, and full-body strength. Hybrid competitions require aerobic and anaerobic capacity, making Devil Press a perfect conditioning tool.

The top 5 strength exercises for Runners and why they are beneficial:

Squats:

Benefits: Squats target the quadriceps, hamstrings, glutes, and calves, crucial for running power and efficiency. They also help improve knee stability and strength, which can prevent injuries.

Lunges:

Benefits: Lunges work on balance and stability and strengthen the quadriceps, hamstrings, and glutes. They also improve hip flexibility, aiding in running mechanics and stride length.

Deadlifts:

Benefits: Deadlifts primarily target the posterior chain muscles, such as the hamstrings, glutes, and lower back. Strengthening these muscles can enhance running posture, power, and endurance.

Calf Raises:

Benefits: Strong calf muscles are essential for pushing off the ground and maintaining a powerful stride. Calf raises improve ankle stability and can help prevent common running injuries like Achilles tendinitis.

Planks:

Benefits: Core strength is crucial for maintaining good running form and stability. Planks engage the entire core, including the abdominal muscles and lower back, which can improve posture and reduce fatigue during long runs.

These exercises target key muscle groups used in running while improving overall strength, stability, and injury prevention.

Incorporating them into a well-rounded strength training routine can significantly enhance a runner's performance and longevity.

Dynamic Exercise - Plyometrics

Dynamic exercises are essential for boosting overall strength and athletic performance. Functional exercises, often performed in the gym, support our goals as athletes.

Plyometrics, or jump training, has been crucial for track and field athletes in Russia and Eastern Europe for many decades. Russian coach Verkhoshanski pioneered this method, calling it shock training. The term "plyometrics" was later popularized in 1975 by Fred Wilt, a former Purdue University women's track coach.

The Term "Plyometrics" comes from Greek roots meaning "to increase" and "to measure," reflecting the aim of improving sports performance metrics like jump height, sprint speed, or throwing distance.

How Plyometrics Work

Plyometrics enhance muscle power by using a pre-stretch of the muscle-tendon unit. This pre-stretch allows muscles to generate more force during the following contraction. Here's how it works:

- Eccentric Contractions: The muscle lengthens while contracting, creating the most force.
- Isometric Contraction: The muscle contracts without changing length, producing less force than eccentric but more than concentric.
- Concentric Contraction: The muscle shortens while contracting, generating the least force of the three.

Muscle Recruitment in Plyometrics

Plyometrics require high-intensity efforts to be effective. This intensity recruits different types of muscle fibers in a specific order, known as the size principle:

- Slow Twitch (ST) Fibers: Activated during low-intensity efforts.
- Fast Twitch (FT) IIa Fibers: Recruited as intensity increases, from 30% to 80% of maximum effort.
- Fast Twitch (FT) IIb Fibers: Engaged at high intensities, above 80% of maximum effort.

Plyometric exercises are most effective with high-intensity efforts to develop power and engage FT fibers. When starting a plyometric program, expect some muscle soreness (DOMS), which typically resolves within a few days. Highly trained athletes may not experience this soreness. In plyometrics, the eccentric pre-stretch and a quick transition (known as the amortization phase) maximize force during the concentric phase, resulting in powerful movements.

When adding plyometrics to your training, consider the following:

- Exercises: Choose exercises that match your sport's demands.
- Intensity: Ensure exercises are performed at high intensity to recruit FT fibers.
- Sets and Reps: Balance volume and intensity to optimize performance and minimize injury risk.

Incorporating plyometric exercises can be highly beneficial for enhancing running performance and excelling in Hyrox competitions.

Here are five great plyometric exercises:

Skip Rope

Skipping rope is an excellent warm-up to any strength training regimen and enhances foot-to-core activation, agility, and cardio benefits. For more intensity, work on performing double-unders (passing the rope beneath you twice per skip).

Box Jumps

Box jumps build explosive power in your legs, which is crucial for running and Hyrox events.

HOW TO DO IT: Stand before a sturdy box or platform (20" for beginners, up to 36"). Bend your knees slightly and swing your arms back.

Explode upward, landing softly on the box with both feet. Step down carefully and repeat.

Bounding

Bounding improves stride length and power, which is ideal for runners and Hyrox athletes.

HOW TO DO IT: Start by running forward at a moderate pace.

Push off forcefully with one foot, raising your knee high and reaching forward with the opposite arm.

Land softly on the opposite foot and repeat the motion, alternating legs. Perform bounds over a set distance or for a specified time.

Depth Jumps

Depth jumps increase reactive strength and power, enhancing the stretch-shortening cycle in running and high-intensity events.

HOW TO DO IT: Stand on a box or platform. Step off the box, landing softly on the balls of your feet. Immediately jump as high as possible upon landing. Repeat the sequence.

Lateral Skater Jumps

Lateral skater jumps improve lateral power and stability, benefiting agility and multidirectional movement in Hyrox competitions.

HOW TO DO IT: Start with your feet hip-width apart. Jump to the right, landing on your right foot while swinging your left foot behind you. Push off your right foot and jump to the left, landing on your left foot. Continue alternating sides.

Tuck Jumps

Tuck jumps build explosive strength and enhance knee drive, crucial for running speed and overall athletic performance.

HOW TO DO IT: Stand with your feet shoulder-width apart. Lower into a slight squat and jump explosively upward. Pull your knees toward your chest at the peak of the jump. Land softly with bent knees and

repeat.

Tips for Integrating Plyometrics

- Warm-Up: Always start with a dynamic warm-up to prepare your muscles and joints.
- Volume: Begin with 2-3 sets of 8-10 reps per exercise, focusing on quality over quantity.
- Recovery: Allow adequate rest between sets to maintain explosive power.
- Progression: Gradually increase the intensity and volume as your strength and conditioning improve.

Start with two complementary exercises and change up the selection in future sessions. To maximize each exercise's benefits, it's crucial to understand its goal. Study the approach to each exercise and focus on maximum engagement and contractile forces. Misunderstanding engagement can lead to ineffective training and potential injury. Think effective, then efficient!

Regularly practicing these plyometric exercises can significantly enhance your running performance and help you excel in Hyrox competitions.

THE TRAINING TEMPLATES

Running and Hyrox

By now, everything you've absorbed should pave the way for what's next—your journey towards transforming your training and achieving your goals. Let's face a stark truth: I'm not fond of cookie-cutter training templates. How could I be? I don't know you, your background, or your unique capabilities as I craft these plans. That's precisely why I don't offer a one-size-fits-all program that assumes a linear path from start to finish. Instead, I present concepts—principles that empower rather than dictate.

In my previous writings, "Training The Dark Side," I have emphasized that knowledge precedes guidance. Understanding how to approach your training is far more valuable than blindly following a plan that could lead to frustration and failure if it doesn't align with your needs.

Remember the "WHY" that has guided your reading so far: knowing your adversary, mastering proper running techniques, grasping the intricacies of adaptation, and harnessing your metabolic pathways effectively.

These templates are here as tools, ready to be adapted and applied. If they don't fit perfectly, it may be because I've offered a path that either underestimates your abilities or challenges you beyond your current reach. Use your newfound knowledge to tailor these templates to your needs, ensuring they propel you toward success rather than holding you back.

About the Running Template

The Running Template provides daily workouts over eight weeks. It is fashioned for those transitioning from heel striking and overstriding to forefoot running. In the initial few weeks, skill work precedes volume and intensity. Intensity tends to overshadow volume as the weeks go by, but the blend of efforts is well-balanced. These workouts will make you stronger and help you become a more proficient runner at any distance. The target distance is set to 10K, which is perfect for enhancing speed and endurance. This is a great place to start for those interested in participating in an event from 5K to 20K. I have also introduced two specific strength training sessions; one is held exclusively to body weight, and the other is more intense workouts fashioned with external loading. They are indicated with a specific Icon R1 and R2.

I have also recommended that you develop a daily habit of Performing what I refer to as "The Good Morning" to help reduce the typical nagging injuries that many runners face.

About The Hyrox Template

The Hyrox Template is a complete departure from the approach taken in the Running Template. Because Hyrox demands multi-functional capacities, they were fashioned to build a tolerance to fatigue under various unique stressors. As indicated earlier, these templates represent examples of many Hyrox-specific approaches. My experience in this regard is born from the labor of the many athletes I coach in this sport, including the reigning World Champion and many other athletes who compete at a very high level. I said it earlier, but it bears repeating, "We are all unique creatures; how and when we adapt to training is relative to our history, genetics, and tenure. What works for some may not be appropriate for you." The information that brought you to this place, combined with the running education provided, these training sample days are issued to provide you with unique challenges

that collectively will cause you to be a stronger, more enduring athlete. You will notice that Indirect strength exercises are melded into some training days rather than being an exclusive strength day. This may be different from the approach you currently follow.

I suggest you approach these training days as they are written, after a few weeks you don't feel that progress is at hand, you could always add or omit some of the work. As I suggested, these are training samples.

Strength R1

Skip Rope
10 one min. intervals easy pace

Lateral Hops
10 thirty second deliberate hops

Inch Worm
From standing, walk hands out to push up position and return 10 reps.

Glute Bridge
Extend hips skyward, squeeze glutes 10 sec. repeat for 20 reps.

Hip / Glute Extension
Drive heel into ground, swing knee towards chest 20 reps ea.

Hip Flexor / Quad Stretch
Kneel into lunge, shift hips forward hold and release 10 sec x 20 reps ea.

Bounding Drills
Leap forward into strides 100 m. four rounds.

Air Squats
4 X 25 reps

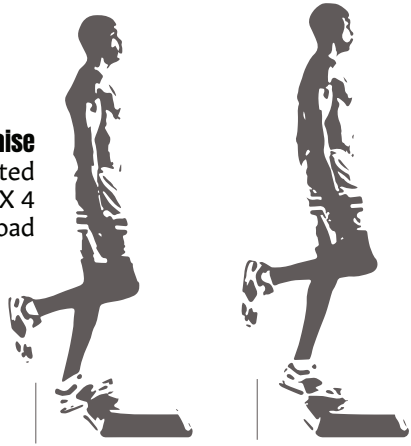
Plank, tap opposite shoulder, do a push up alternate. 5 X 10 reps.

Plank-Shoulder Tap-Push ups

Strength R2

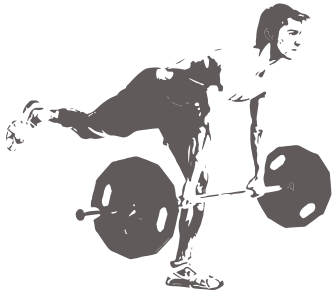
Indoor / Outdoor Cycle
Flow Intervals 30 min.

Calve Raise
weighted
10 X 4
max cap load



Bulgarian Split Squats
weighted
10 X 4
max cap load

Lunge Walk
4 X 20 meters
max cap load



Single Leg DeadLift
10 X 4
max cap load

Depth Jumps
Drop from a 20" box and immediately recoil out of the landing into a leap.
10 deliberate repetitions.*

*Plyometrics are intense. To be effective, you must focus on execution.

Run 10K Week 1

MON

CAD MSD AET

CAD 5 MIN
MSD 5 MIN
AET 20 MIN

TUES

CAD MSD AET

CAD 5 MIN
MSD 5 MIN
AET 20 MIN

WED

CAD MSD AET

CAD 5 MIN
MSD 5 MIN
AET 20 MIN

THURS

DAY OFF

FRI

CAD MSD ANT AET

CAD 5 MIN
MSD 5 MIN
ANT 5 MIN
AET 20 MIN

SAT

CAD MSD AET ANT

CAD 5 MIN
MSD 5 MIN
AET 20 MIN
ANT 5 MIN

SUN

CAD MSD AET ANT

CAD 5 MIN
MSD 5 MIN
AET 20 MIN
ANT 10 MIN

60 MIN = 30% SKILL | 120 MIN = 60% AET | 20 MIN = 10% ANT | TOTAL = 3:33 HRS

Does not include strength training session Total 200 min.

Run 10K Week 2

MON

DAY OFF

TUES

CAD

MSD

REC

AET-TT

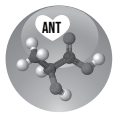
CAD	5 MIN
MSD	5 MIN
REC	N/A
AET-TT	2 MILES
	30 MIN

WED

CAD

MSD

AET



ANT

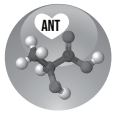
CAD	5 MIN
MSD	5 MIN
AET	30 MIN
ANT	5 MIN
	45 MIN

THURS

R1

MSD

AET



ANT

MSD	5 MIN
AET	25 MIN
ANT	10 MIN
	40 MIN

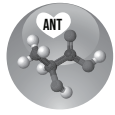
FRI

DAY OFF

SAT

MSD

AET



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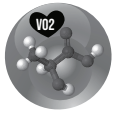
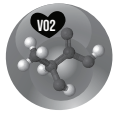


VO2

MSD	5 MIN
AET	35 MIN
ANT	10 MIN
VO2	2 MIN
	52 MIN

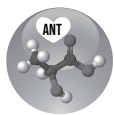
SUN

MSD



VO2

AET



ANT

MSD	5 MIN
VO2	2 MIN
AET	34 MIN
ANT	12 MIN
	53 MIN

35 MIN = 17% SKILL | 144 MIN = 63% AET | 41 MIN = 20% ANT | TOTAL = 3:66 HRS

Including TT @ average 20 min

Run 10K Week 3

MON


MSD


AET

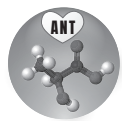
VO2


AET

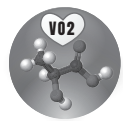
FLOW
10% MSD
75% AET
15% VO2
= 45 MIN

TUES


AET



ANT



VO2


AET

FLOW
60% AET
30% ANT
10% VO2
= 45 MIN

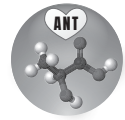
WED


DAY OFF

THURS


R1


AET

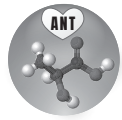


ANT

FLOW
70% AET
30% ANT
= 30 MIN

FRI


AET



ANT

VO2

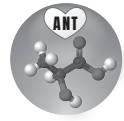

AET

FLOW
60% AET
30% ANT
10% VO2
= 45 MIN

SAT

VO2


AET



ANT


AET

FLOW
5% VO2
65% AET
30% ANT
= 45 MIN

SUN


DAY OFF

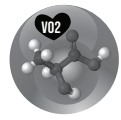
4.5 MIN = 2% SKILL | 138 MIN = 60% AET | 67.5 MIN = 10% ANT | TOTAL = 3:50 HRS

Run 10K Week 4

MON


MSD


AET



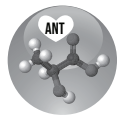
VO2


AET

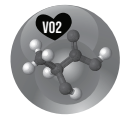
FLOW
10% MSD
75% AET
15% VO2
= 45 MIN

TUES


AET



ANT



VO2

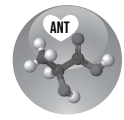

AET

FLOW
60% AET
30% ANT
10% VO2
= 45 MIN

WED


R1


AET



ANT

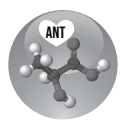
FLOW
70% AET
30% ANT
= 40 MIN

THURS


DAY OFF

FRI


AET



ANT

VO2

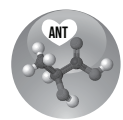

AET

FLOW
60% AET
30% ANT
10% VO2
= 40 MIN

SAT

VO2


AET



ANT


AET

FLOW
5% VO2
65% AET
30% ANT
= 30 MIN

SUN


MSD


REC

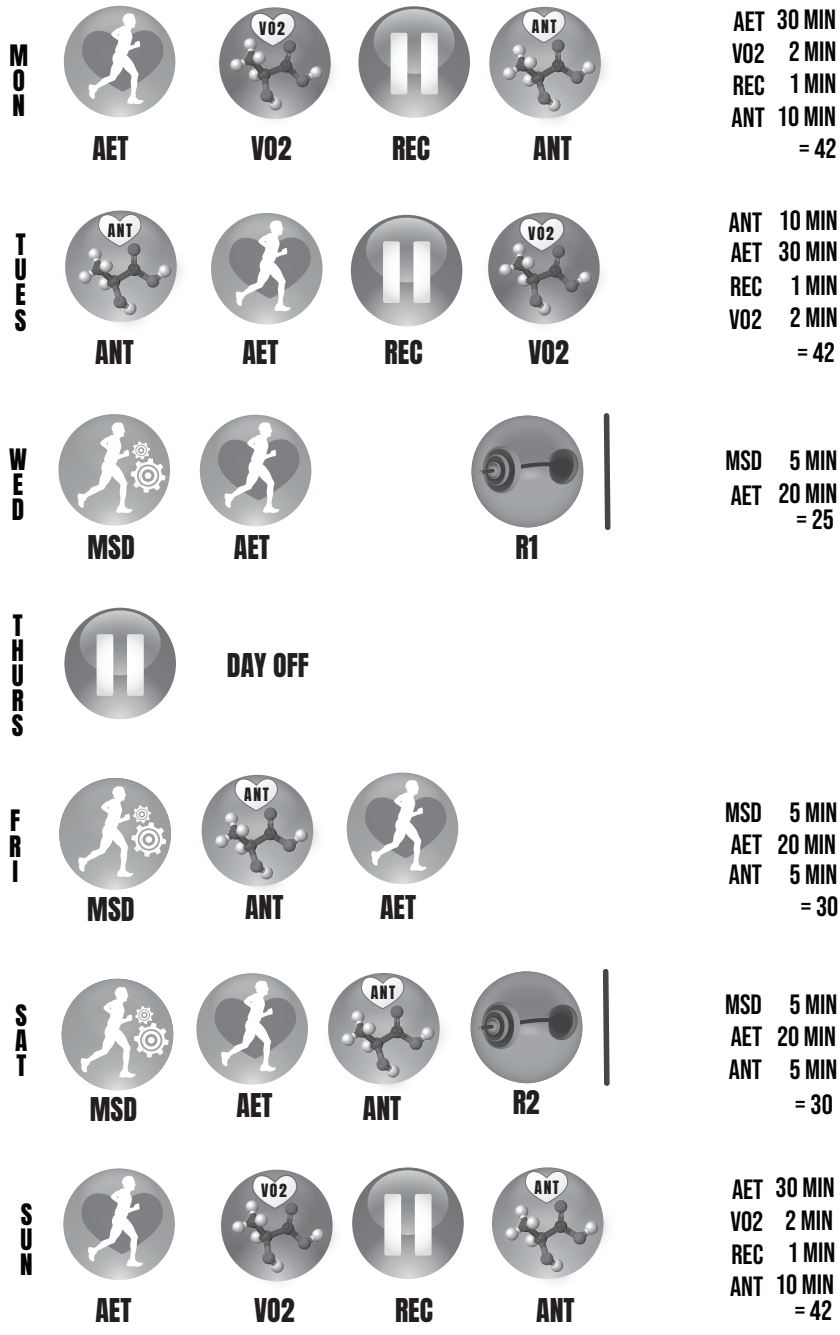

Flow-TT

MSD	5 MIN
REC	2 MIN
FLOW-TT	4 MILES

9 MIN = 3.75% SKILL | 150 MIN = 62.5% AET | 81.25 MIN = 33.85% ANT | TOTAL = 4:00 HRS

Including TT @ average 36 min (50/50 AET-LT)

Run 10K Week 5



15 MIN = 7% SKILL | 150 MIN = 71% AET | 46 MIN = 21% ANT | TOTAL = 3:50 HRS

Run 10K Week 6

MON

DAY OFF

TUES

R1

AET

ANT*

AET

FLOW
70% AET
30% ANT
= 40 MIN

*Hill repeats treadmill 6% grade. 6 X 2 min

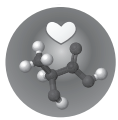
WED

MSD

AET-TT

MSD 5 MIN
AET-TT 10K
= 65 MIN

THURS



MLSS*

*Steady state effort 10 bpm above Ant.

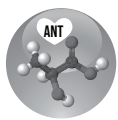
MLSS
= 45 MIN

FRI

DAY OFF

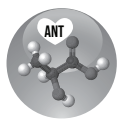
SAT

R2



ANT

AET



ANT

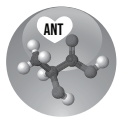
FLOW
50% AET
50% ANT
= 45 MIN

SUN

AET

VO2

AET



ANT

FLOW
60% AET
10% VO2
30% ANT
= 60 MIN

5 MIN 2% SKILL | 146.5 MIN = 57.45% AET | 103.5 MIN = 40.58% ANT | TOTAL = 4:25 HRS

Includes Aet TT based on 60 minutes completion

Run 10K Week 7

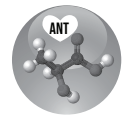
MON

DAY OFF

TUES

R1

AET



ANT

AET

FLOW
60% AET
40% ANT
= 45 MIN

WED

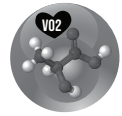
MSD

AET-TT

MSD 5 MIN
AET-TT 10K
= 65 MIN

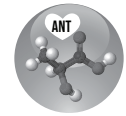
THURS

AET



VO2

REC



ANT

FLOW
60% AET
10% VO2
30% ANT
= 55 MIN

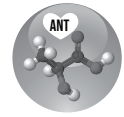
FRI

DAY OFF

SAT

ANT*

AET



ANT

FLOW
50% AET
50% ANT
= 45 MIN

*Hill repeats treadmill 6% grade. 6 X 2 min

SUN

MLSS*

R2

MLSS
= 60 MIN

*Steady state effort 10 bpm above Ant.

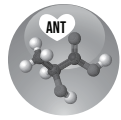
5 MIN 2% SKILL | 142.5 MIN = 52.7% AET | 122.5 MIN = 45.3% ANT | TOTAL = 4:50 HRS

Includes Aet TT based on 60 minutes completion

Run 10K Week 8

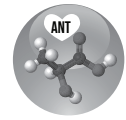
MON

R2



ANT

AET

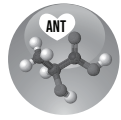


ANT

FLOW
50% AET
50% ANT
= 45 MIN

TUES

AET



ANT

AET

FLOW
85% AET
15% ANT
= 60 MIN

WED

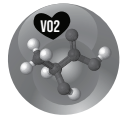
MLSS*

Recovery = 200 meters between each 400 m.
set.
*Steady state effort 10 bpm above Ant.

10 X 400 MLSS
W/200 M WALK
= 50 MIN

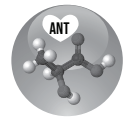
THURS

AET



VO2

REC



ANT

FLOW
60% AET
10% VO2
30% ANT
= 45 MIN

FRI

DAY OFF

SAT

MSD

10K

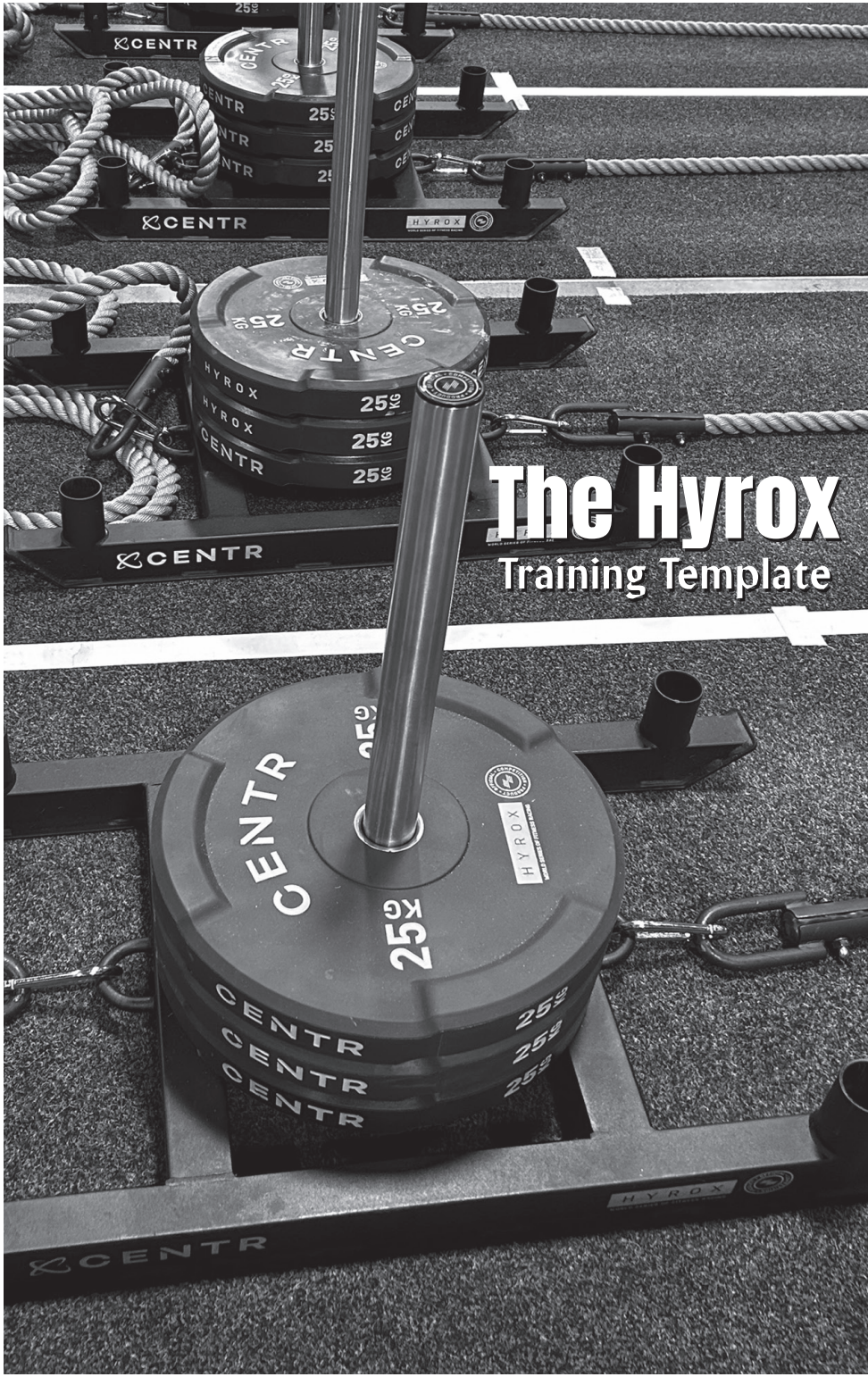
20% SKILL
80% ANT
=60 MIN

SUN

AET

100% AET
= 60 MIN

12 MIN 3.75% SKILL | 160.5 MIN = 50.1% AET | 147.5 MIN = 46.09% ANT | TOTAL = 5:33 HRS



The Hyrox
Training Template

THE HYROX STANDARDS

Hyrox Pro Men

1KM RUN
1000M SKI ERG
1KM RUN
2X25M SLED PUSH
(202 KG + SLED) 444.4 LB
1KM RUN
2X25M SLED PULL
(153 KG + SLED) 336.6 LB
1KM RUN
80M BURPEE BROAD JUMP
1KM RUN
1000M ROWING
1KM RUN
200M FARMERS CARRY (32KG) 70.4 LB
1KM RUN
100M SANDBAG LUNGES (30KG) 66 LB
1KM RUN
100X WALL BALLS (9KG)

Hyrox Pro Women

1KM RUN
1000M SKIERG
1KM RUN
2X25M SLED PUSH
(152 KG + SLED) 334.4 LB
1KM RUN
2X25M SLED PULL
(103 KG + SLED) 226.6 LB
1KM RUN
80M BURPEE BROAD JUMP
1KM RUN
1000M ROWING
1KM RUN
200M FARMERS CARRY (24KG) 52.8 LB
1KM RUN
100M SANDBAG LUNGES (20KG)
1KM RUN
100X WALL BALLS (6KG)

Hyrox Doubles / Relay Men

1 KM RUN
1000M SKI ERG
1KM RUN
2X25M SLED PUSH
(152 KG + SLED) 334.4 LB
1KM RUN
2X25M SLED PULL
(103 KG + SLED) 226.6 LB
1KM RUN
80M BURPEE BROAD JUMP
1KM RUN
1000M ROWING
1KM RUN
200M FARMERS CARRY
(24KG) 52.8 LB
1KM RUN
100M SANDBAG LUNGES
(20KG) 44 LB
1KM RUN
100X WALL BALLS (6KG) 13.2 LB

Hyrox Doubles / Relay Women

1KM RUN
1000M SKI ERG
1KM RUN
2X25 M SLED PUSH
(102 KG + SLED) 224.4 LB
1KM RUN
2X25 M SLED PULL
(78 KG + SLED) 171.6 LB
1KM RUN
80M BURPEE BROAD JUMP
1KM RUN
1000M ROWING
1KM RUN
200M FARMERS CARRY
(16KG) 35.2 LB
1KM RUN
100M SANDBAG LUNGES
(10KG) 22 LB
1KM RUN
75X WALL BALLS (4KG) 8 LB

Relay Mixed

1KM RUN
1000M SKI ERG
1KM RUN
2×25M SLED PUSH
(102 KG/152 KG INCL. SLED) (F/M)
1 KMRUN
2×25M SLED PULL
(78 KG/103 KG INCL. SLED) (F/M)
1KM RUN
80 M BURPEE BROAD JUMP
1KM RUN
1000 M ROWING
1KM RUN
200M FARMERS CARRY
(2×16 KG/24 KG) (F/M)
1KM RUN
100M SANDBAG LUNGES
(10/20 KG) (F/M)
1KM RUN
100 X WALL BALLS (4/6 KG) (F/M)

DAY 1

Skip rope
Warm up 5 X 1 min. intervals easy pace

Run
2K
Easy Pace

Thrusters
1 min.

Run
2K
Easy Pace

Do not record warm up. Allow heart rate to recover to 120 bpm before beginning the exercise set.

Record splits from each exercise and total time of completion along with average heart rate. Recover for 5 minutes before next set.

Run
1K
Moderate Pace

Farmer Carry
200 meters

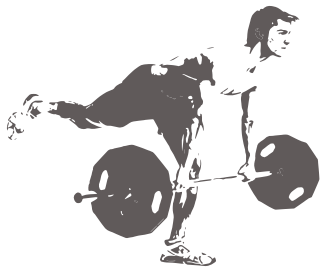
Burpee Broad Jump
80 meters

Run
1K
Moderate Pace

Record splits from each exercise and total time of completion along with average heart rate.

DAY 2

Ski erg



Single Leg RDL'S

Bent over Rows

Lunge walk
comp weight

Tuck Jumps

Ski 1K moderate pace, Single Leg RDL'S 12 reps*
Lunge Walk - comp weight 100 meters, Bent over Rows 12 reps*
Tuck Jumps 10 reps.

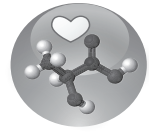
2 Rounds

*Each round drop the reps from 12, 8,6 @ max capacity load.

DAY 3

5 min.
Cadence drill

5 min.
Motor Skill

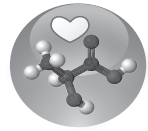


10 min.
10 bpm+ ANT

15 min.
Aerobic

Allow heart rate to recover
to 120 bpm before beginning the exercise set.

1K
Aerobic

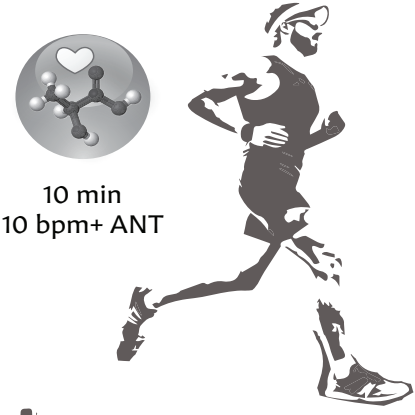


1K
10 bpm+ ANT

2K
Aerobic

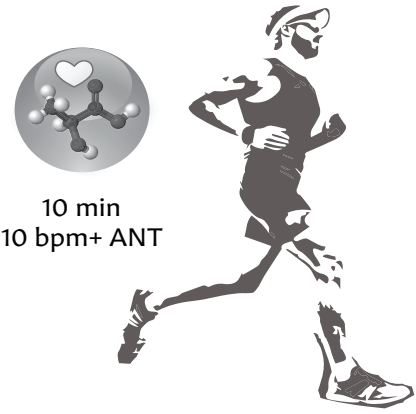
If you skipped over the chapters on running and the Icons, this would be a great time to revisit!

DAY 4

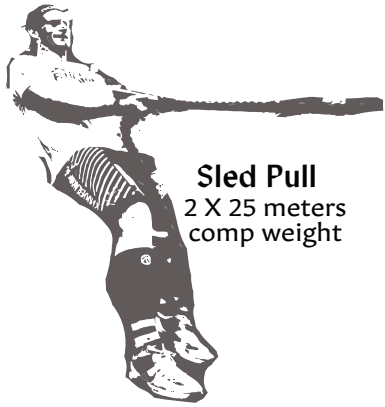


10 min
10 bpm+ ANT

Sled Push
2 X 25 meters
comp weight



10 min
10 bpm+ ANT



Sled Pull
2 X 25 meters
comp weight

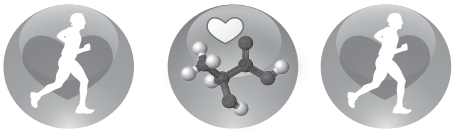
2 Rounds

DAY 5

Active Recovery
45 min.

Roll your legs at an easy pace, hydrate while riding. Don't over do it!
Start your day with a Good Morning session.

DAY 6



1K
Aerobic

500 meters
10 bpm+ ANT

1K
Aerobic

Lunge Walk
comp weight
50 meters

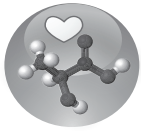
Wall Balls
comp weight
60 reps

Squats
15 reps
max cap

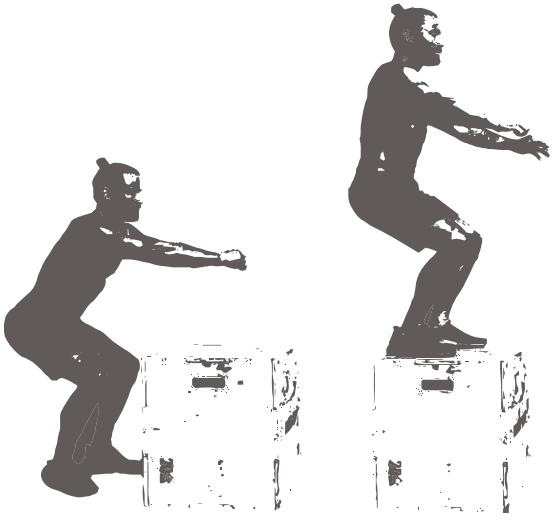
2 Rounds

DAY 7

3K
Aerobic



1K
10 bpm+ ANT



Box Jumps
20 reps

1K
10 bpm+ ANT

2 Rounds

DAY 8

Skip rope
Warm up 5 X 1
minute intervals
easy pace

Pain Cave

Best conducted on a track
or other measured flat surfaces.

Pain Cave is an incredibly taxing workout. It is designed to enhance your stamina, build your lactate tolerance and beef up your VO2 max. Odds are, you won't be able to complete this workout on your first attempt. Keep trying, you'll get a few more chances.

You must first establish your best 400 meter time.
Add 15 seconds as your standard.
Run 400 meters at your standard, walk 200 meters.
Repeat for 20 rounds. Walk and hydrate until you feel adequately recovered, then run a mile for time.

Do not record warm up. Allow heart rate to recover to 120 bpm before beginning the exercise set.

Record splits from each exercise and total time of completion along with average heart rate. Recover for 5 minutes before next set.

DAY 9

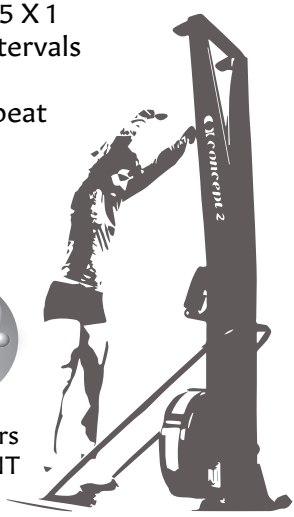
Active Recovery
45 min.

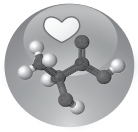
Roll your legs at an easy pace, hydrate while riding. Don't over do it!
Start your day with a Good Morning session.

DAY 10

Skip rope
Warm up 5 X 1
minute intervals
easy pace
do not repeat

Bent over Rows
15 reps





500 meters
10 bpm+ ANT

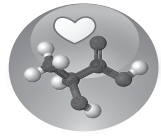
Bulgarian split squats
15 reps

Burpee Broad Jump
80 meters

3 Rounds

DAY 11

5 min.
Aerobic



5 min.
10 bpm+ ANT

5 min.
Aerobic

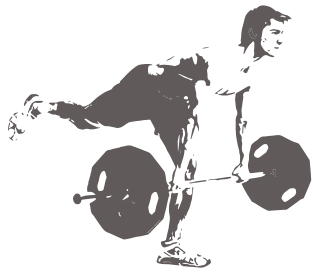
30 sec.
Best effort

3 Rounds

10K
Aerobic

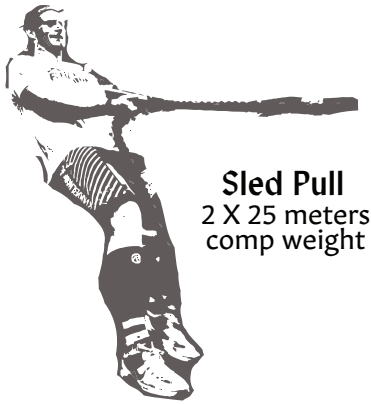
DAY 12

3K
Aerobic



Single Leg RDL'S
15 reps max cap

Bent over Rows
15 reps max cap



Sled Pull
2 X 25 meters
comp weight

3 Rounds

DAY 13

Pain Cave

Best conducted on a track
or other measured flat surfaces.

Skip rope
Warm up 5 X 1
minute intervals
easy pace

Pain Cave is an incredibly taxing workout. It is designed to enhance your stamina, build your lactate tolerance and beef up your VO2 max. Odds are, you won't be able to complete this workout on your first attempt. Keep trying, you'll get a few more chances.

You must first establish your best 400 meter time.
Add 15 seconds as your standard.
Run 400 meters at your standard, walk 200 meters.
Repeat for 20 rounds. Walk and hydrate until you feel adequately recovered, then run a mile for time.

Do not record warm up. Allow heart rate to recover to 120 bpm before beginning the exercise set.

Record splits from each exercise and total time of completion along with average heart rate. Recover for 5 minutes before next set.

DAY 14

Active Recovery
45 min.

Roll your legs at an easy pace, hydrate while riding. Don't over do it!
Start your day with a Good Morning session.

DAY 15

TT Time Trial Hyrox Race simulation #1.

Do not record warm up. Allow heart rate to recover to 120 bpm before beginning this simulation.

Record splits from each exercise, total time of completion and average heart rate.

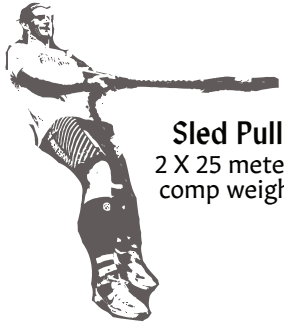
Warm up 5 min.

1K MLSS*

1K MLSS*

Sled Push
2 X 25 meters
comp weight

1K MLSS*



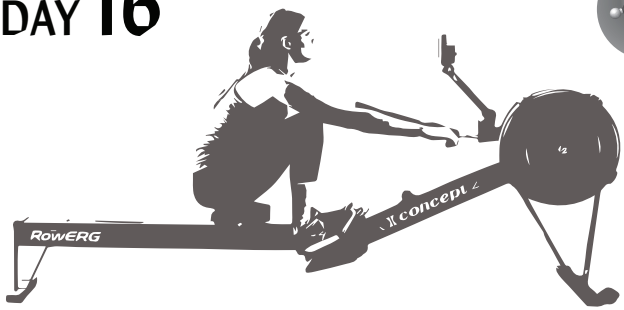
Sled Pull
2 X 25 meters
comp weight

This Time Trial simulation should be conducted when you are relatively fresh it represents the first 50% of a Hyrox competition. Be sure to record stats and jot down comments.

*MLSS - Maximum Lactate Steady State

In the chapter on Managing Energy Cost you should have identified what your Ant threshold is. MLSS is the greatest intensity you can support without slowing or speeding up your pace.

DAY 16



1K
MLSS*

1K
MLSS*

60 reps
comp weight

80 meters

3 Rounds Allow heart rate to recover to 120 bpm after each round.

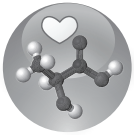
DAY 17

5 min.
Cadence drill

5 min.
Motor Skill

Skill Work

Flow



5 min.
10 bpm+ ANT

15 min.
Aerobic

1 min.
max effort

Recover
to 120 bpm

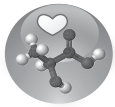
3 Rounds

Perform the skill work and move directly into the Flow sets. "Flow" through the intensities into the brief recovery and then repeat.

Total training time = 10 min Skill and 63 min. of Flow with 45 min Aet and 18 min Ant.

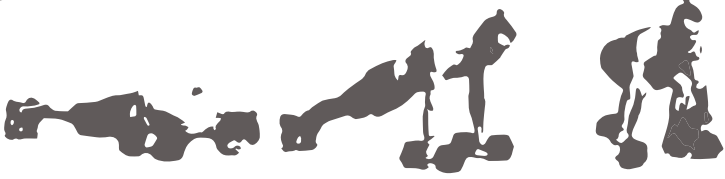
DAY 18


1K
Aerobic

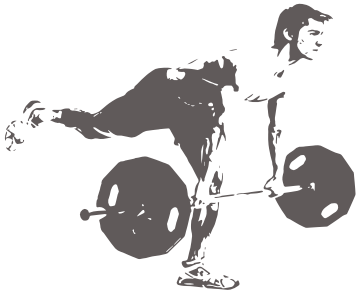

500 meters
10 bpm+ ANT


1K
Aerobic

If you have the option of training on a Concept 2 bike great, if not, an Assault bike or any other stationary bike will do.



Devil Press
15 reps
max cap



SLRDL'S
15 reps
max cap

3 Rounds

DAY 19

Active Recovery
45 min.

Roll your legs at an easy pace, hydrate while riding. Don't over do it!
Start your day with a Good Morning session.

DAY 20

5K
MLSS

Lunge Walk
comp weight
50 meters

Wall Balls
comp weight
60 reps

Squats
15 reps
max cap

2 Rounds

DAY 21

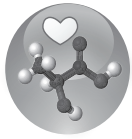
5 min.
Cadence drill

5 min.
Motor Skill

Skill Work

Flow

1 min.
max effort



5 min.
10 bpm+ ANT

10 min.
Aerobic

1 min.
max effort

10 min.
Aerobic

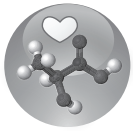
2 Rounds

Perform the skill work and move directly into the Flow sets. "Flow" through the intensities. Recover to 120 bpm between rounds. Total training time = 10 min Skill and 54 min. of Flow with 40 min Aet and 14 min Ant.

DAY 22

Bent over Rows
15 reps max cap

Skip rope
Warm up 5 X 1
minute intervals
easy pace
do not repeat



2K
10 bpm+ ANT

Bulgarian split squats
15 reps max cap

Burpee Broad Jump
80 meters

3 Rounds

DAY 23

Skip rope
Warm up 5 X 1 minute intervals easy pace

Pain Cave

Pain Cave is an incredibly taxing workout. It is designed to enhance your stamina, build your lactate tolerance and beef up your VO2 max.

Run 400 meters at your standard, walk 200 meters. Repeat for 20 rounds. Walk and hydrate until you feel adequately recovered, then run a mile for time.

Do not record warm up. Allow heart rate to recover to 120 bpm before beginning the exercise set.

Record splits from each exercise and total time of completion along with average heart rate. Recover for 5 minutes before next set.

DAY 24

Active Recovery
45 min.

Roll your legs at an easy pace, hydrate while riding. Don't over do it!
Start your day with a Good Morning session.

DAY 25

TT Time Trial Hyrox Race simulation #2.

1K MLSS

Warm up 5 min.

80 meters

1K MLSS

1K MLSS

1K MLSS

200 meters

This Time Trial simulation should be conducted when you are relatively fresh it represents the first 50% of a Hyrox competition. Be sure to record stats and jot down comments.

DAY 26

1K
MLSS*

amrap unbroken
comp weight

15 reps max cap

15 reps max cap

15 reps max cap

3 Rounds

DAY 27

Skip rope
Warm up 5 X 1 minute intervals easy pace

Pain Cave II

Best conducted on a track or other measured flat surfaces.

Pain Cave II is an extension of it's predecessor. It is designed to enhance your stamina, build your lactate tolerance and Increase pacing capacity.

Multiply your 400 meter standard time by 2 and add 20 seconds. Run 800 meters at your new standard, walk 200 meters. Repeat for 10 rounds. Walk and hydrate until you feel adequately recovered, then run a mile for time.

Do not record warm up. Allow heart rate to recover to 120 bpm before beginning the exercise set.

Record splits from each exercise and total time of completion along with average heart rate. Recover for 5 minutes before next set.

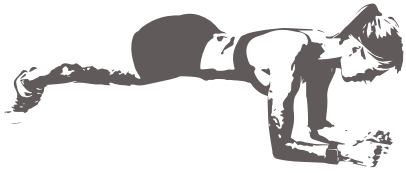
DAY 28

Active Recovery
45 min.

Roll your legs at an easy pace, hydrate while riding. Don't over do it!
Start your day with a Good Morning session.

DAY 29

Active Recovery



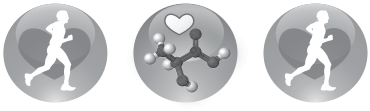
It's been a challenging bit of training thus far with only one day for recovery each week. Your body needs regeneration, avoid any external loading and focus on moving out resident inflammation while encouraging your functional ranges of motion. No timeline on how long to spend or what to do first. Just address the areas that are needing attention.

DAY 30

1K Aerobic | 500 meters 10bpm+ ANT | 1K Aerobic

200 meters

comp weight 50 meters



1K Aerobic | 500 meters 10bpm+ ANT | 1K Aerobic

3 Rounds Allow heart rate to recover to 120 bpm after each round.

DAY 31

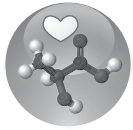
5 min.
Cadence drill

5 min.
Motor Skill

Skill Work

Flow

1 min.
max effort



5 min,
10 bpm+ ANT

10 min.
Aerobic

1 min.
max effort

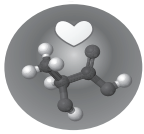
10 min.
Aerobic

Perform the skill work and move directly into the Flow sets. "Flow" through the intensities. Recover to 120 bpm between rounds. Total training time = 10 min Skill and 54 min. of Flow with 40 min Aet and 14 min Ant.

2 Rounds

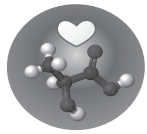
DAY 32

Flow



1K
MLSS

5 min.
Aerobic



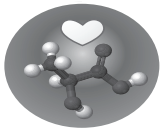
1K
MLSS

5 min.
Aerobic

This Flow session mimic's the typical demands of competition. A steady state anaerobic effort with a regression in intensity and straight back into the fire!

3 Rounds

DAY 33



2K MLSS

15 reps max cap

amrap unbroken
comp weight

15 reps max cap

4 Rounds

DAY 34

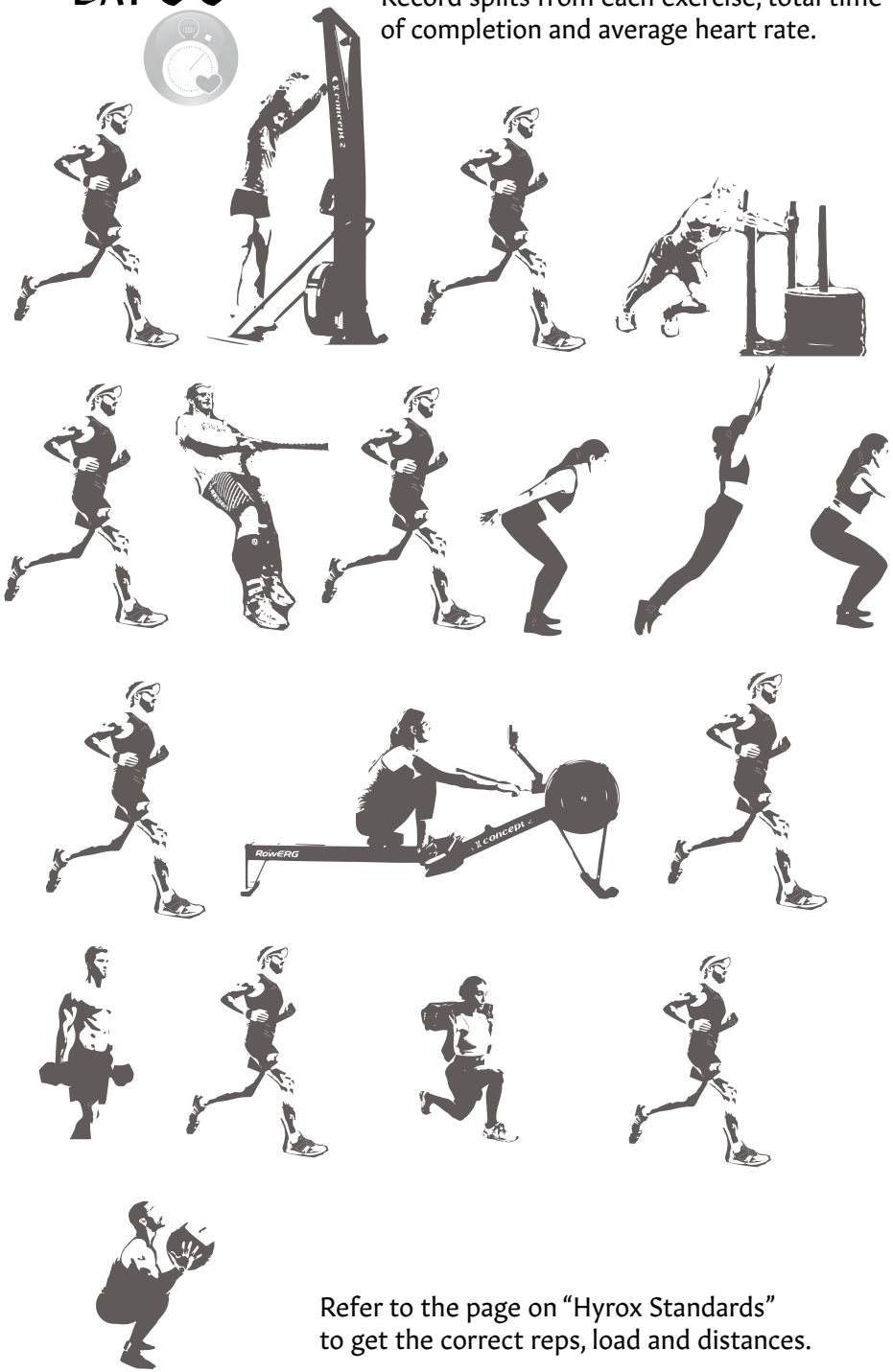
Active Recovery
45 min.

Roll your legs at an easy pace, hydrate while riding. Don't over do it!
Start your day with a Good Morning session.

DAY 35

Time Trial Hyrox Full Race simulation #1.

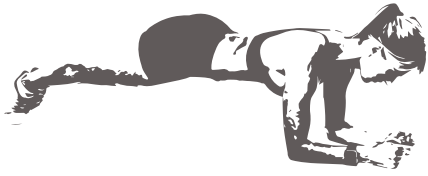
Record splits from each exercise, total time of completion and average heart rate.



Refer to the page on “Hyrox Standards” to get the correct reps, load and distances.

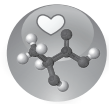
DAY 36

Active Recovery



You just completed your first full Hyrox simulation. Your body needs regeneration, avoid any external loading and focus on moving out resident inflammation while encouraging your functional ranges of motion. No timeline on how long to spend or what to do first. Just address the areas that are needing attention.

DAY 37


500 meters
Aerobic

500 meters
10bpm+ ANT

500 meters
Aerobic

Air Squats
20 reps

Shoulder tap - Plank Push ups
20 reps



500 meters
Aerobic

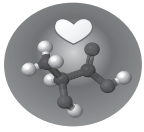
500 meters
10bpm+ ANT

500 meters
Aerobic

2 Rounds Allow heart rate to recover to 120 bpm after each round.

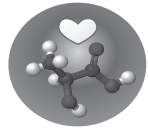
DAY 38

Flow



1K
MLSS

5 min.
Aerobic



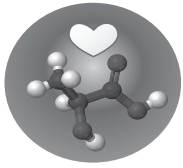
1K
MLSS

5 min.
Aerobic

This Flow session mimic's the typical demands of competition. A steady state anaerobic effort with a regression in intensity and straight back into the fire!

3 Rounds

DAY 39



3K
MLSS

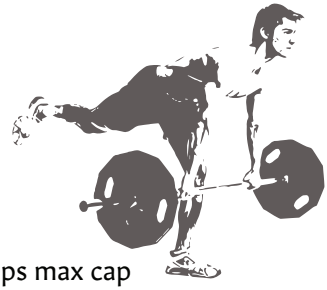
1K
Aerobic

This is a great workout for race pace prep. Go out hard for 3K, recover to an aerobic pace for 1K and repeat for 3 rounds.

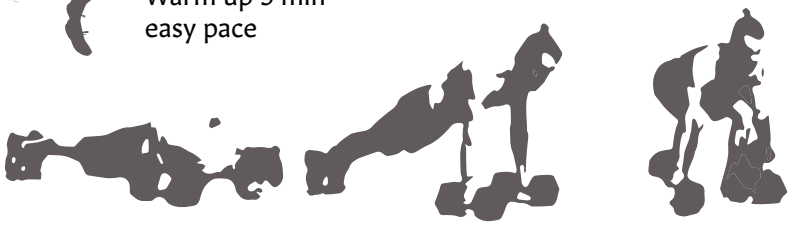
3 Rounds

DAY 40

Skip rope
Warm up 5 min
easy pace



15 reps max cap



Devil Press
15 reps max cap

500 meters
Aerobic

500 meters
10[bpm]+ ANT

500 meters
Aerobic

3 Rounds

DAY 41

Active Recovery
45 min.

Roll your legs at an easy pace, hydrate while riding. Don't over do it!
Start your day with a Good Morning session.

DAY 42

1K MLSS

80 meters

200 meters
comp weight

1K MLSS

3 Rounds Allow heart rate to recover to 120 bpm after each round.

DAY 43

Skip rope
Warm up 5 X 1 minute intervals easy pace

Pain Cave

Pain Cave is an incredibly taxing workout. It is designed to enhance your stamina, build your lactate tolerance and beef up your VO2 max.

Run 400 meters at your standard, walk 200 meters. Repeat for 20 rounds. Walk and hydrate until you feel adequately recovered, then run a mile for time.

Do not record warm up. Allow heart rate to recover to 120 bpm before beginning the exercise set.

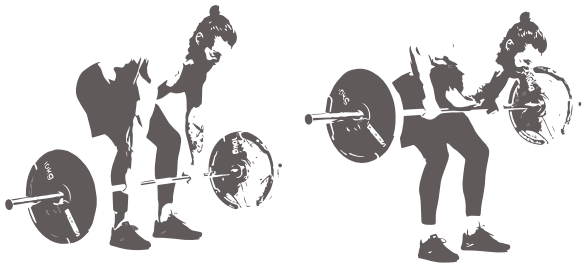
Record splits from each exercise and total time of completion along with average heart rate. Recover for 5 minutes before next set.

DAY 44

Active Recovery

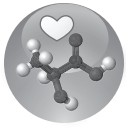
At this point you are familiar with the work and the associated stress. If you have been careful with the amount of quality rest, feeding and hydration you should have accomplished a great deal with your fitness thus far. This day, like others before this type of recovery period should also be paying off. Respect your recovery days, you don't get that many!

DAY 45



Bent over Rows
15 reps max cap

Skip rope
Warm up 5 X 1 minute intervals
easy pace
do not repeat



2K
10 bpm+ ANT

Bulgarian split squats
15 reps max cap

Burpee Broad Jump
80 meters

3 Rounds

DAY 46

3K
MLSS

1K
Aerobic

15 reps max cap

3K
MLSS

1 K
Aerobic

200 meters
comp weight

amrap unbroken
comp weight

2 Rounds

DAY 47

Active Recovery
45 min.

Roll your legs at an easy pace, hydrate while riding. Don't over do it!
Start your day with a Good Morning session.

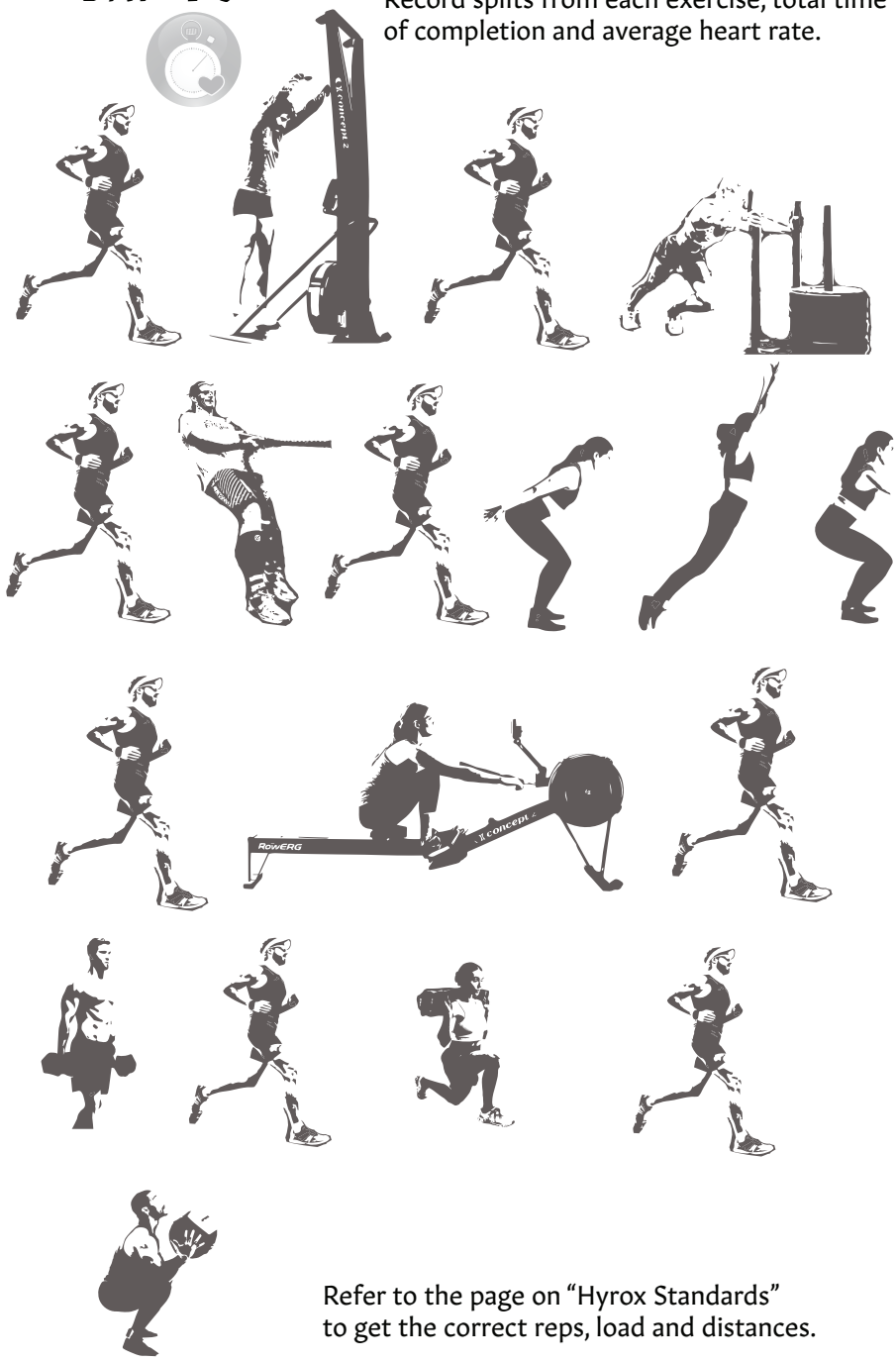
DAY 48

Active Recovery

DAY 49

Time Trial Hyrox Full Race simulation #2.

Record splits from each exercise, total time of completion and average heart rate.



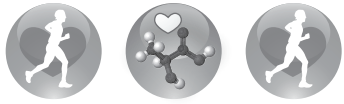
Refer to the page on “Hyrox Standards” to get the correct reps, load and distances.

DAY 50

Active Recovery
45 min.

Roll your legs at an easy pace, hydrate while riding. Don't over do it!
Start your day with a Good Morning session.

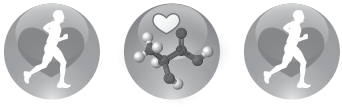
DAY 51



1K Aerobic | 500 meters 10bpm+ ANT | 1K Aerobic

200 meters

comp weight
50 meters

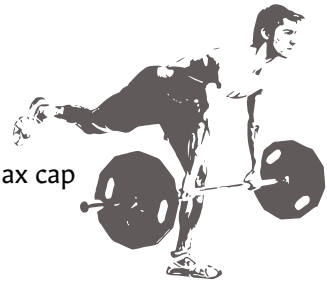


1K Aerobic | 500 meters 10bpm+ ANT | 1K Aerobic

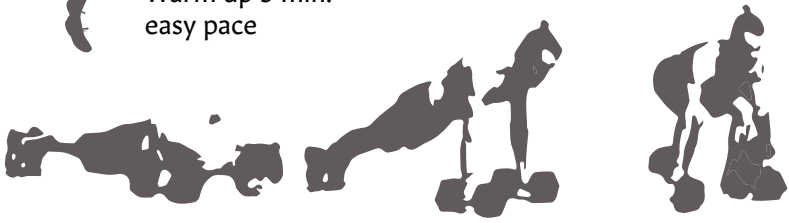
3 Rounds Allow heart rate to recover to 120 bpm after each round.

DAY 52

Skip rope
Warm up 5 min.
easy pace



15 reps max cap



Devil Press
15 reps max cap

500 meters
Aerobic

500 meters
10^{bpm}+ ANT

500 meters
Aerobic

3 Rounds

DAY 53

Skip rope
Warm up 5 X 1
minute intervals
easy pace

Pain Cave II

Best conducted on a track
or other measured flat surfaces.

Pain Cave II is an extension of it's predecessor. It is designed to enhance your stamina, build your lactate tolerance and Increase pacing capacity.

Multiply your 400 meter standard time by 2 and add 20 seconds. Run 800 meters at your new standard, walk 200 meters. Repeat for 10 rounds. Walk and hydrate until you feel adequately recovered, then run a mile for time.

Do not record warm up. Allow heart rate to recover to 120 bpm before beginning the exercise set.

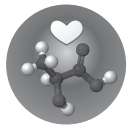
Record splits from each exercise and total time of completion along with average heart rate. Recover for 5 minutes before next set.

3 Rounds

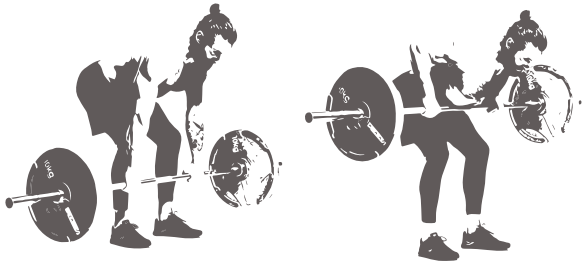
DAY 54

Active Recovery

DAY 55



2K MLSS



15 reps max cap

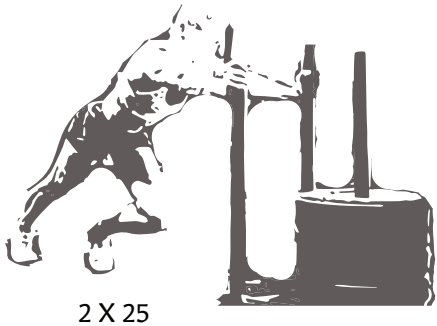
amrap unbroken
comp weight

15 reps max cap

4 Rounds

DAY 56

2K MLSS



2 X 25
comp weight

2K MLSS

2 X 25
comp weight

amrap unbroken
comp weight

3 Rounds

HEAT BLOCK TRAINING

HEAT BLOCK TRAINING

The icing on your training cake

During exercise, our body generates heat, leading to a decline in performance and even severe consequences if left unchecked. Our body activates defense mechanisms to reduce heat sources as we overheat. One of these mechanisms is muscular contractions, which results in a decline in performance. The blood supplying the working muscles is redirected to cool our internal organs by pulling heat away from them towards the surface of our skin. The oxygen-rich blood is no longer focused on powering muscular contractions, as the cardiac output is now prioritized for cooling rather than contracting muscles. If we notice decreased performance, pushing harder to maintain intensity can lead to further distress, reducing cognitive ability, balance, and motor skills. At this point, we are dangerously close to causing irreparable damage or even death.

Power generation during exercise relies on energy converted from stored sugars and fats synchronized with muscle contractions fueled by oxygen through blood flow. This is a highly complex system. Unfortunately, humans are not very efficient in converting energy into performance. Running, in particular, is one of the most inefficient forms of physical activity, with an estimated efficiency of less than 10% of total energy production. This means that if running a 10k requires 1000 kcals of energy, only around 100 kcals of energy created are used for the task, while the rest is allocated to thermo-regulation to maintain core temperature.

The cooling process begins by moving blood to the skin's surface via vasodilation, allowing blood vessels to expand and bring more blood to surface areas. Simultaneously, the sweat glands in our skin begin to

produce sweat, which quickly evaporates as it comes in contact with air along the skin's surface. The water particles on our skin cool the body by removing the muscles' heat. This represents our primary method of reducing heat. The water we lose through sweating comes from blood plasma. Plasma is how red blood cells get oxygen to our working muscles. As the cooled blood circulates through the body, it continues to dissipate heat energy on its way to cooling our organs. This system is not ideally automated in removing heat as quickly as it's generated. This lag in cooling requires a heat reserve—a certain amount of excess heat that the body can absorb. This "reserve heat" is indicated by our body's core temperature, which generally hovers around 98.6°F or 37°C. Losing just one liter of sweat can increase the heart rate by an average of eight beats per minute.

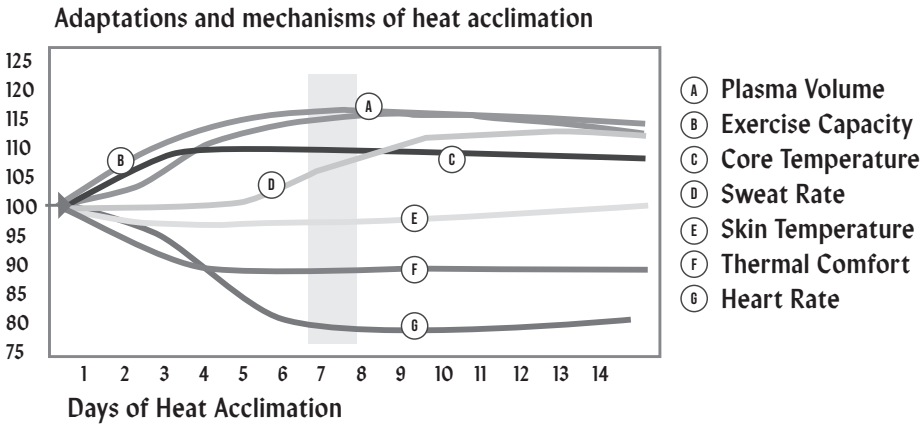
Most of us are accustomed to tracking heart rate as a prime metric in our training. However, monitoring core temperature is rarely a topic in most training paradigms because the technology to relay an accurate core temperature reading is not readily available. The intensity of training has an increasingly debilitating effect on performance, and the impact of intense effort elevates core temperatures. Simply stated, overheating and dehydration are what kill performance.

Overheating and lactic acidosis can be detrimental to our physical performance. But we can combat these foes by enhancing our cardiovascular system. Heat Block Training has been shown to help professional runners, cyclists, and triathletes boost their performance, and this same technology and methodology can provide the same benefits for Functional Fitness Competitors such as Hyrox and CrossFit Athletes. The athletic community is starting to pay attention to the benefits of Heat Block Training and the advent of noninvasive core temp monitors that can accurately monitor our body's core temperature and harness heat production to provide incredible performance-enhancing benefits.

Adaptations and Mechanisms of Heat Acclimation

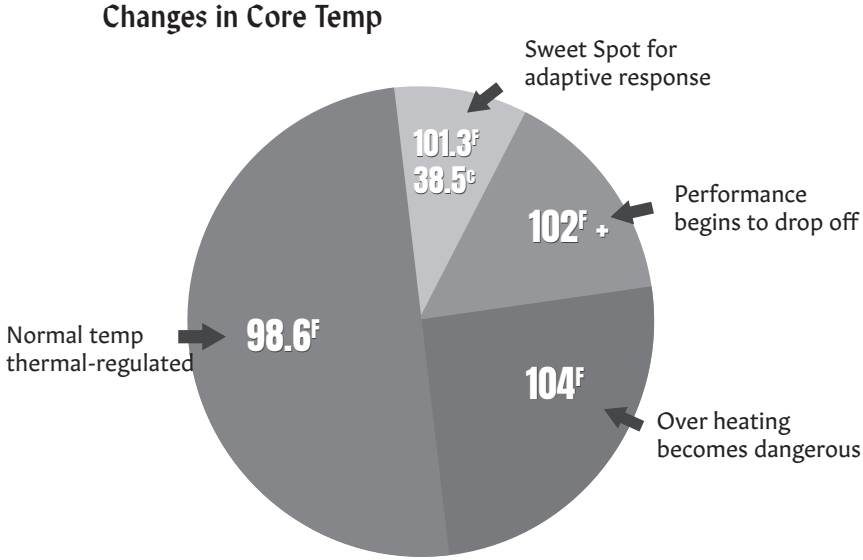
Adaptations and mechanisms of human heat acclimation: Applications for competitive athletes and sports J. D. Périard1, S. Racinais1, M. N. Sawka Athlete Health and Performance Research Centre, Aspetar Orthopaedic and Sports Medicine Hospital, Doha, Qatar, School of Applied Physiology, Georgia Institute of Technology, Atlanta, Georgia, USA Corresponding author: Julien D. Périard, PhD, Athlete Health and Performance Research Centre, Aspetar Orthopaedic and Sports Medicine Hospital, PO Box 29222, Doha, Qatar. Tel: +974 4413 2544, Fax: +974 4413 2020, E-mail:julien.periard@aspetar.com Accepted for publication 13 December 2014

The following graph shows how plasma volume expands and heart rate decreases during a given work rate after just one week of very specific exercise heat exposure. Thermal comfort improves, and core and skin temperature are reduced while sweat rate increases. All these adaptations depend on the initial acclimatization level, environmental conditions, exercise intensity, and acclimation regimen.



Exercise intensity and acclimation regimen

Heat acclimatization is a relatively rapid process that begins on the first day of exposure. 75–80% of the adaptations occur in the first 4–7 days. Repeated exposure to a constant work rate regimen results in physiological habituation (diminishing results), whereas the progressive overload approach (e.g., controlled hyperthermia to a core temperature of 38.5 °C) induces complete adaptation. Long-duration (60 min at 50% VO2max) exercise elicits similar heat acclimatization benefits (i.e., reduced exercising heart rate, core temperature, and metabolism) to that of moderate-intensity short-duration (30–35 min 75% VO2max) exercise.



When core body temperature rises to 39-40°C, most athletes start to suffer during exercise, and most stop exercising due to fatigue at ~40°C. It's interesting to note that these adaptations are gender specific. Men are more inclined to see these changes occur within the first week of training; however, women, although they will reap the same benefits, acclimatization takes a bit longer, up to 14 days to arrive at the same benefits.

With the rise of fitness competitions such as Hyrox and other high-intensity fitness challenges, Heat Block Training presents prime opportunities to benefit from this method.

Decay

Heat acclimatization is transient, and the benefits gradually disappear if they are not maintained by repeated heat exposure. The heart rate improvement, which develops rapidly during acclimation, is also lost more quickly than thermo-regulatory responses (Williams et al., 1967; Pandolf et al., 1977). However, there is no agreement concerning the decay rate for heat acclimation. The beneficial effects of the 14 days of heat acclimatization reported in the study from Dresoti (1935) appeared to be maintained for one month. Lind (1964) believed that heat acclimation might be retained for two weeks after the last heat exposure and then rapidly lost over the next two weeks. Williams et al. (1967) reported some loss of acclimation in sedentary individuals after one week, with the percentage loss greater with increasing time. By three weeks, losses of nearly 100% in heart rate and 50% in core temperature were observed.

Conversely, Pandolf et al. (1977) observed significantly attenuated losses in physically trained individuals, indicating that aerobic fitness and regular exercise contribute to retaining the benefits of heat acclimation for a more extended period. More recently, it was shown that two weeks after the final exposure to heat, a 35% loss of acclimation occurred in both heart rate and core temperature in individuals exercising for 60 min at 60% in temperate conditions (18 °C; Saat et al., 2005). In contrast, Weller et al. (2007) demonstrated that following a 10-day acclimation (46 °C and 18% RH) regimen, there was no core temperature decay and minimal heart rate decay after 12 and 26 days without heat exposure. During this period, however, regular physical activity patterns were maintained. Consequently, heat re-acclimation was accomplished in 2 and 4 days, respectively (Weller et al., 2007). A particular feature of this study was the use of controlled hyperthermia (38.5 °C) to elicit heat acclimation, which may have enhanced the benefits of heat acclimation.

Notwithstanding, these observations support the notion that aerobic fitness and regular exercise are critical during decay in providing stimulus for sustaining adaptation (Pandolf et al., 1977). It has also been suggested that one day of training in the heat is required for every five days spent without heat exposure (Pandolf et al., 1977; Taylor, 2000), which challenges the notion that one day of acclimation is lost for every two days spent without exposure to heat stress (Givoni & Goldman, 1972). With short-term heat acclimation, adaptations persist for one week but not two (Garrett et al., 2009). Future research endeavors may examine the minimum intensity, duration, and exposure frequency required to maintain heat acclimation benefits.

The research above was drawn from The Scandinavian Journal of Medicine & Science of Sport and can be found in more depth here: https://onlinelibrary.wiley.com/doi/full/10.1111 sms.12408

I have outlined the "What" and "Why" of Heat Block Training and its significant benefits to your training. Now, let's discuss the "When" - when this type of training should be included in your training routine. It's important to note that we all respond to training influences differently. Therefore, it's essential to identify your unique physiological responses to exercise stress related to thermo-regulation.

To get started, you need to purchase the appropriate equipment. I highly recommend the core temperature monitor and indoor heat training suits from https://corebodytemp.com. This investment is small compared to the valuable information you'll gain during training. For the record, I am not sponsored by this company and do not receive any compensation for my endorsement. They are not even aware that I am writing this program. I share this with you sincerely because, like you, I am interested in

valid and ethical approaches to performance enhancement.

Once you have the core monitoring device, sync it to their app and then to your heart rate monitor. Most heart rate monitors are compatible with their devices. As this information is recorded, it will be displayed on your heart rate monitor and can be further delivered to other training journals such as Training Peaks. Before we move forward, let me express that I am not the person to contact for tech support. My expertise lies in outcome and planning.

Assuming you are engaged with the product and app, let's give it a test run. Affix the monitor to your body by attaching it to your heart rate monitor chest strap, centered just below your sternum. Attach the core monitor a few inches to the left of the chest strap monitor contact. Once done, wait for the information to appear on your app and watch. Be patient; this can take a minute or two. Alternatively, you can use the adhesive foam pads that come with the core device.

Go out and train as you normally would. Whether indoors or outdoors, your mission is to collect information. Wear the device as you would your monitor; it provides additional information on how much heat you are generating relative to your heart rate. You will quickly learn that core temperature is slow to move. Your perception of effort may not match what your core body temperature tells you. It is tough to raise the core temp in temperate climates and easy in warmer climates. Early on, focus on monitoring outcomes relative to your activities.

Get to know the app and its displays to ensure everything works correctly. The next step is to target the sweet spot (38.5°C or 101.3°F). The following templates, designed for the final 30 days of pre-Hyrox competition, include "Heat Block" workouts conducted indoors. To succeed, you must trap your body heat effectively. Core's indoor heat suits work exceptionally well. I have used them with clients, and they are incredibly effective.

Remember these cardinal rules for "Heat Block" sessions:

- More is not better.
- Hotter is not better; it's worse.
- Regulate your temperature by lowering intensity if needed and shedding garments if you can't lower a high temperature.
- Hydrate effectively; you will shed a lot of water, so be sure to replace it.

The templates specify intensity, target temperature, and time for heat sessions. For example, if a template suggests 60% of VO2 max at 38.5°C for 45 minutes, it means 45 minutes at that temp and intensity, not including warm-up or over-temp time.

If your VO2 max is 60 mls/kg/min, 60% would be 36 mls/kg/min. If you don't have an accurate VO2 score, use max heart rate x 60%. If your max heart rate is 180 bpm, your target is 108 bpm.

The exercise you do during a Heat Block doesn't matter as long as you achieve the heat exposure goal. I prefer a C2 Bike erg or a stationary bike for easier modulation and sustained effort. A treadmill works well but can get messy. Our goal is

to be in a controlled state of heat for physiological benefits.

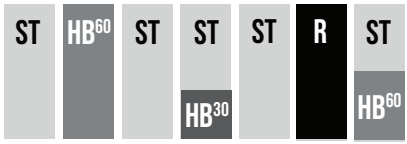
Introducing Heat Block sessions within the final 30 days of your pre-competition training will benefit your results. These low-intensity sessions have minimal stress on the body. If you need recovery, postpone the Heat sessions for another week before adding them to your pre-race taper.

Pay close attention to your hydration status. Weigh yourself before and after workouts to monitor water loss, and ensure you replace fluids and electrolytes. SkratchLabs.com offers great products for this purpose.

Finally, remember that more is not always better. Elevating your core temp beyond recommendations won't help. If you use a hot tub or sauna occasionally, that's fine, but don't rely on these instead of Heat Block sessions. Note that the Core Monitor does not work in a sauna or jacuzzi.

HEAT BLOCK TRAINING

Week One



Week Two

ST Specificity Training

R Recovery Day

HB30 75% VO2 max 30 min.

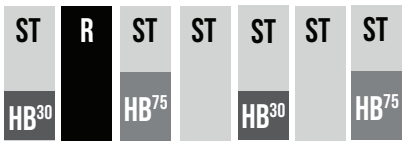
HB45 60% VO2 max 45 min.

HB60 60% VO2 max 60 min.

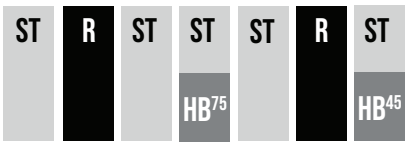
HB75 60% VO2 max 75 min.

HEAT BLOCK PRE-RACE

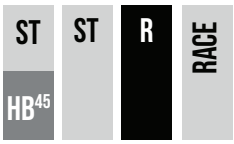
Week Three



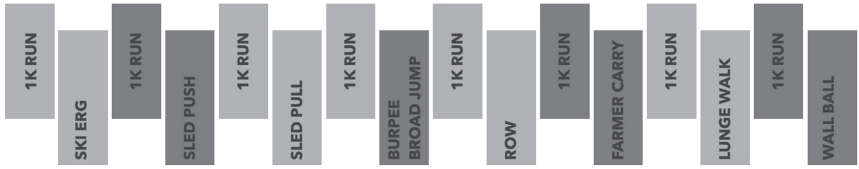
Week Four

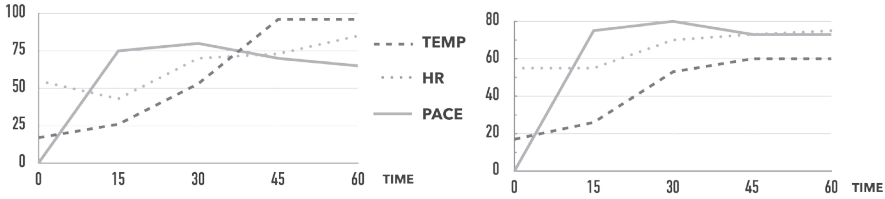


FINAL DAYS



THE EVENT





WEEK 1 / DAY 1

Run 1k @
70% PE*

Ski 1k @ 60%
600m /40% PE*
400m

Sled Push 50m
comp weight

4 Rounds

DAY 2

C2 Bike warm up
to achieve core
heat target temp

C2 Bike Heat Block 60%
of VO2 max** hold 38.5^{c}
for 60 min.

**If you are uncertain of your VO2max use the heart rate you develop while maintaining the core temp of 38.5^{C} (or 101.3^{F} avoid exceeding this temp during the session.

DAY 3

Run 800m
@ 70% PE

Lunge Walk 100m
comp weight

Wall Balls 60 reps

4 Rounds

***PE = Perceived exertion**

DAY 4

Run 800m
@ 70% PE

Burpee Broad Jump
25 Reps

2 Rounds

Heat Block 75%
of VO2 max hold
38.5^{c} for 30 min.

WEEK 1 / DAY 5

Pre-Comp Sim

1 K RUN - 1K Ski Erg - 1K Run
50m Sled Push comp weight - 1K Run
50m Sled Pull comp weight - 1K Run
80m Burpee Broad Jump - 1K Run
1K Rowing - 1K Run
200m Farmers Carry comp weight
1K Run - 100m Lunges comp weight
1K Run - 100 Wall Balls comp weight

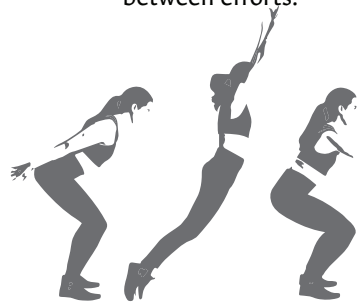
Keep in mind, these training sessions are conducted within the last 30 days prior to competition. I am a firm believer in the power of specificity training. After this week you have 3 more weeks before you race. This is a great time to see how things are going and what you need to work on.

DAY 6

Recovery ride easy pace 30 minutes.

DAY 7

RUN 8 X 1k @ 70% PE
W/ 20 bpm recovery
between efforts.



Burpee Broad Jump 80 m.

Heat Block Session
60% of VO2 max hold
38.5^{c} for 60 min.

WEEK 2 /DAY 8

Run 1k @ 70% PE

Burpee Broad Jump 25 Reps

50m Sled Push comp weight

Run 1k @ 70% PE

4 Rounds

DAY 9

C2 Bike warm up to achieve core heat target temp

Heat Block Session 60% of VO2 max hold 38.5^{c} for 75 min.

DAY 10

Ski 1k @ 600m /40% PE 400m

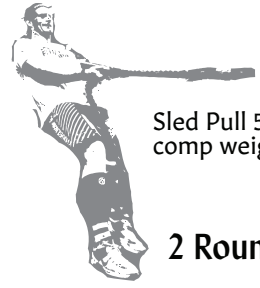
Wall Balls 60 reps comp weight

Run 800m @ 70% PE

4 Rounds

DAY 11

Lunge Walk 100m comp weight



Sled Pull 50m comp weight

2 Rounds

Heat Block Session 75% of VO2 max hold 38.5c for 30 min.

WEEK 2 /DAY 12

Recovery Day

You are 2 weeks out from race day, It's time to take a break! Focus on quality rest, feeding and hydration.

DAY 13

Run 3k
@ 60% PE

Heat Block Session
60% of VO2 max
hold 38.5^{c} for 75 min.

DAY 14

Ski 1k @ 60% PE
600m /40% PE
400m

Wall Balls 60 reps
comp weight

Lunge Walk 50m
comp weight

4 Rounds

WEEK 3 / DAY 15

Run 800m @ 70%
Perceived Exertion

Sled Pull 50m
comp weight

2 Rounds

Heat Block Session
75% of VO2 max hold
38.5^{c} for 30 min.

WEEK 3 /DAY 16

Recovery Day

You are 2 weeks out from race day, It's time to take a break! Focus on quality rest, feeding and hydration.

DAY 17

Run 800m
@ 70% PE

Heat Block Session
60% of VO2 max hold
38.5^{c} for 75 min.

DAY 18

Ski 1k @ 60% PE
600m /40% PE
400m

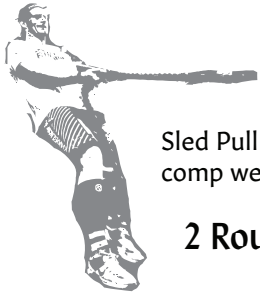
Wall Balls 60 reps
comp weight

Lunge Walk 50m

4 Rounds

DAY 19

Run 800m
@ 70% PE



Sled Pull 50m
comp weight

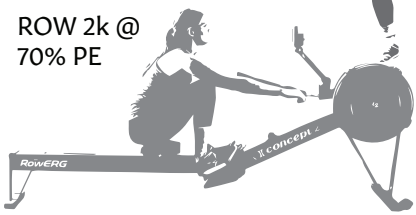
2 Rounds

Heat Block Session
75% of VO2 max hold
38.5^{c} for 30 min.

DAY 20

Run 800m
@ 80% PE

ROW 2k @
70% PE



Run 800m
@ 80% PE

SKI 2k
@ 70% PE

2 Rounds

WEEK 4 /DAY 21

SKI 5k
@ 70% PE

Heat Block Session
60% of VO2 max
hold 38.5^{c} for 75 min.

DAY 22

Run 2k @
70% PE

Wall Balls 75 reps
comp weight

Lunge Walk 50m

2 Rounds

DAY 23

Recovery Day

DAY 28

Run 3k @ 60% PE

Heat Block Session
60% of VO2 max
hold 38.5^{c} for 45 min.

DAY 29

Run 1k @ 60% PE

Pre-Race C2 bike to flush the legs, easy pace as needed.

DAY 30

Recovery Day

COMMITMENT

What does it truly mean to commit?

As I finalize this writing, it becomes glaringly evident that no amount of meticulous planning or strategic insight matters if you don't fully commit. Commitment isn't just a matter of saying you will do something; it's about making a promise to yourself and following through with relentless determination.

In nearly 30 years of coaching athletes across diverse sports, I've witnessed firsthand what separates the winners from the also-rans. It's not just talent or technique but the unwavering commitment they bring to their training every single day. When you hear the question, "How bad do you want it?"—that's the heart of the matter. Every strategy and piece of advice in this book is meaningless if you don't turn it into action and see it through to your goal, whatever it may be. In my daily coaching with athletes from around the world who share training data with me, the program I use to write daily workouts results in uniquely graded outcomes. If you do the work as prescribed, the header turns green. It turns yellow if you did some of the work but less than what was prescribed. If you did it not at all, the header turns red. This sets the stage for the conversation around the "Why" it didn't get done. On the other hand, I have clients who pride themselves in full weeks of nothing but green.

From my perspective, this speaks about one's willingness to commit to a task. Some of this responsibility falls to me. It could be I asked more than an athlete can give. This is a lesson. I shared this lesson with the athlete, who was not quite ready. For some, this represents a benchmark and a future challenge; for others, I may need to scale the workouts back a few notches to achieve completion.

At the end of the day, those who have the mindset that they refuse to fail, give up, or quit are the diamonds in the rough that every coach aspires to have in his or her charge. In hindsight, this was the method I used to write this book. I tried to present the essential concerns to provide the knowledge needed to approach the global scheme effectively, knowing full well that there will be those of you who went to the Table of contents to find the dessert instead of the meal. This book was also written so that if you don't consume the critical details that preceded the training templates, you will be lost.

When I shared this approach with my wife, we reflected on our school typing class. Ironically, we both cheated, looked at the keys, and tried our best to skate through the class, very much in keeping with the point I was trying to make. If you try to cut corners, you will either fail or have to revisit the lessons you should have learned before you gather yourself for another attempt at success.

Commitment means embracing the entire journey, not just the parts you find easy. It's about making a vow to yourself and persisting through every challenge, knowing that true success comes from unwavering dedication.

For some, much of what is written here requires a hard reset: changes to your running gait, a novel approach to arranging intensities during your training, and basically a leap of faith. What do you have to lose? Taking on the training paradigms set forth only requires weeks of training. If you find it's not for you or too contrary to your current beliefs, all you need do is revert to what you know: no harm, no foul. On the other hand, if what you learn from this book resonates with you, I recommend you check out some of my other works on my website or reach out to me for guidance; you'll find me approachable and happy to serve.

I wish you the very best in your quest for athletic performance!

Https:diazhumanperformance.com

Richard Diaz