THE MYTH OF H.I.I.T

why foregoing aerobic work is foregoing gains

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dedication

This is for everyone out there with a pair of wings. Use them. Never stop. And to those that encouraged me to use mine, this is, and always will be, for you. Life is our sport, #makeityours.

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ACKNOWLEDGEMENTS

Truthfully, I wouldn't know half of what I know if it wasn't for James Smith of powerdevelopmentinc.com and Buddy Morris. I interned under them while at the University of Pittsburgh and they formulated a skeleton of thought that won't be forgotten.

Likewise, Joel Jamieson has prominent in this field (8weeksout.com). Lyle McDonald of bodyrecomposition.com also put forth some good information.

INTRODUCTION

About me

Hi. My name is Anthony Mychal. I'm a writer that hangs around the health, performance, strength, fitness and tricking circles.

You should

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About you

This text is written for anyone interested in strength, health, fitness, and athletics.

But, all in all, anyone wrapped up in the recent high-intensity interval (HIIT) craze needs to take a look at this eBook.

I don't have anything against HIIT. It has its merits, and I'm not here to argue that. But there are too many, *way too many*, misconceptions floating around about what it does and doesn't do.

This is hopefully a push towards the truth. Or, at least, the truth as I understand it to be.

PROLOGUE

The Internship That Changed Everything

No learning experience compares to the internship I had at the University of Pittsburgh under James Smith and Buddy Morris. At the time, I thought I knew everything.

Squats were done past parallel. Conditioning was pushing a prowler, pulling a sled, hiking up a hill, or anything else that induced the gag reflex. The usual “factual” suspects.

When I walked through the doors and saw less than full squats and an emphasis on aerobic work, I was puzzled. Luckily, I was open to the idea of change. And change I did.

From where I sit now, I feel that aerobic training is a neglected first child.

In light of being able to write a book without a publisher (we live in a cool world now, don't we?), I’m doing justice to my ideas (largely formulated from the people and sources mentioned in the introduction) on aerobic training because the topic of “conditioning” is a world of mayhem.

Aerobic training is at a tipping point. A tipping point of comeback. So this is one more push. I can only hope it falls

CHAPTER OF IMPORTANCE

Who cares?

Why write this? What's the big deal? Who cares? How does it affect *me*? Is there a need to get all detailed and philosophical with how we train?

Great questions asked by great people.

My answers: you, everything, everyone, values, and absolutely.

Why write this?

This book is admittedly premature. The concepts and ideas are taken primarily from the sports world and have yet to trickle their way into mainstream thought.

But I didn't write this eBook for professional athletes. I wrote it for you—the fitness enthusiast. The people that can't get high on training information, yet are nothing more than diehard fans and practitioners.

The sports world has prominent figure heads and coaches orchestrating the aerobic movement. There's no way I'm going to claim to know as much as them, especially since what I know is formed from what they were willing to share.

But the sporting world somehow disconnects from the general fitness enthusiast world. It takes ideas years to nestle into the fiber of society.

So these concepts are taken from high level athletics and manipulated to best suit most everyone that isn't making six figures per year on the field.

What's the big deal?

The big deal is this: what if HIIT doesn't do what it's portrayed to do? And what if you're training specifically for what HIIT is portrayed to do?

Training for explosiveness? Training for VO2? Training to look better naked? Training to reap the benefits of EPOC? Training to condition?

Training with HIIT?

You're potentially **wasting your time**.

How's that for a big deal?

Who cares?

To truthfully answer this question: few people care. But everyone *should* care.

Aerobic training has been around for ages and was previously at the forefront of attention in the fitness world, being associated with better health markers like decreased blood pressure, decreased heart rate, increased cardiovascular health, improved cholesterol profiles, less depression, and better sleep.

Then HIIT boomed.

And no one cared anymore.

Their minds were made up: aerobic work was no longer a viable training method, no matter what previous studies showed.

How does it affect *me*?

It affects your *values*.

You think HIIT is more time-efficient. Most times, it isn't

You think HIIT does as much for health as aerobic work. Most times, it doesn't.

You invest in finishers.

You work hard to exercise and put stock in the methods you use to help you become a better all around person, physically.

So on the short end, it affects your time, health, money, and mentality.

Enough?

Is there a need to get all detailed and philosophical with how we train?

If “detailed and philosophical” means actually having goal to achieve, then yes.

It’s just like most other things in life: until you evaluate the details, you won’t be as good as you can be.

If you’re trying to save money and haven’t sat down with your bank balances, income streams, and bill payments, you won’t get very far.

CHAPTER OF HISTORY

Aerobic Conception in America

In 1970, Dr. Kenneth Cooper quested into the field of health and longevity. At this time in America, the professional field was nearly non-existent.

Cooper wondered why some people were better at specific physical tasks.

Why is Lance Armstrong God on a bike, but mortal on his feet? Why can an Olympic Weightlifter lift five hundred pounds, yet be gassed after a one mile run?

So Cooper began testing. And he started with the aerobic system.

Since Cooper pioneered a new field, his studies were the foundation of science as it relates health and physical culture. Anything Cooper said was scripture. And since he studied the aerobic system, it was at the forefront of the world's attention. Health became synonymous with aerobics.

But America was behind. Way behind. Overseas in the 1970's, the Eastern Bloc countries were crafting athletes. Yes, crafting. In a time when America knew nothing about health and human performance, the Eastern Bloc countries tested, measured, and perfected the art of athletic

creationism. Kids underwent a battery of tests to predict their genetic capabilities and be sorted accordingly. It was Sparta all over again.

Their athletes were, and still are, famed and fabled just like American movie stars. They took training seriously, and they dominated.

But I'm getting sidetracked here. Bottom line: everything America does is nothing more than a game of catch up, even by today's standards.

The Downfall of Aerobic Training

Aerobic training ruled America. Athletes of all levels ran. The general population jogged. But come 1990, things shifted. And by 2000, a revolution was in full throttle. The message was clear: aerobic work was not only a waste of time but also a disservice to the human genetic code.

Aerobic training was looked down upon, citing a tendency to diminish strength, power, and muscle growth. The argument was hard to refute. Side by side comparisons of marathon runners (aerobic specialists) and sprinters (anaerobic specialists) served further proof that a strong and capable body wasn't built by running long distances.

Everyone confessed: they *hated* running long distances. It was boring and time consuming. Seeing that sprinters trained at a high

intensity for a short period of time and had "ideal" bodies, aerobic work was trashed in favor of high-intensity training methods.

The Rise of Anaerobic Training

The flip side to aerobic training is anaerobic training. Aerobic means "with oxygen." Anaerobic means "without oxygen."

The body is better fueled by oxygen, meaning aerobic training can go on for a long time. Marathon runners run for hours, for example.

Anaerobic training is of a higher intensity and relies more on carbohydrates than oxygen. It's not as sustainable because carbohydrates are stored in the body. When they're gone, they're gone. Oxygen, however, is in the air and is extracted with every breath.

So these new high intensity, "sprinter inspired," workouts popped up. The duration of workouts was short—twenty minutes maximum—which was a big hook. Everyone was tired of walking gingerly on the treadmill for hours. If better results were delivered in twenty minutes (or less), why continue training the aerobic system?

From the turn of the century, anaerobic training proliferates namely in the form of high-intensity interval training (HIIT for short). High-intensity interval training is defined by Wikipedia as:

High-intensity interval training (HIIT), also called High-Intensity Intermittent Exercise (HIIE) or sprint interval training, is an enhanced form of interval training, an exercise strategy alternating periods of short intense anaerobic exercise with less-intense recovery periods.

...

A HIIT session consists of a warm up period of exercise, followed by six to ten repetitions of high intensity exercise, separated by medium intensity exercise, and ending with a period of cool down exercise. The high intensity exercise should be done at near maximum intensity. The medium exercise should be about 50% intensity. The number of repetitions and length of each depends on the exercise. The goal is to do at least six cycles, and to have the entire HIIT session last at least fifteen minutes and not more than twenty.

The original protocol set a 2:1 ratio of work to recovery periods, for example, 30–40 seconds of hard sprinting alternated with 15–20 seconds of jogging or walking.

HIIT is considered to be an excellent way to maximize a workout that is limited on time.

HIIT has been the standard anaerobic training method for both athletes and general fitness enthusiasts. It's said to burn more calories, increase cardiovascular function, and just be flat out better than aerobic training.

But I have some crazy news.

It's not.

Yeah, you heard me.

HIIT has been the go-to because it's portrayed as a cure all. It's easy to market because it touches on values. Less time in the gym means more time to make money, more time to spend with family, and more time to relax.

But the HIIT over-reliance left the world forgetting the capabilities of the aerobic system from a health, performance, and body composition standpoint.

For the rest of the ride, prepare to shake old thoughts from your being. The next chapter contains general information about the emergence of aerobic training and the migration towards HIIT. The following chapter debunks common myths with HIIT. And the last portion fills in some gaps and gets nerdy with the nervous system.

Here's what to expect along the way:

- Debunking the myths associated with HIIT
- Why HIIT makes you *less* explosive
- Why aerobic doesn't equal long distance runs
- Why aerobic training doesn't take hours
- Why HIIT is a bad way to burn calories
- Why EPOC is overblown
- Why HIIT isn't more "natural"
- Why aerobic training *is* natural
- Why aerobic work makes you look like a sprinter, not a marathon runner
- Why HIIT doesn't burn more fat

So here's to training in a way *best* suited to you. Here's to not wasting your time or effort doing something that isn't in line with your goals. And, most importantly, here's to the truth.

CHAPTER OF SCIENCE

As Complex as Necessary

Right, right, science isn't exactly captivating stuff. But a little bit of the complex stuff is necessary to understand why things work the way they do.

Energy Systems

Movement requires energy. Energy comes from different sources, depending on length and intensity of movement. Just think of three piggy banks. Two of the piggy banks are labeled anaerobic. The other is labeled aerobic.

The anaerobic piggy banks are further labeled. One is "alactic" and the other is "lactic."

The alactic anaerobic piggy bank is about 1/10 full. The lactic anaerobic piggy bank is about 3/10 full. The aerobic piggy bank, about 9.8/10 full. Here’s a repeat of the visual.


alactic anaerobic
lactic anaerobic
aerobic

When movement begins, all three piggy banks empty money. By nature of both length and intensity of muscle contractions, certain piggy banks dispense money at a faster rate.

The scientific breakdown of each system, as referenced in a guest blog post by Eric Oetter on Joel Jamieson's website, is this:

- Alactic Anaerobic | short term energy | 10-15 seconds | ATP-CP Fueled
- Lactic Anaerobic | mid term energy | 60-90 seconds | Glycolysis Fueled
- Aerobic | long term energy | hours | Oxygen Fueled

So upon starting intense activity, all of the systems turn on.

For the first 15-or-so seconds, the alactic anaerobic system is pumping hard (as are the others). But since it's only 1/10 full, it runs out of money fast.

The second bank, the lactic aerobic one, then becomes the primary contributor assuming movement intensity remains high. This is when that fun burning sensation in your muscles happens.

If the activity continues, this system also runs out, at which point the aerobic bank is supplying most of the money.

Subtle Differences

Most people distinguish between the aerobic system and the anaerobic system. But few break the anaerobic system down into the alactic branch and lactic branch.

Saying something is "anaerobic" isn't specific enough. Throwing a baseball is predominantly anaerobic. Doing as many vertical jumps as possible in one minute is also predominant anaerobic.

Yet both of these are vastly different, and organizing training for each one is a different animal.

My dad hasn’t done much physical activity in the past few years. He can still throw a ball. But vertical jumps for sixty consecutive seconds? I don’t think so.

Not all anaerobic training is created equally.

Overseas

This subtle divide of the anaerobic system is crucial.

The seemingly meaningless rant about the Eastern Bloc countries in the 1970's served a purpose. They've known about the nooks and crannies with this energy system business long before us. And while I

know not everyone is interested in the elite athlete stuff, the general science and theories behind their methods are applicable to everyone.

So while most people jumped on the aerobic hate train, it's long been documented that the aerobic system is vital to health and performance. It has a place in nearly **everyone's** training program. If it has a place for athletes, it especially has a place for general fitness enthusiasts.

Moving Forward

Welcome to the beginning of the end. It's time to reverse the hatred for aerobic training. Don't worry. It's for the better.

CHAPTER OF

MYTH BUSTERS

MYTH 1 HIIT IS MORE NATURAL OR AEROBIC TRAINING ISN'T IN LINE WITH OUR PRIMITIVE PHYSIOLOGY)

HIIT is more natural (or, aerobic training isn't in line with our primitive physiology

They say distance running isn't in line with how humans used to move in the days of hunters and gatherers and that we were more apt to throw a rock or spear to kill for food. (As if a rock ever killed a deer. Hell, sometimes even bullets don't kill deer.)

But in *Born to Run*, Christopher McDougall profiles "primitive" villages. And what does he find? They are distance runners—aerobic monstrosities.

Some tribes even use a unique strategy called persistence hunting. Persistence hunting is pretty advanced stuff: wound an animal and chase it until it collapses.

But it's not the wound that kills the animal.

The animal can't sweat. By chasing it for a long distance at a mediocre pace, it dies from heat exhaustion.

The muscular antelope, zebra, horse, or whatever animal ***can't sweat***. We, of course, can.

The aerobic system is the most efficient energy pathway. Why would the most efficient energy pathway be dangerous to our own organism?

Built for endurance?

Maybe. Just maybe.

MYTH 2 HIIT IS HEALTHIER OR AEROBIC TRAINING IS UNHEALTHY

HIIT is healthier, (or, aerobic training is unhealthy)

In line with Myth #1, there's a thought that aerobic training isn't healthy. These thoughts assume that aerobic work equals marathon running. But there's a big difference between aerobic training and marathon running.

A cornerstone study in the fight against aerobic work is this one:

> *Schwartz J, et al "Does long term endurance running enhance or inhibit coronary artery plaque formation? A prospective multidetector CTA study of men completing marathons for least 25 consecutive years" ACC 2010; Abstract 1271-330.*

The participants were marathon runners in developed worlds.

First, aerobic training and marathon running are different. I cook dinner every night, but I'm not Emeril Lagasse.

Second, there are tribes around the world that chase food for hours. True, they're better suited to handle distance running by virtue of being raised in an environment that requires it.

Where as us "civilized" folk, used to eating cheeseburgers, fries, and ice cream, may have a different physiology—one that doesn't respond to it as well. Or, perhaps, the air quality isn't as good and by running outside, we inhale a bunch of toxins.

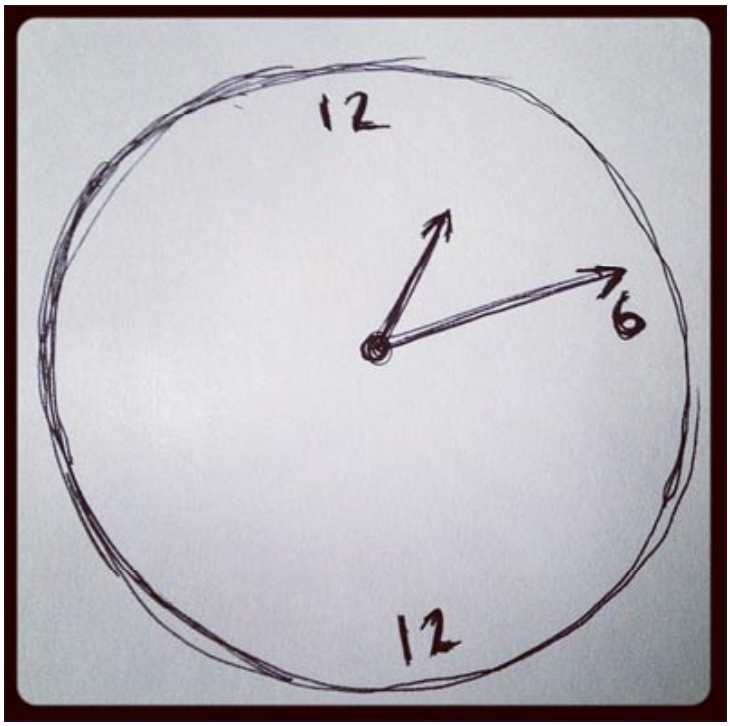
After all, here is the Amazon description of the previously referenced book, Born to Run.

> *Isolated by the most savage terrain in North America, the reclusive Tarahumara Indians of Mexico's deadly Copper Canyons are custodians of a lost art. For centuries they have practiced techniques that allow them to run hundreds of miles without rest and chase down anything from a deer to an Olympic marathoner while enjoying every mile of it. Their superhuman talent is matched by uncanny health and serenity, leaving the Tarahumara immune to the diseases and strife that plague modern existence. With the help of Caballo Blanco, a mysterious loner who lives among the tribe, the author was able not only to uncover the secrets of the Tarahumara but also to find his own inner ultra-athlete, as he trained for the challenge of a lifetime: a fifty-mile race through the heart of Tarahumara country pitting the tribe against an odd band of Americans, including a star ultramarathoner, a beautiful young surfer, and a barefoot wonder.*

For a long time, aerobic training has been shown to improve health by lowering resting heart rate, increasing HDL cholesterol levels, and reducing blood pressure.

Aerobic training, by virtue of lowering the resting heart rate, can reduce overall stress on the body during times of inactivity. This is one of the coolest parts of developing the aerobic system: it improves how the nervous system functions.

MYTH 3 HIIT IS TIME EFFICIENT OR AEROBIC TRAINING TAKES TOO MUCH TIME



HIIT is time efficient (or, aerobic training takes too much time)

HIIT is time-efficient, which makes it appealing to those with a hectic life. As mentioned, being a gerbil on a treadmill isn't fun.

But fancy this: I hate the treadmill. But I love aerobic work.

The problem with HIIT being a go-to, regardless of a fast-paced hectic lifestyle, is that it's a step beyond what the majority of people are ready to handle. You don't have a one million dollar line of credit on your first credit card.

HIIT is a stressful and intense form of training (one of the most stressful, in fact). The body, more often than not, isn't adapted or prepared for the intensity. Training history matters. The body needs to be built from the ground up.

Jumping right into HIIT is like taking an ice bath when you're used to hot showers.

Now, I'm no fool. People across the world have been doing HIIT from the get-go without keeling over. But there's an even more compelling reason to ease into HIIT: *to make it more effective*.

To this point, it may seem like I hate HIIT. Truly, I don't, and I understand that it has some uses and can certainly be effective for some purposes. But what if I told you it could be even better?

Aerobic training works in tandem with HIIT. They can increase respective "ceilings." So by increasing aerobic capacity, you can go even harder on HIIT.

But the argument that HIIT takes *less* time isn't valid. A quality aerobic session, for most of us, doesn't need to last beyond twenty minutes. Since it's a lower intensity form of training, the warm-up doesn't have to be as exhaustive either. So factoring in both warm-up and workout time, the difference between HIIT and aerobic training is moot. (That is, if you're doing a twenty minute HIIT session.)

And most times, people *love* properly structured aerobic training, especially when compared to HIIT, because their eyeballs aren't dangling from their optic nerve.

Even more, weight training sessions can take an aerobic tone by modulating rest periods and monitoring heart rate.

Time is just an excuse.

MYTH 4 HIIT IS PAINFUL AND PAIN IS WEAKNESS LEAVING THE BODY OR AEROBIC WORK IS FOR SISSIES

HIIT is painful, and pain is weakness leaving the body (or, aerobic work is for sissies)

During Easter dinner a few years ago, I convinced everyone in my family to do Tabata squats.

I was a HIIT freakazoid at the time. As you can guess, having sedentary people follow the Tabata protocol, after eating a scrumptious meal, didn't end well.

My sister *tried* stepping outside for fresh air. She collapsed. Her leg muscles couldn’t fire properly when trying to step down to the ground (the door is about one foot above the surface).

My mom couldn't walk up stairs. Everyone was sore for one week.

But this was "cool" to me. I worked them hard, and I thought I was making a difference. But when the body shuts down for one week, you've overstepped boundaries. And that can't happen.

The body likes operating in homeostasis (now called allostasis by some) and being somewhere within an ideal baseline. As Robert Sapolsky stated in *Why Zebras Don't Get Ulcers*, when allostatic balance is continually disrupted, the body freaks out. Intense repetitive stress—gnawing, screaming, and scratching the steering wheel and or dashboard during rush hour traffic, for instance—causes a host of diseases.

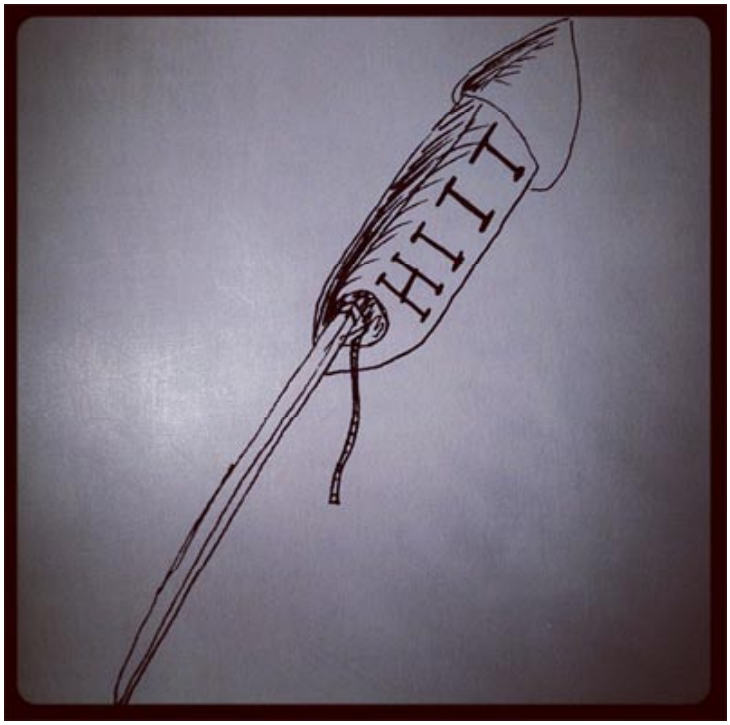
Even worse, this kind of soreness and damage means lower quality training sessions until recovered.

Congratulations. You burned 400 calories in four minutes. But you can't exercise again for one week. Sorry.

Maybe walking briskly, an easily repeatable activity, and burning 300 calories daily is a better choice?

Sometimes it's better to be the tortoise.

MYTH 5 HIIT MAKES YOU EXPLOSIVE OR AEROBIC WORK KILLS SPEED AND POWER



HIIT makes you explosive (or, aerobic work kills speed and power)

The great migration to HIIT was helped by the claims that aerobic work killed speed and power production. There's nothing non-factual about this. But I have two beefs with this myth.

First, there are countless football players, soccer stars, basketball wonders, and cycling masters that produce incredible power. And, as you will see, all of these sports rely heavily on the aerobic system.

Second, *any* non-specific adaptation will take away from a specific adaptation. This means that training for power will hinder your absolute aerobic potential. Likewise, training for strength will hinder your absolute power potential.

You will never, **never**, be as fast *and* as strong as you're capable of being *at the same time*. The two adaptations compete against each other. Walking on ice doesn't make walking on coal any easier.

Strength can help speed and whatnot. But both can't be maximized simultaneously. So, of course, you won't have the best aerobic development and best power production. But you *can* have more than enough of both.

Legendary sprint coach Charlie Francis was a fan of going either fast or slow. Anything in between was too slow to work on speed and too fast to serve as a light workout.

This in between zone was 75-95% of top end speed; purgatory for power and explosiveness.

With HIIT, even though you perceive the workload as fast and intense, it's not above the 95% cut.

Say you go 100% while completely fresh and run a 40 yard dash in 5 seconds. But do you think you're going to be running 40 yards in 5 seconds if you're in the middle of HIIT?

No.

That 40 yards turns into 6, 7, or 8 seconds. And that's purgatory.

If you're not working close enough to your maximum, absolute speed, you *can't* increase power, speed, or explosiveness.

Gaitanos and colleagues, in a study entitled, "Human muscle metabolism during intermittent maximal exercise," put people through a repeat sprint workout. (A study and information that was originally referenced on 8weeksout.)

They did ten total six-second sprints. In between each six second sprint, they were given a thirty second rest. From the first sprint to the last sprint, there was a 27% drop in power! And that was with a conservative work-to-rest interval.

Imagine what these numbers would look like if there was a negative work-to-rest interval, meaning you rest *less* than you exercise. (This is explained in the next section.)

How can you expect to develop speed and power in a deep state of fatigue, working well below your capacity?

Speed and power can't be developed in purgatory.

Now, aerobic work may seem to do the same thing. But it doesn't to the same degree because it's slow enough, and of a low enough intensity, that it doesn't compete for the same adaptation reserves.

It's like this: Maximum speed is king. Purgatory is a right-hand man looking to overthrow the king. The aerobic zone is where peons live.

Peons aren't worrisome. They aren't going to overthrow anyone. They pose no threat.

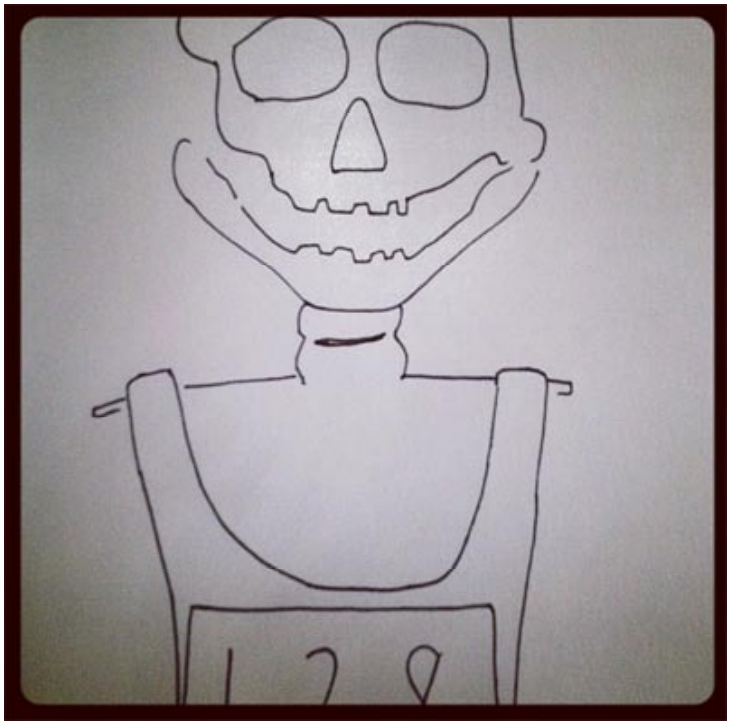
The right-hand man, however, is tricky. The king gets worried of an overthrow. So he can't do his job well because there is someone competing with him.

Speed and explosiveness can only be improved by training at or above the 95% intensity marker. You don't get faster by running slowly. This is why power cleans and Olympic lifts are done for lower reps with longer rest periods.

Fatigue kills speed and power development. So if you're not working near your absolute maximum, you're not really getting any

faster. In this respect, neither aerobic work nor HIIT makes you faster or more powerful. But when you do HIIT, you're not reaching the upper echelon needed to improve much of anything. You're just floating around in purgatory.

MYTH 6 HIIT MAKES YOU LOOK SEXY OR AEROBIC WORK MAKES YOU LOOK SICKLY



HIIT makes you look sexy (or, aerobic work makes you look sickly)

One picture of a marathon runner is all it takes to become suspicious of aerobic training's potential to make you look "unhealthy." And CrossFit doesn't help either as most people in the sport look rather well muscled and have a low body fat.

CrossFit, for all intents and purposes, is a form of HIIT. It mainly trains the anaerobic lactic energy system with its high-intensity time-based workouts. But there *are* aerobic workouts mixed into the programming.

Other forms of HIIT are said to make someone "look better." This goes back to the sprinter vs. marathoner argument.

Are CrossFit dudes jacked? Yeah, some of them. But some of them aren't. *They are no different than every other athlete of a sport that requires keeping tabs on body fat and weight.*

CrossFit people do a lot of bodyweight exercises in push-ups, chin-ups, squats, dips, rope climbs, and such. If you want to be in the CrossFit games (the people you're used to seeing in the media), you *can't* carry extra bodyweight to perform at a high level.

So they have to be muscular with a low body fat in order to perform at the elite level. There are fat and unfit CrossFitters out there in gyms everywhere, trust me.

Any athlete that keeps tabs on their body weight is usually jacked and ripped to maximize performance. They carry as much muscle as possible with as little body fat as possible to fit into lower weight classes. Check out Dmitry Klokov, Aleksandr Karelin, Oleksandr Kutcher, most gymnasts, most wrestlers, and any other athlete of a weight class sport.

HIIT *does* boost growth hormone secretion. (One of the more compelling things about it.) But HIIT-ish athletes are lean, mean, and muscular because it's the body they *have* to have to be successful at the high level. And because we only see the high-level successful people, we only see those that have the ideal body for the sport.

Football players are the quintessential animals for having a strong aerobic development. And they certainly aren't chumps.

Marathon runners, despite popular belief, aren't fat. Suzie walks the track every morning and fails to lose weight because she goes home and eats donuts, not because walking makes people fat.

Distance runners aren't well muscled because *there isn't a need for it*. Every extra pound they have is another pound they have to haul for miles and miles. Imagine strapping ten pounds across your body and going for a run. It will be tough.

Their muscles only have to be big enough, strong enough, and powerful enough to help them scurry across the ground. In most instances, this means: the muscles don't have to be very strong.

The body always adapts to what's best for survival. And when you need to run twenty some miles, you don't want anything weighing you down.

Also included under this umbrella is the idea that aerobic training increases cortisol levels, causing your body to gnaw away at its precious muscles.

While cortisol levels do increase during aerobic exercise, they increase in response to *any* exercise—strength training included. And let's not forget the levels also rise during sleep.

Being frightened of cortisol comes from its knack for "eating away" at our muscles to fuel activity. But most times this doesn't happen unless our body's carbohydrate stores are low, which usually doesn't happen until aerobic work passes a certain duration (most sources say around 45 minutes).

So while cortisol levels can be somewhat troubling, unless you're doing steady-state training for a prolonged period of time, it's moot. And the good news is that aerobic training doesn't have to be either steady state or prolonged.

MYTH 7 HIIT IS BETTER FOR VO2

HIIT is better for VO2

VO2 is considered one of the "standout" indicators of how "in shape" someone is. A few studies during the boom of HIIT showed that, indeed, HIIT was better for increasing VO2.

Or did they?

Take this study from Tabata and friends:

> *Effects of moderate-intensity endurance and high-intensity intermittent training on anaerobic capacity and VO2max.*

The concluding remarks portray high intensity work as the best training method:

> *"...high-intensity intermittent training may improve both anaerobic and aerobic energy supplying systems significantly..."*

But when looking specifically at the increase in VO2, both groups improved at the same level with the main difference being with the improvements in anaerobic capacity.

Most Tabata research uses a 2:1 work to rest ratio, meaning for every twenty seconds of work there is only ten seconds of rest.This is called a negative recovery (rest period shorter than the work period).

Recent research done by Ziemann and colleagues:

> *Aerobic and anaerobic changes with high-intensity interval training in active college-aged men*

was able to see results similar to Tabata's method by flipping the work and rest interval. So for every ten seconds of work there was twenty seconds of rest—a much less stressful and lower intensity interval ratio.

Less work and the same results. I’m in.

MYTH 8 HIIT IS SPORT SPECIFIC

HIIT is sport specific

Around the same time as my family's Tabata fiasco, I went to my girlfriend's brother's soccer game. Being my high and mighty self, I proclaimed that if I was in charge of the team, they would do HIIT and I would have them in *real* shape. I was swimming in the myth that sports weren't aerobic and that athletes *never* jogged. Ever.

It's what everyone thought: HIIT was more sport specific.

But when outwardly gazing at soccer, basketball, football, and the likes, we see a bunch of sprints in between a lot of jogging. Seriously. They jog. A lot. Go search YouTube if you don't believe me.

Aerobic work, even jogging, is hugely important in sports at nearly every level. Here's a study done on a soccer game:

> *Osgnach, C., et al. (2010). Energy cost and metabolic power in elite soccer: A new match analysis approach. Medicine & Science in Sports & Exercise, 42(1), 170-178.3)*

Conclusion: 70% of the game was performed at low(er) "aerobic" intensities. **70%**! Most sprints lasted only 2-4 seconds and were followed by 90 or so seconds of low-intensity movement.

Compare that to twenty seconds of sprinting and ten seconds of jogging as used in the Tabata method.

Aerobic training…sport specific?

Just a little.

MYTH 9 HIIT BURNS MORE FAT OR AEROBIC WORK DOESN'T BURN FAT

HIIT burns more fat (or, aerobic work doesn't burn fat)

A 1993 study by Romajin and colleagues examined substrate metabolism during three different intensities of activity. The first one, 25% of VO2. The second, 65% of VO2. The third, 85% VO2.

Of them, the 65% group showed the most mobilization of fat at over triple the amount as the other two. In fact, there was little difference between exercising at 25% VO2 and 85% VO2 (in terms of fat mobilization). This is because the high intensity necessitates powerful muscle contractions, and carbohydrates are much better at doing this than are fats.

But a big hook of HIIT is something called Excess Post-Exercise Oxygen Consumption (EPOC). After intense workouts, like HIIT, the body continues to burn calories after the workout is over. This is appealing as it technically "raises metabolism."

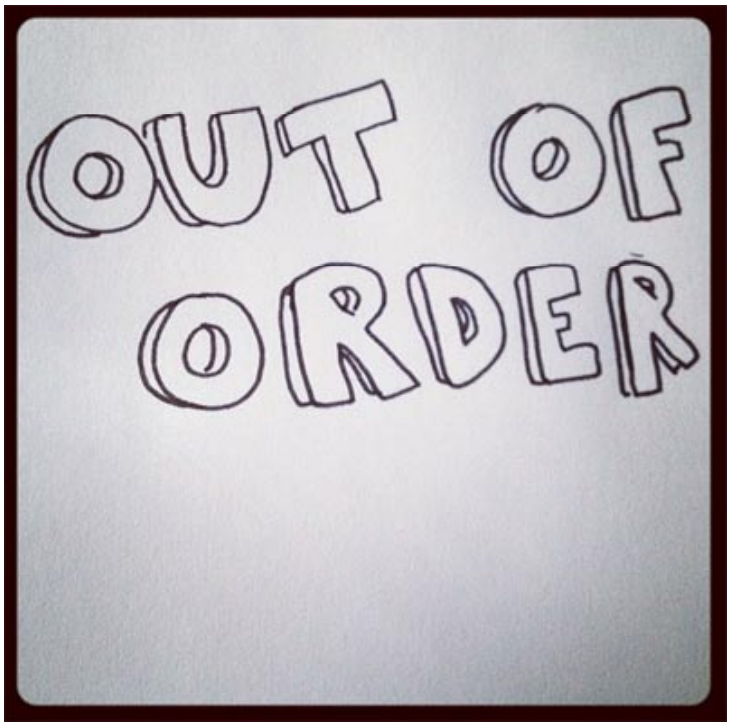
But EPOC ignores the sciency stuff like what substrates are actually used to fuel the body. When it comes to high-intensity training, carbohydrates are broken down inside the body and used for fuel. But medium-intensity "aerobic" training uses more fat.

Now, aerobic training also creates EPOC. But EPOC—even for HIIT— isn't that huge of a caloric hit. Lyle McDonald did some

calculations and found that aerobic work yields a 7% EPOC. HIIT, a 14% EPOC.

So if we're talking about burning 300 calories, HIIT burns whopping 20 more calories through EPOC than aerobic training.

MYTH 10 AEROBIC TRAINING DOESN'T WORK



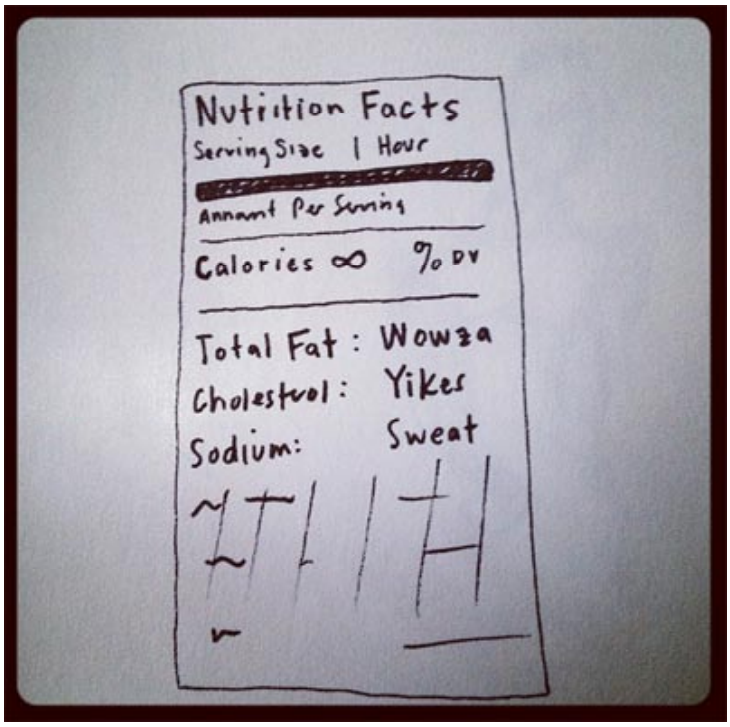
Aerobic training doesn't work

For a moment, think about sex. Or running your nails down a chalk board. Or my personal favorite (and by that I mean most hated), scraping a popsicle stick on your teeth.

Yes, you have no idea how painful it was for me to write that last one, as it always gives me chicken skin, chills, goosebumps, or whatever else you want to call it. Funky how a single idea can cause such a widespread bodily response.

Well, that's kind of how exercise is. If you believe it will work better, it will work better. People think HIIT is the best, so they work harder. They give more effort. And surprise. It works better.

MYTH 11 HIIT BURNS MORE CALORIES



HIIT burns more calories

The body strives to use less calories and energy to perform a task. So throwing a person into a HIIT activity, where they are working at a maximum, they will be very inefficient. This means they will burn a ton of calories.

Compare the sprinting form of a sedentary person and that of a world class sprinter. Catch the drift?

Telling someone to go "all out" won't be very pretty from a technical standpoint at first. Arms will flail. Hips will be all over the place.

But because of the short duration of studies, most of the training is still being adapted to. But if the study continued, and if the intensity and whatnot stayed the same, less and less calories would be burned. So a difference in calories burned can be because of beginner's inefficiency with a high-intensity task.

Think of a basketball player shooting foul shots. If given free reign, he will take his time. And when he takes his time, he makes nearly all of his shots. He's very efficient.

But if he has to make ten shots in twenty seconds, his form goes awry. He isn't as crisp, and less shots go in. Inefficiency due to high intensity.

As an aside, the argument that aerobic work isn't good because it's easy to become efficient at is ridiculous. Here's the solution: run a little longer or a little faster. This is like saying squatting serves no purpose because you never get any better. But that's only true if you never attempt to make the squat harder.

So you can squat 135 for the rest of your life and, yes, you won't ever get much better at it. But you can always just add weight. Same goes for aerobic training through speed or distance.

Another crux in this argument, and a point made by Lyle McDonald, is how frequently each activity can be trained.

True HIIT sessions can't be done more than three times per week. They are too stressful. And if you can do HIIT more than three times per week, you're probably not doing HIIT.

From a hypothetical look, if you do three HIIT sessions that burn 300 calories each, that's 900 calories in one week.

Alternatively, you can do low-intensity aerobic work and burn 200 calories five or six days per week. That's 1000-12000 calories in one week.

The time tradeoff in the above example *seems* to make sense. But there's a little problem.

These numbers assume that aerobic work is *inferior* to HIIT at burning calories. But think of a twenty-minute HIIT protocol that alternates between one minute of activity at 80% VO2 and one minute of activity at 50% VO2. As an average over twenty minutes, you're VO2 is 65%.

How is that different than keeping a steady pace of 65% VO2 for twenty minutes? The thirty extra calories from EPOC?

CHAPTER OF AEROBIC BENEFITS

Why aerobic training is gaining popularity

The fitness industry is cyclical. In ten years, I wouldn't be surprised if I was writing, "The Myth of Aerobics," or something similar.

Part of the problem is how fast the pendulum swings. And it only takes one idea-virus to give it momentum. Books like this are the tipping point.

But I don't want the pendulum to swing too far back in the direction of aerobic training.

HIIT can be useful, just as aerobic training can be. And I want this eBook to bring down HIIT only as far as necessary to give aerobic training the spotlight it deserves.

Conditioning

The general population, for the most part, only wants a time-efficient and fun way to condition. HIIT for conditioning. Finishers for conditioning. It's all about conditioning.

But the word “conditioning” is ambiguous. It can’t be defined. No, Head & Shoulders doesn’t count. Neither does “anything that makes you huff and puff.”

I liken “conditioning” to the phrase “resistance training.” You can resistance train many ways. You can use dumbbells, barbells, machines, kettlebells, and many more apparatuses.

And even then you can resistance train for many reasons. For strength, for health, for power, for speed-strength, for starting strength, and much more.

Most people condition to get more conditioned. But do you resistance train to become more resistance-trained?

It’s ambiguous. Really, “conditioning” is synonymous with “energy system training.” But, as discussed, there are three branches of energy systems: alactic anaerobic, lactic anaerobic, and aerobic. So if you’re conditioning, which one are you hitting?

Chances are you have no idea. You don’t care, either. You’re just doing something because you read about it online. Or because it challenges you. Or someone else told you about it.

Even worse, you’re doing some kind of “finisher” because it’s in a book. You don’t know why you’re doing it. It makes you breathe hard, I guess. And it’s challenging, which curbs your association with pain and gain. Who knows.

So everyone that's "conditioning" and "finishing" is running around with their head cut off, doing whatever the hell makes them tired.

Is this the goal of training? To tire yourself out?

Anyone can train to fatigue. Just go do something until you collapse. Voila.

But shouldn't there be more to it than that?

More on conditioning

Did you know that adaptations associated with HIIT and other lactate training methods level off after a few weeks?

This is like lifting weights and hitting a wall on your program. Imagine training for five weeks and making *zero* progress. Well, that's what happens when your goal is generalized into "conditioning."

After about four weeks, you're not really making progress, you're just doing something to do something. Few people lift weight without care for progression. Yet that's exactly what happens in the conditioning and finishing realm.

CHAPTER OF SPORTS CONTEXT

Aerobic Training and Repeat Sprint Athletes

The following section seems solely for athletes. But I hold the philosophy that everyone—even general fitness enthusiasts—should train more like an athlete. So saddle up and learn something, even if you're not aiming to be the next Michael Jordan.

Aerobic training became vilified when it was linked to decreasing power production. And if you remember back to the purgatory speech, aerobic work is slow enough that it doesn't interfere with speed reserves as much as everyone believes.

Even with that, however, intensively training the aerobic system *will* diminish power production. It's the nature of all training and life. You can be a jack of all trades, but you will be a master of none.

But don't get discouraged. Developing the aerobic system doesn't mean turning into a slow slob. Sports like soccer, football, and hockey all require a lot of aerobic capacity. Yet, there are many athletes in these sports that are fast and explosive.

Is the best skater in hockey going to win an Olympic short track skating gold medal? Probably not. Can he or she be fast and graceful

enough to be downright inspiring? Sidney Crosby, anyone? (Yes, I'm from Pittsburgh. Hate me.)

Likewise, Chris Johnson is a monster on the football field. Is he going to win a 100m Olympic gold medal? Probably not. Is he still fast and insanely explosive? Absolutely. So don't worry.

Even the legendary sprint Coach Charlie Francis had his sprinters develop the aerobic system.

The "easy" sports

There are sports that clearly fit into one energy system. The 100m, shotput, discus, javelin, etc…are all maximum-effort, short-term, power sports (alactic anaerobic). The marathon runs are aerobic.

Team sports rarely fall solely into *one* of these categories. Football is a great example. People think football is purely alactic anaerobic. Plays only last 6 or so seconds, after all. But this logic is like saying a javelin thrower is as "in shape" as a football player.

It's not so much about the immediate length or speed of movement but rather sustaining it over a long period of time.

Remember the study by Gaitanos and colleagues that showed sprints repeated over time with a capped rest period resulted in a 27%

decrease in performance? That's what we're dealing with.
The *true* alactic, anaerobic sports don't have that incomplete rest period.

Think of Usain Bolt running the 100m. After he won the gold medal, if he was to go back to the starting blocks and run *another* sprint, do you think he would rebreak his record?

This single bout with long rest is what makes the 100m so alactic anerobic power based. These athletes give their all *one time*. Football, as with most team sports, require repeated explosive efforts over time.

Capacity vs Power

Let's say Bolt ran a 9.58, showcasing great power. If he were to run another 100m after one minute of rest, his speed would drop. Then the next one, drop. Then the next one, drop.

That can't happen in football. It's much better to run a solid 10.3 over the duration of the game, sacrificing initial power for consistency.

Bolt is more concerned about absolute, all out, one-time power.

Footballers are more concerned about power with capacity—the ability to sustain a high intensity effort over time.

So true power athletes are your Olympic weightlifter, 100m sprinter, javelin thrower, shot-putter, etc. These athletes give a maximal effort and take a long time to recover. Someone with great alactic

power *and* capacity, however, can replicate intensive efforts over time—a baseball pitcher, for example.

A pitcher with amazing alactic power will hit triple digits on the radar gun. But if their capacity sucks, their speed will diminish with each successive throw. So a pitcher with good capacity and decent power is more likely to be a starter. One with a lot of power and shady capacity, however, is more likely to be a closer.

Sprinters *Do* Jog

Let's go back to the bit about the side-by-side comparison of a marathon runner and a sprinter. From an outside glance, it appears training like a sprinter is much better than training like a marathoner when it comes to getting big and ripped.

But that's all it is: an outside glance. And there's an even greater problem: *everyone assumes that sprinters never jog*.

Charlie Francis, one of the best sprint coaches of all time, had his sprinters train aerobically. He even went as far to say that it was this low-intensity aerobic work—not the sprinting—that was responsible for sprinters carrying a low body fat.

Here's more on sprint training from Lyle McDonald:

> *"There isn't a single elite 400m program that doesn't use at least 3 days of low intensity, high volume tempo work (some even opt for things like a 20 minute run on grass). Their volumes are higher than [100m] sprinters, but generally similar intensities for the majority of the time. Their fast stuff comes with long rests and couldn't really be considered interval stuff, IMO, anyway (3x350m with 10-15mins rest for the coaches who like LOW rest periods)."*

Another popular sprint coach, Barry Ross, has his sprinters develop the aerobic system too, albeit with a high-intensity walking technique.

CHAPTER OF THE NERVOUS SYSTEM

Developing the aerobic system has a positive effect on the nervous system by making us more parasympathetic-dominant (also known as carrying a vagal tone).

The parasympathetic nervous system is known as our “rest and digest” control center because it’s responsible for relaxation.

Can’t sleep? Performance sucks? Parasympathetic nervous system is probably out of whack.

The easier your parasympathetic nervous system kicks in, the better off you are. You recover from stressful events faster, which means you can perform at higher levels with consistency and frequency.

A lot of world class athletes have dominant parasympathetic nervous systems, which gets them in trouble because they don’t stress themselves beyond necessity. This shows when they apparently “slack off” during practice. But if they’re good enough to compete with the rest of the team while only playing at 80% of their capabilities, they aren’t going to use the extra 20%.

And high-strung people aren't organizing dog fights or carrying around illegal firearms. You have to have a calming demeanor to think that everything will always work in your favor.

Turning yourself off is just as important as turning yourself on. Ever notice how some athletes play a ton of video games? After practice, they go home, rest, and escape from it all. Personally, I'd prefer you do something more useful like read a book. But everyone has their preferences.

Taking naps and falling asleep quickly are hallmarks of being able to suppress your sympathetic nervous system to expedite recovery.

"If there's a skill that's overlooked," Dan John once said, "it's the ability to nap when necessary. If my athletes struggle with getting or staying asleep, we're going to have issues down the line. Training oneself to relax is the first step."

Training yourself to relax is training yourself to become parasympathetic-dominant—part of aerobic training's job description.

It's like this: a developed aerobic system kick starts the relaxation and recovery process. More time recovering means more recovery.

On and off switch

There are many branches and pieces to the nervous system. But we only need to concern ourselves with two: the sympathetic nervous system (SNS) and the parasympathetic nervous system (PNS). They work like opposing pistons. So when one is working, the other one is inhibited. One is on, the other is off.

The sympathetic nervous system is your fight-or-flight response. It kicks in under times of duress. It releases adrenaline and all of that fun stuff. It increases heart rate, heightens senses, and gets you prepared to mobilize. If you see a bear in the woods, your sympathetic nervous system is going gangbusters.

The parasympathetic nervous system, however, is more of a rest and digest kind of production. It kicks in during times of relaxation. It calms, lowers heart rate, and recovers the body. After Thanksgiving dinner, your parasympathetic nervous system is in heaven.

Two systems, two functions, working in opposition.

Stress

During times of stress—traffic, break up, even physical activity—the sympathetic nervous system kicks on. The heart rate boosts and you have heightened survival senses.

Because life is so demanding, the majority of people in the world are constantly tapping into their sympathetic branch. The alarm clock sucks, the commute sucks, the boss sucks, the work sucks, the commute back sucks, and it isn't until 7-8PM that people really "unwind." And even then, thinking about work the next day amps the SNS again.

Idling

The term I use for people that are constantly activating their SNS is "idlers," because, like a car idling, they never turn off but they never really move. This isn't good. An idling car pollutes the environment, doesn't get anywhere, and eventually runs out of battery life.

Finite

Stress is finite. The body can only handle so much before it breaks down. This is what *Why Zebras Don't Get Ulcers* is about. (I highly recommend reading this book, if you couldn't tell.) Stress, when out of control, causes diseases.

Idling constantly taps into the stress response. Stress is finite. Idling is stressful. Idling is finite.

You will run out of batteries.

Nervous Tones

Because of the yin and yang between the SNS and PNS, you can describe people as having a certain "tone."

People with an overactive SNS are high strung and always stressed out. But when you're on the recliner and not too stressed, your heart rate slows. The PNS takes over. And when this happens, you have a "vagal tone."

The vagus nerve is what's responsible for slowing both heart rate and blood pressure. Vagus nerve lends itself to "vagal," which is where "vagal tone" comes from.

So calm, relaxed, and peaceful means parasympathetic joy, meaning strong vagal tone.

You can say the vagus nerve is responsible for maintaining a semblance of homeostasis (or allostasis) in the body to combat stress. Sometimes in the medical field, the actual neural capacity of the vaugus nerve is tested to see how well the body is doing in relation to its baseline.

Allostasis vs homeostasis

Homeostasis is an old idea of there being one set optimal baseline with only one aspect to regulate. Sort of like an air conditioner kicking on. The thermostat senses the heat and turns the air conditioner on.

Allostasis, the “new age” homeostasis, says that baselines vary depending on conditions. For instance, what's optimal for a baseline will be different when sleeping than opposed to when climbing Mount Everest.

In other words, turning on the air conditioning depends on more than the temperature. It depends on where the sun is, if there’s cloud coverage, if the wind is blowing, what clothes you’re wearing, how humid you are, and a bunch of other factors. There isn't one set controller.

Likewise, there are many things that can be done to fix an uneven state of allostasis. So back to the air conditioning example: If excessive heat is the problem, more can be done than turning on the air conditioning. You can open windows, you can take a cold shower, you can walk around naked, and you can do a lot more things to control the problem

So the concept of homeostasis is cool—that there's one optimal level—but allostasis is more fitting and practical.

What does it mean?

Aerobic training increases vagal tone. We know aerobic athletes have lower heart rates at rest. This is because they are very parasympathetic-dominant. Their body knows how to shut off when it's time to shut off. No idling here.

And, as it turns out, great athletes have great control over the SNS and PNS. The body is a smart organism. Wasting energy is bad. Idling wastes energy. Elite athletes almost never waste energy, so they almost always carry a vagal tone *unless* they are competing. This leads to optimal performance *and* optimal recovery.

If you activate your sympathetic nervous system too early prior to a competition, you're going to be wiped out before the actual competition.

Remember being a kid and being so giddy about something that when it actually came, it wasn't exciting? Or perhaps getting so jacked before lifting a new personal record that your energy was zapped before touching the bar?

Equally as important, once you exercise or work out, it's important to shut off the SNS as fast as possible. The faster the SNS shuts off, faster the recovery process kicks in.

The Electric Car

Imagine your body as an electric car. When the SNS is activated, the battery in the car loses charge. When the PNS is activated, the battery gains charge.

Turn the car on when it needs to go somewhere.

Make sure it's turned off at all other times.

People that have poor aerobic development are terrible at managing their battery. They idle.

This related to average joes *and* pros. Average joes stress much more. Their battery is constantly dwindling. Poor aerobic development

compounds the problem. They have a more difficult time hitting a vagal tone. And even when they do get there, because the aerobic system is so inefficient, the recharge isn't as effective as it should be.

The better developed the aerobic system, the faster the car charges. Terrible aerobic development doesn't help the charge. So it's not only about hitting the vagal tone, but it's also about how effective it is when you get there.

An overactive sympathetic nervous system—a pitfall of bad aerobic development—destroys performance. Olympic athletes and even those in special operation military forces all have stronger sympathetic signals during performance and higher parasympathetic signals during rest. They know how and when to turn on and how and when to turn off.

Great strength coach Buddy Morris once recalled of two athletes. One was of a high level. The other, not so much. The day after competition, the high level athlete was much better recovered and ready to go. The other one, well, his body was still in shock.

Great athletes know when to shut down and recharge. Think back to when you did something so memorable that you had trouble sleeping because it replayed in your head while you laid in bed. As crazy as it sounds, this is what idling is and it hinders recovery.

An extreme example comes from the military. Take two people: one of much experience, another with none. Put them on field of battle. Who will be more shaken after it’s all said and done?

So, in essence, a developed aerobic system kick starts the recovery process. And when it's started, it also makes the process much more efficient and effective.

For those interested in the health side of things, having a "dominant" vagal tone means being overall less stressed. Being less stressed increases the quality of life. Again, I'm not Robert Sapolsky, but he makes a compelling argument about excessive stress being deadly. And us humans willingly take it on.

CHAPTER OF CONCLUSIONS

Aerobic Training and Health

A developed aerobic system:

- Kick starts the regeneration process
- Enhances the recovery process
- Promotes relaxation
- Reduces stress
- Increases health markers

In the long run of aerobic training's life, it has been associated with doing such for the body:

- Lowering heart rate
- Lowering blood pressure
- Bettering cholesterol levels
- Helping depression
- Helping dementia
- Helping Parkinson's patients
- Improving sleep

Stress is a causal link in the following:

- Heart Disease
- Cancer

- Alzheimer's Disease
- Diabetes
- Arthritis
- Stroke

And can impact the following systems and processes:

- Cardiovascular System
- Digestive System
- Immune System
- Reproductive System
- Growth and Development
- Sleep
- Memory
- Pain

Aerobic work doesn't equal distance runs

As this eBook closes, I want to leave you with one last idea: aerobic training *is not the same as running marathons*. This could be the most perpetuated and dangerous myth of them all.

Distance running is a form of aerobic training. But not all aerobic training is distance running. It's like that whole "all squares are rectangles but not all rectangles are squares" bit.

Joel Jamieson points out that, for most people, the aerobic magic happens when the heart rate hovers between 130 and 150 bpm. And, for most of us, aerobic training shouldn't need to last more than 20-30 minutes.

The prime example of non-long slow distance aerobic training is that of tempo runs taken from Charlie Francis. Tempo runs are basically *low* intensity intervals.

Instead of sprinting at max speed, jog at 60-70% speed for a certain distance until your heart rate reaches the upper aerobic threshold. Rest, or do another lower intensity activity, until the heart rate returns to the lower end of the threshold. And then do it all over again.

It's not long slow cyclical distance running because there are breaks built in. Filler exercises can even be done to further break the monotony .

Aerobic training can also be a circuit of exercises like curls, push-ups, body weight squats, and chin-ups. Jump rope, even. Just respect the aerobic heart rate range.

Way back, nearly all athletes performed aerobic work. Bill Starr writes about running in *The Strongest Shall Survive*. Thomas Kurz in *The Science of Sports Training* notes that Weightlifters jog in the early off season. Old school fighters were known for doing road work. Hell,

even Ricky Bruch, the eccentric discus thrower, jogged. Maybe it's time to reconsider aerobic work after all.

One Last Word

I cite research against HIIT in this eBook. Research was cited against aerobic training during the HIIT boom. Research is everywhere. Five years ago, coffee and eggs were evil. Now, they are both superfoods.

Beware out there. For the most part, research is useless. Not because it's actually useless, but because people believe what they want to believe, regardless of research. This is especially true in the health, fitness, and sports space.

When a study about red meat being unhealthy pops up, no one cares. Everyone knows (because we just know these things) that the study is flawed. Red meat is natural. Caveman ate red meat. There's no way it is detrimental to our function.

When a study about half squats being inferior to full squats pops up, no one cares. Everyone knows the study is correct. No one cares about the research design, yet we're apt to join the hater parade. Full squats are obviously superior. Even babies squat. Never mind that they are babies and we are grown adults. Maybe we should start pooping our pants and vomiting on ourselves at random intervals too.

With the red meat study, there's outrage. It's contrary to our beliefs. Something must be wrong.

With the squat study, everyone stands in the "I told you so" line. It's congruent with our beliefs. Something must be right.

Anytime a study confirms prior beliefs, we don't care if it was done "correctly."

The correlation and causation grenade is quickly thrown these days, especially if the study isn't in line with our beliefs. To give you an example of correlation and causation, imagine that every day you wake up and order a large Starbucks at 8:00AM.

At 10:00AM, you're exploding your bowels.

And let's just say this happens every day.

We can then say that because your bowels become infuriated at 10:00AM, the time 10:00AM is responsible for your unfortunate accidents.

But that's just a correlation. What's actually expelling last night's dinner from your intestines is the venti Americano with three espresso shots.

By the way, has anyone really taken a look at the recent coffee studies? Why is the magic bean suddenly a superfood? Ten years ago it was the plague.

Hell, I know I haven't looked at the studies. I like coffee. And if I hear it's good, I don't want to argue my mild addiction. I want to live in peace knowing every morning I'm doing my body good.

But if a study is published putting coffee in a negative light, prepare for uproar. "It's a correlation," we'll say.

Yeah, only because we (or, I guess, "I") want it to be.

And that's the problem. I'm fairly convinced that, no matter what, we only believe what we want to believe.

Natural food? It must be good. Acai berries? Sign me up for that shit. Poison ivy tea leaves? Natural? Must be good. I'll take a some of those, too.

People believe what they want to believe. They always have. And they always will.

When that research comes out about aerobic work, HIIT, or whatever, keep an open mind. But don't ride the pendulum too far.

So I know reading this and taking this in seems somewhat radical. And I know the things that are popping through your head.

"Well, gymnasts don't train aerobically."

"Well, Olympic weightlifters and powerlifters don't train aerobically."

So what? Unless you're trying to maximize your ability to perform one maximum explosive burst with a long rest period, is there a reason *not* to train the aerobic system?

And throw all of the anecdotal thoughts out of your head. There's a good chance that it's been a while since you've actually played football, basketball, or soccer. So just go and play.

My "ah-ha" moment came when my friends asked me to play a game of pick-up football. Back in high school, I played every weekend with no problems. But I was four years removed from those experiences.

Ten minutes into the game, my hands were on my knees, my breathing was heavy, and I was struggling. My muscles weren't burning, it was deep huffing and puffing. And the deep huffing and puffing greatly reduced my ability to showcase the power and strength that I had built up.

So, studies aside, I encourage you to just go and test this out for yourself. It's the best way to learn.

> *My observation is that the doers are the major thinkers. The people that really create the things that change the industry are both the thinker-doer in the same person.*
>
> *Leonardo was the artist but he also mixed his own paints, he also was a fairly good chemist, knew about pigments, knew about human anatomy. Combining all of those skills together, the art and the science, the thinking and the doing, resulted in the exceptional result.*
>
> *And there is no difference in our industry – the people that have really made the contributions have been the thinkers and the doers.*
>
> *Usually when you dig a little deeper, you find that the people that really did it were also the people that worked through the hard intellectual problems as well.*
>
> *-Steve Jobs*

Last words

This eBook was written to help those looking to train for their sport, not to down HIIT. HIIT is a quality method that certainly has its uses under certain circumstances. Like mentioned, my goal isn't to swing the pendulum to the aerobic extreme. That would defeat the entire purpose of writing this.

I'm all about learning. And I know people have different ideas, some of which refute mine. That's fine. I respect that. **We're all in this together**. The only way to learn is to throw ideas out there, let them bounce, and gather what trickles back.

So this is me chucking. And I hope it gave you something to think about.

If you found any value in this, I'd really appreciate it if you could share this eBook. (Links at the bottom of the page.) This eBook is totally free. Who doesn't like totally free stuff? And this will help spark conversation and perhaps provide a little value to others. So, again, I'd truly appreciate it.

Thanks for reading.