

Take a Ride on the "Fast Train" and Learn The Secret of Better
Endurance and Vitality on Less Time



Pureformance FastTrain

Pureformance Strategies, 100% designed for your benefit

Having fun exploring, lowering stress, taking on challenges and increasing results are all a big part of our culture here at Pureformance. FastTrain incorporates all of the above – while helping you build vitality, endurance and improving your performance.

Pureformance founder Scott Price adapted these strategies from endurance frontiersmen Tudor Bompa, Dr. Phil Maffetone and James Autio; Price used FastTrain to compete and win as a professional cyclist while investing about 1/4 of the typical weekly training time.

FastTrain allows you to free up hours of training time by simply manipulating when you fuel and the intensity of your training. The choice is yours! Take a look at some benefits of fasted training.

Primary Benefits of FastTrain Over Traditional Long Slow Distance Training
Time Efficient. Perform better on less time
Recovery. Less training time means more time before your next session, not to mention gaining space for an extra hour of sleep! Gain 3 hours of recovery per 24 hour period - a 12.5% increase
Lifestyle. While exercise time spent (as long as you are exercising) might not directly reflect major health concerns, stress does **Scott, I'm not sure what this means 😊**. Less training time means more energy available to meet life's demands and responsibilities
Energy. Extreme endurance training is simply taxing. Why be on the constant edge of breakdown if you can still get the results you want?

Building. FastTrain's controlled duration and intensity prevents excessive cellular stress/tissue breakdown. This equals more uptime, better adaptation and less unsustainable training collapse.
High Performance Specific. FastTrain's target training intensity better reflects average demands for efforts / output / pace in high performance efforts and competition.

What is FastTrain?

A training regimen that's both super-efficient and über-effective may seem like the holy grail of exercise: Incredibly desirable but guarded (in a forgotten, dark, spider-web-filled, Indiana-Jones-esque temple...) i.e., just not attainable in the real world.

If, like most of us, you're already trying to achieve balance between your work and family obligations, fitting in time for training and exercise can be daunting. That's where fasted movement (good old exercise) comes in.

But why *fasted* training – and why is fat so important, you ask? [The Gatorade Sports Science Institute](http://www.gssiweb.org/Article/sse-59-fat-metabolism-during-exercise-new-concepts) (Source: <http://www.gssiweb.org/Article/sse-59-fat-metabolism-during-exercise-new-concepts>) put it quite eloquently:

“BODY FAT STORES Adipose Tissue

Fat is stored in the body in the form of triglyceride, which is comprised of three fatty acids attached to a molecule of glycerol. The fatty acids consist of chains of carbon atoms with hydrogen atoms attached. There is more stored energy (9 kcal) in a gram of fat than in an equal weight of carbohydrate (4 kcal/g). Typically, about 50,000 to 60,000 kcal of energy are stored as triglycerides in the entire mass of all of the adipocytes throughout the body. Obviously, there will be more energy stored in an obese person and less in an individual who has little body fat (Figure 1). Approximately 100 kcal of energy are expended per mile of walking, so most people have sufficient stores of triglyceride energy to walk 500-1,000 miles. Because this large amount of energy is stored in a relatively small mass of triglycerides, they provide a marvelous way for people to carry fuel as they move from place to place. In contrast, if all of this energy were stored as carbohydrate in glycogen, water molecules, which are very heavy, would be bound to the glycogen molecules, resulting in a total energystore weight of more than 100

pounds. Undoubtedly, the storage of fuel as triglyceride has served nomadic human beings very well in the course of evolution when food was scarce.

Intramuscular Triglyceride

Triglyceride is also stored in droplets directly within the muscle fibers (intramuscular triglyceride), placing this fuel in close proximity to the site of oxidation in the muscle mitochondria. Intramuscular triglyceride accounts for 2,000-3,000 kcal of stored energy, making it a larger source of potential energy than muscle glycogen, which can contribute only about 1,500 kcal. Unfortunately, because it is technically difficult to measure intramuscular triglyceride from muscle biopsy samples, relatively little is known about the rate at which intramuscular triglyceride can be oxidized during exercise or how this energy store changes in response to acute and chronic training. It is clear, however, that intramuscular triglyceride can provide energy for intense exercise at less than one-third the rate attributed to muscle glycogen. Therefore, during strenuous training or competition energy from intramuscular triglyceride should be considered as supplementary to that supplied by muscle glycogen.”

****I think this is fine as long as it's completely clear that it's a quote. You can add the hyperlink and set it aside in quotes and/or indents – both if you want -- to indicate that it's a direct quote. OR perhaps place it within a box, or some other visual that really sets it apart.****

So what does this mean for you? In a nutshell, your natural gold mine – your source of energy for life and endurance – lies in tapping your fat metabolism pathways. And the most effective way to do this? Placing your body in a state where it has to rely on this **endless** energy supply, rather than a steady stream of blood sugar from food and energy drinks... sorry Gatorade!

Also known as fasted training, FastTrain represents an extremely time-efficient, effective and powerful way to gain endurance, improve your cardiovascular health and increase your vitality. Plus, FastTrain's focus on an intensity level closer to the average of a running, cycling or triathlon event reflects the demands of racing more realistically than traditional training, better preparing you to kick up your performance.

FastTrain takes less than half the time of traditional long slow distance (LSD) training. Think of it as a smart, specific way to get the results you want, complete with perks like longer and more effective recovery periods, less detrimental tissue breakdown, less dehydration, and more time to spend doing all of the other stuff you need – and want – to do!

One realistic consideration: While this style of training optimizes your oxygen-based metabolism pathways, the lower training volume doesn't prepare you as well for muscular endurance. For example, if you train in sub-2-hour running sessions and get incredibly fit, fast and efficient, you could still slow to a crawl in a 10-hour-long endurance event because your legs give out muscularly. So make sure to test the entire scope of your fitness by [knowing yourself](#) (link here?) through doing periodic test training sessions of at least 75% of your goal duration / event.

Here's how FastTrain works.

FastTrain sessions must take place while your body is in a fasted state – so you'll work out either first thing in the morning before you eat breakfast, or later in the day after a minimum of three hours without any caloric intake. Why is this important? Because training in a fasted state forces your body to draw energy from stored fat, rather than from whatever calories you just consumed. The key to endurance power is how efficiently you metabolize *intramuscular* fat stores (not belly fat).

Imagine how liberating it will feel knowing that your body has tapped into its own integral source of energy – a source that grows stronger the more you use it!

During FastTrain, hydration is essential, so you'll drink at least one large bottle of water per hour during your workout session. A hydrated body utilizes the most appropriate energy sources in the most effective way.

Another significant benefit of fasted training is more time for recovery. It may not be common knowledge, but proper recovery from training is actually what makes you get stronger; training depletes, dehydrates, fatigues and breaks you down at the cellular and muscular level. During recovery, your body heals, adapts, builds and re-builds.

FastTrain requires shorter training sessions, expends fewer kilojoules of energy per aerobic building session, and provides more recovery time than traditional/LSD training – all of which lead to big jumps in performance!

Over time, fasted training leads to enhanced aerobic development or building, as well as improved endurance. And, as compared to traditional/LSD training, FastTrain leaves you less dehydrated and less depleted, resulting in greater energy and vitality. Best of all, shorter training sessions mean more time to spend with your family, to be productive at work, and simply to enjoy yourself!

Sound good? Here's how to do it.

How Do I Make FastTrain Work for Me?

First, find your target heart rate (Target HR*). I like Dr. Phil Maffetone's "180 Formula," which is:

- $180 - \text{Your Age} = X$
- $X + \text{or} - 5 \text{ HR} = \text{Your FastTrain Target HR}$
- For example, a 43-year-old would be: $180 - 43 = 137$
 $137 \text{ bpm} + \text{and} - 5 = 132 - 142 \text{ bpm FastTrain Target HR}$

*Training using Target HR values allows you to account for a number of variables, such as fatigue, dehydration, low energy and outside temperatures.

Once you obtain your TargetHR range, it's time to wake up and do some fasted training! Start with a 60-minute endurance training session in your sport of choice *or* a training session at 1/4 the duration of a long endurance session, whichever is shorter.

Important note: Ingesting food undermines the benefit of this training style. Fueling once you're into a FastTrain session is OK when needed, as you've already tapped into the desired metabolic pathway.

When your 60-minute session ends, keep hydrating with water but abstain from any caloric intake for another 60 minutes. This way, you'll gain 2 hours of fat energy system isolation, on only 1 hour of training.

Maximize the benefits further by re-fueling after the 60-minute wait period with foods that contain a high percentage of healthy fats. Choices might include:

- Avocado
- Peanut or almond butter
- Nuts and seeds

These beneficial foods stimulate your body to utilize fats more efficiently, as well as enable your aerobic system and endurance to adapt. Choose whatever you like for your next meal or snack.

Now comes the intangible – but just as important – stuff.

Along with the physical methodologies inherent to the FastTrain method, it's essential to focus on and recognize the essential role of [intent \(link here?\)](#). While you're training, visualize your true intent: What do you want to get from your training? What's the big picture that you want to realize?

If you perceive training as jumping through hoops, you'll end up getting really good at jumping through hoops – but you may not realize your full potential or achieve transformation. Without vision and intent, you will not develop in the same way as someone who does connect to that realization – even under the same training stimulus.

[Fasting also helps us break the mindset that how we feel is a reflection of what we have just eaten: That's simply not the case. Fasting can allow you to experience vitality and clarity that breaks through conventional thought, all to your benefit.](#)

Example applications of FastTrain: (Scott Will Add)

Ride

Run

Triathlon

Cardio at the gym

Playtime with the kids

Visualize your path and know that you will achieve your intent. Above all else, enjoy yourself along the way!

- **Body.** Fasted training made a huge difference in my cycling career. With as few as 8 hours of focused and disciplined training a week, I was able to compete and defeat athletes that trained more than three times that much – giving me the opportunity to have a balanced training-family-work-life schedule.
- **Mind.** Tired of thinking of exercise and training as a burden? FastTrain switches up your game by providing results in less time. You *can* see

results in a time-efficient way that promotes a balanced life – and still leaves room to enjoy long endurance days or adventures, *when you want them*.

- **Spirit.** You can achieve increased vitality, energy levels, concentration, wellness and happiness by simply moving as we are designed to move. With FastTrain, you can put in as few as 20 minutes of cardio, and continue to reap the benefits by remaining fasted while you work, play with your kids, or even go shopping.

Additional Resources:

“Digital Mantrap” by James Autio: An in-depth exploration of how humans stem from our “Woolly Mammoth Hunter” roots and how to avoid the pitfalls of “Digital Man Disease.”

“Training for Endurance” by Mr. Phil Maffetone

For the science minded: Except from leangains.com by Martin Berkhan

The new study

Results of a [new study](#) on fasted endurance training was released just a few weeks ago. The primary aim here was to test the hypothesis that fasted state endurance training would yield greater improvements in fuel utilization and boost muscle glycogen storage efficiency. A hypothesis that was based on results seen in prior studies on this topic. The secondary aim was to see if the effects differed between genders, since men and women favor slightly different fuels during exercise. Men tend to utilize more glucose, while women tend to burn more fat.

This study lasted four weeks and had all subjects cycling 25 minutes at 65% VO₂Max five mornings the first week. The duration was then increased by 25 minutes per week, so that subjects were cycling 100 minutes in the final week.

The cycling was either done in the fasted state or one hour after a cereal-based breakfast (1.5 g carbs/kg). In weeks three and four the fed group also received 30 g of maltodextrin during training. The fasted group received the breakfast, and the maltodextrin, *after* training.

Week 1, fasted: 25 min cycling followed by breakfast.

Week 2, fed: breakfast followed by 25 min cycling.

Week 4, fasted: 100 min cycling followed by breakfast and maltodextrin.

Week 4, fed: breakfast followed by 100 min cycling and maltodextrin.

With regards to the diet maintained outside the laboratory, weighed food records was collected to ensure that potential differences could not be explained by differences in diet. This was done pre-training and in the final week. The findings showed that calorie intake increased in both groups, with an increase coming mainly from carbs and protein. But no difference in total calorie intake or macronutrient intake existed between groups.

The results

After the study, the researchers summed up the improvements in a few relevant variables related to performance, muscle glycogen and fuel utilization. I'll give you a brief rundown of what each of these variables means before showing the changes in the fasted and fed groups.

VO2Max: "The highest rate of oxygen consumption attainable during maximal or exhaustive exercise" ([Wilmore & Costill, 2007](#)). This is a rough measure of fitness.

Both groups started out with levels around 3.5 liters per minute (l/min), which is close to standards for untrained individuals. To put this into perspective, elite endurance athletes have about twice that capacity. One Norwegian skier topped [this chart](#) at 7.3 l/min. A more accurate measure of VO2Max is ml/min/kg, but in this study l/min was noted.

Fasted: +9.7% increase

Fed: +2.5% increase

The fasted group increased their VO2Max significantly more than the fed group. Interesting.

It's also noted that "Whilst peak power increased in both groups, there was a strong tendency for FAST to improve their peak power more than FED".

Muscle glycogen content: This is measured in millimoles per kilo dry muscle and shows how much glucose is stored in the muscle. The sample was taken from vastus lateralis, a portion of the [quads](#), since this was the main muscle exercised during the cycling sessions.

Fasted: +54.7% increase

Fed: +2.9% increase

As you can see, the fasted group showed a dramatic increase in muscle glycogen content compared to the fed group. It's almost too good to be true.

Citrate synthase (CS): This enzyme is critical for the initiation of the citric acid cycle, which regulates the mobilization of fat and converts glycogen into glucose for use during exercise. Think of it as a marker for fuel utilization efficiency.

Fasted: +17.9% increase

Fed: +19.1% increase

While the differences between groups, on average, did not show any significant differences, these appeared when comparing the results obtained from the women with those of the men. When this comparison was made, fasted training was found to stimulate significantly greater increases in CS in men (+35%) than in women (+10%).

On the other hand, fed training stimulated significantly greater increases in women (+25%) than men (+10%).

Men attained a more much better response from fasted training, while women received a more favorable response from fed training.

3-hydroxy-CoA dehydrogenase (HAD): Also a marker for fuel utilization efficiency, but this one is specifically involved in fatty acid metabolism. Think of it as a fat burning enzyme.

Fasted: +3.5% increase

Fed: +9.1% increase

As was the case with CS, the mean increase above is a bit misleading, since there were big differences in between fasted and fed groups depending on gender.

When looking at gender differences, females showed a stronger response than males (+5% fasted and +25% fed). This goes in line with prior studies which show that the HAD activity of female muscle is more responsive to the same training stimulus. Males in both groups showed only subtle change that was deemed non-significant (+3% fasted and -10% fed). However, fasted training seems to provide a slight edge once again.

Reference:

Pubmed Adaptations to skeletal muscle with endurance exercise training in the acutely fed versus overnight-fasted state.

<http://www.ncbi.nlm.nih.gov/pubmed/20452283>