

The Primal Blueprint Podcast – Episode #29: A Case Against Cardio, Part 2

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Brad: Welcome back to the Malibu Studios. I am your host, Brad Kearns, back with Mark Sisson, and Mark, we promised last time that we would get in to this a little bit more...this chronic cardio topic after you read that nice essay.

Mark: Yes, I think it is important to get into the specifics and some of the details because there is still that backlash of: Mark you are beating a dead horse here. That chronic cardio really isn't an issue for a lot of people. The fact that as a youth I trained hard doing 100 miles a week and went hard just about every day was sort of an anomaly. People don't do that any more. They might have followed {Arthur} Lydiard or {Percy} Cerutti [Old time distance running coaches from New Zealand and Australia, respectively] or some of these other programs. The fact is that anybody who is running more than 35 or 40 miles a week or anybody who is cycling more than 200 miles a week, even as a recreational athlete, ought to start paying attention to some of the signals here.

Brad: [00:01:38] Including the other stress factors here. When you coached me, you would always mention that big picture where jet traveling across time zones is extremely stressful and you have to counter that with reduced training volume.

Mark: Yes it is interesting about the jet travel because I think we talk a lot about sleep being important in terms of just general health, but sleep is tremendously important to an athlete because that is when the recovery process really kicks in and travelling across multiple time zones as many athletes do, really impacts sleep. So there you have not just your health as an average citizen being affected by lack of sleep but now your recovery as an athlete is being affected by lack of sleep and by a massive disruption in circadian rhythm. So it requires some steps like melatonin to address your internal clock to get on a program of sleeping in a new time zone and things like that. Again all of this is just the strategies that we need to look at and incorporate if we want to maximize our fitness level and our health at the same time. That is really the key here. I can train you to be fit and I can over train you and you'll still be fit enough to race fast but you won't be healthy. What I am looking for, for myself, and I hope for most of the people that come to Mark's Daily Apple and read The Primal Blueprint is: "How can I be as fit as possible and still be as healthy as I can possibly be?"

Brad: The jet travel is a great example but also your busy hectic schedule like important meetings on a particular day or a deadline week at work. These things have to be weighed on the same side of a balanced scale as whatever mileage you are putting in. So even if you tell yourself a story like well I have cut down my marathon training from 50 miles this week to only 30 because I have had non-stop meetings and deadline pressures that all has to be thrown into the mix on the same side with sleeping and rest and relaxation on the other.

Mark: Yes, those are all stresses and sometimes the body doesn't recognize one stress or the other because what it is responding to is an increase in cortisol and epinephrine and certain other hormonal changes...maybe a decrease in testosterone. At some point the body might not even know whether the stress came from a meeting that ran late or an interval session that went two internals too long.

Brad: [00:04:17] So many roads lead to burnout is what you are saying.

Mark: Exactly. We get back to this notion that the ideal way to train is to be so intuitive about it that you can have a planned strategy and a planned workout program and put in some key or breakthrough workouts but be so in tune with your body to know that maybe it is inappropriate to do the planned workout today based on how you feel based on what has been going on in your life the prior week. It is that sense of intuition of knowing when it is appropriate and when it is not appropriate to train that becomes probably the greatest skill, certainly in age group athlete or an amateur athlete can have.

Brad: [00:05:00] We can all admit that a dark rainy night in the winter time when you really should go do a workout and you kind of need to get a little boost or you don't feel like it right away. That is one thing but when you are talking about a breakthrough workout you have some different standards to ascribe to in terms of how rested and motivated you are, don't you?

Mark: We have talked about the breakthrough workout in other podcasts and we have talked about it in the upcoming book, Primal Endurance. But the idea that it only takes one or two significantly hard well-planned, strategic workouts to take you to the next level of fitness to break through the plateau is the point. So many people are stuck in their running at 7:45 per mile or they are riding at 20 miles an hour and they can't break through to 22 miles an hour plateau. Sometimes it takes backing off a little bit and being fully recovered and rested and then going out and shooting to go extra, extra hard in a breakthrough workout one time and if done right and if recovered from that workout, you can breakthrough that plateau and now you've reset your benchmark. Instead of 7:45 now you are running 7:30 a mile in all of your long training runs or races. Instead of riding 20 miles an hour, now you can maintain 22 miles an hour on your bike for an extended period of time. The irony is this doesn't happen from training hard every single day. It comes from picking and choosing specific and appropriate workout. Some of which are high intensity. Some of which are long steady very easy workouts and then planning that breakthrough day when you say, "I am fully rested. I am fully recovered. I am stoked. I am psyched. Today is the day I'm going to do it." Once you break through, you can maintain that with 40 percent of the effort it took to get there.

Brad: Right. So the term "breakthrough" is appropriate because it implies that you are rested and energized before it and ready for a break-through performance. Now, in contrast, (and this has happened at the last two PrimalCons) two separate individuals have come up to me and said, "So I do cross-fit six days a week and "..... and right there I'll stop them, wherever they are and say, "Look, if you are doing such a challenging workout six days a week, by definition, each of those workouts are mediocre."

Mark: Yes, you cannot possibly have a breakthrough doing that, because you are never fully recovered doing that, not just the previous day's workout but maybe from the previous two or three weeks of working out. This idea that in training to become fit, we have to always bear in mind what it takes to become fit. It takes a signal being sent to the genes to increase muscle strength, muscle mass, explosive power, whatever you are trying to accomplish. There are these biological signals that cause the genetic material to up-regulate certain enzyme systems that make you stronger as a result of that stress. But it requires backing off. It requires rest. It requires recovery time and if all you ever do is continue to accumulate stress and never allow the signaling and the growth as a result of that to fully be expressed, you just become this accumulation of stress and sometimes an accumulation of injury and over-training. So the six days a week of Crossfit is a great example where somebody has a body that is used to doing those motions but it never really breaks through to the next plateau because you haven't allowed it the time to recover and to grow from the prior experiences.

Brad: [00:08:48] Speaking of that and also speaking of intuition as we have discussed, everybody is different. I am reading a great book right now called "The Sports Gene" where they are talking about the genetic science of trainability and how some people can adapt and respond to training differently than other people and then some people might have a natural genetic gift that are different from other people. Like Jim Ryan, the great miler, was a mention there because in middle school, he was in the middle of the pack or back of the pack distance runner. He was terrible. But he became, in very short time, the greatest high school distance runner of all times and one of the great milers of all time. So when you are trying to

identify what training is right for you, it has to be totally individualized. You have to step out of the conventional wisdom, let's say, or the going rate for how many cross-fits per week work well.

Mark: Well, it comes back to how well you recover. I have said this for the longest period of time. For any given sports there are thousands, if not tens of thousands, of people who are probably genetically able to do the workout. But there are very few who have the ability to recover from those workouts quickly enough to go on to the next level and the next plateau. So in some regard this genetic differentiation has as much to do with the ability to recover from training as it does with the configuration of fast twitch and slow twitch fibers and body shape and size. For myself, I remember, Brad, when you and I were training together, I was the coach and you were the pro athlete, I recognized that I was already into my late 30s and I could do the same workout you could do. I just couldn't do them on a regular basis. You could do a hard ride on a Monday and come back easy on a Tuesday or a Wednesday. I could do that same hard ride on a Monday, but it would take me until Thursday or Friday, until my body had recovered enough to go do the next hard work that was going to be required for the breakthrough.

Brad: Yes, because you had to run along and go do an honest job while the rest of us went back home and took a nap. Big difference there. That is a good point. I want to say that a transformation point in my own career was when I went up and trained with Mike Pigg, who the top guy in the world and the hardest working triathlete you have ever met in your life, and I came home so discouraged. You were my coach again and I just said, "I could never last with this guy. He is super human." He wakes up at 6 a.m. and goes non-stop for nine hours. The only stop was for food and to pump the tires back up on the bike for the other 50 or 100-mile ride. I just thought that I would never be able to be in the same league as a guy like that. But you said, "Look, why don't you just compare to him on your best day rather than a single day." And I realized that I could focus and hone in on this breakthrough workout technique. I could put together a phenomenal performance one day a week as long as you gave me the next two, three, or four days of just easy moderate training.

Mark: Yes. [00:11:56] That brings us back to the discussion about cardio and the idea that the idea that if you are going hard every day and if you are asking your heart to pump to fuel the muscles doing an activity that is really not going to contribute to your overall fitness, but it may, in fact, lead to your over-stressed, over-exercised, over-trained demise. There is a danger there beyond not just getting fitter. There is a danger there of losing your health.

Brad: Right. Here is quote I want to pull out from your post in recent podcast essay. You said, "The silent epidemic of heart issues among endurance athletes is getting serious attention in the research community." This has been an issue of great concern for you and me particularly because it involves many of our friends and former peers on the elite triathlon circuit. I think the average athlete deserves to know what is going on here because it is deeply disturbing what is happening to some of the fittest specimens who ever existed on the planet. I don't want to be morbid here and go off and belabor this too much but I really think it is important to mention a few of these cases from the registry that you maintain of top athletes who have been stricken with heart conditions. Probably the most disturbing to me is Steve Larsen's story. This is one of the nicest most energetic guys you would ever meet and one of the most versatile and accomplished endurance athletes we have ever had in this country. He rode as a professional cyclist in the big European tours on Lance Armstrong's team back in that day and moved off of cycling became a pro mountain biker and quickly became a world champion in mountain bike racing. Then he looked for a new challenge and turned to triathlon, picked up the swimming and running. He became a world champion in the mountain bike triathlon category. And then in the Hawaiian Ironman he set an all-time record for the fastest bike split ever in Hawaii and on many other courses all over the tri circuit. When I was producing the World's Toughest Half Ironman in Auburn California, he came to my town one day and just blew the field away. He drove down from Bend, Oregon, and then drove back home after the race...back into his busy life and then at the age of 39, he was doing a track workout in Bend where he collapsed and died. He left his wife and four children. He was still racing at the elite level at the age of 39. Unlike you who were off into the working world, he was racing on the pro circuit and he had a real estate business up there and he had various sporting investments that he was managing. He was literally super human until he dropped.

Mark: That is really a sad story. I remember it very well. But, unfortunately, it is not isolated. Following on the registry is Ryan Shay, one of America's top marathoners. He collapsed and died at mile 7 on the streets of New York City during the 2012 Olympic Marathon trials. They found that his heart had literally exploded and he died instantly. One of my old time running rivals in Northern California, Brian Maxwell, at one time I think was ranked 3rd in the world. He was a 2:14 marathoner and a great guy. Interesting story. He was one of those guys who was working for an alternative to Gatorade on the run course so he and his girlfriend at the time, Jennifer, later became his wife, mixed up this goop of stuff that they would eat during the run. They called it Power Bar. Not that the rest is history, but Ryan became extremely successful as a businessman. He sold Power Bar to Nestle for hundreds of millions of dollars and at the age of 51, he collapsed with heart attack in the post office one day and the notion that his lifestyle earns some longevity benefit on him immediately evaporates.

Brad: So we are starting to get the point here, but I also want to mention several other elite multi-sport athletes who have been forced to retire in recent years due to bad hearts. Normann Stadler, who is the two-time Hawaiian Ironman world champion. He had emergency surgery one day for an aortic aneurysm then immediately retired from competition. Torbjorn Sindballe from Denmark, one of the fastest bikers ever in the sport and one of the leading Ironman contenders on the podium in Hawaii, also announced his sudden retirement in the last couple of years. Greg Welch, one of the greatest triathletes ever, no doubt, and is the athlete with the best competitive attitude and carefree personality. Just a great guy, a happy-go-lucky guy. He won world titles at Hawaiian Ironman. He won in Olympic distance. He also won duathlon. He was probably one of the most versatile triathlete ever. In his retirement...he has endured ten heart surgeries. He had to move to L.A. just to be closer to the hospital. I think he is still back and doing okay and is stabilized. He has had a terrible battle that started with the V-tachycardia incident on the racecourse in Hawaii when his heart started fluttering out of control. Hamish Carter, who is another guy with a great career. He won a gold medal in triathlon in New Zealand. He retired with a heart condition and when I was reading his story, they also mentioned three other legendary key endurance athletes with heart problems, including Peter Snell who was one of the great distance runners of all time. He was an Olympic gold medalist. Today he has made a name for himself as one of the top exercise physiologists at Dallas, Texas. I also have to mention Johnny G who is a good friend of mine with whom I trained out on the road. We did the long rides. He was the creator of Spinning, the indoor cycling programs. So he is a big celebrity in the fitness scene. He also finished the grueling Race Across America, non-stop bicycle race from coast to coast. He had emergency surgery one day where they installed a Pacemaker in his heart. The same thing happened with Southern California legend Mark Montgomery.

Mark: Let's not forget one of the great distance runners this country has ever produced, Alberto Salazar, who was coaching at the campus in Oregon where he coaches other athletes. He literally one day collapsed and died. He was dead for 14 minutes before the paramedics brought him back to life. He died a few more times on the way to the hospital. He is alive today and thank God for that. Again, the idea that he would be the fittest guy. He was an amazing marathoner with tremendous fetes of athletic prowess and endurance. Alberto also collapsed as a young man at the Falmouth Road Race in the late 70s and early 80s and, according to the legend, he was given his last rites at that race, too.

[00:18:37] It's crazy. This isn't just a male thing. One of the most accomplished female triathletes, Emma Carney of Australia, was forced to retire with a heart condition. I think she was 37. Maddy Tormoen, the world's female duathlon champion, had the same thing. I think she has a defibrillator installed. The important thing here is for the listener to reflect upon everyone who is mentioned here, and this is really only a partial list. They all had something in common. They were so good at pushing themselves to and beyond the limits of human endurance, forcing their hearts to be at a consistently high level for hours and hours, day after day, year after year. So again the heart has no say. The heart can't say, "Wait a minute. This is not a good idea." It is the brain telling the legs and the arms to start swinging and moving and working hard. And the heart just says, "Okay. I gotta do what I gotta do." At some point the heart muscles get so thick that they get scarred and the innervation that happens within that muscle wall gets compromised and then we start getting a problem.

Brad: [00:19:45] And, again, since probably most of our listeners are not engaged in pushing the body to the limits of human endurance, but if you are balancing family life and career and personal responsibilities

with an enthusiastic fitness program at any level even if it is comparatively moderate compared to the guys on the list, you are putting yourself into a chronic pattern of stress. It is no different from an elite athlete.

Mark: Yes, this excess cortisol production and the systemic inflammation you can get in a number of different ways. So if have a really busy life, if you are driven to success in your workplace, with fitness goals. It is time to take a step back and look at what is the pot of gold at the end of this rainbow? Why am I training so hard? Why am I working so hard? Is it worth the potential compromises, not just in my own physical health, but in my relationships and my mood and my bank account if I do encounter these health issues later on in life?

Brad: I want to say another thing that really bugs about these stories.....you know, the fallen athletes that have heart problems and this and that. Almost every time the story comes out that the athlete had some genetic defect and that is why this thing came about. They had surgery and they had treatment and they lived to tell about it and the reason they lived is because they are so strong and fit and their heart is so strong.

Mark: Somebody else would have died.

Brad: Yeah. Right. It is obvious for me to talk here about a medical diagnosis is irresponsible. I don't have any grounds to say it, but it becomes fishy to me when the story keeps coming out that these athletes were just unlucky with their genetics and didn't have any consequences related to their extreme training patterns.

Mark: I think we are seeing in the cardiology community that it is not necessarily the case. That it is possible to train too hard and to compromise the health of the heart as a result of that training. You compromise the health of the joints and so much we have talked about is the cardiac health when, in fact, we ought to be talking also about orthopedic health or digestive health or immune function. We have talked about all of this stuff at an event. Remember Julianne White. She wound up finishing an Ironman and, speaking of digestive issues, and ended up having part of her colon removed as a result of ischemia. that is lack of blood flow to the bowel for the amount of time that she had been working hard and competing and winning an event. So there are so many other aspects of health that fall under this umbrella of chronic cardio and as a result of doing too much of this.

It ought to be acknowledged.....Once again, what are you trying to do? I am trying to be fit. I want to race faster, the question I should ask myself isn't how many miles can I put in and not collapse, but what are the workouts that I can do to bring my time down and still be healthy and have a relationship and have a job that I can succeed at.

Brad: Along those lines, why don't you go back to some good material on Mark's Daily Apple that you can read that sort of points to the solution now. You have talked about the negativity and the health problems and such.

Mark: Right, so I am going to read some of the comments that are mentioned on a few different postings and even some back and forth in the reader comments.

Mark's Essay: I hereby give you permission to leave the life of chronic cardio for the promise of less time, more muscle, and better health! Of course, I'm certainly not advocating giving up all training – just that certain problematic, unnecessary type. If you are worried that cutting back will compromise your body composition goals, let me remind you that your ability to reduce excess body fat and maintain your ideal body composition depends 80% on what and how you eat. Namely, moderating the excessive production of insulin by eliminating grains and sugars from your diet.

Eating primally will retrain your energy systems to burn fat and not glucose. Cutting out all simple carbs is the key. It's about insulin management. If you can readjust the diet to encourage the body to burn fats, you won't need to replenish lost glycogen every day. You'll always burn fats and you'll always have energy. The low level aerobic stuff becomes "filler"...so you only do it if it's fun, like a hike or walk with friends

or golf or mountain biking. The real muscle growth will come from the short anaerobic bursts like sprints, intervals or weight training. For example, a well-formulated Cross-fit workout will accomplish more in 20-30 minutes than most of the gym rats doing 90-minute weight sessions, not to mention lengthy aerobic sessions day after day.

In our cardio addicted culture, it can sound too good – too simple – to be true. But the science and the research is there, folks. **Short “interval” exercise, like sprints or strength training, can offer the same fitness benefits (and then some) compared with traditional endurance training.** Take this study via [Science Daily](#) via McMaster University. In the context of six training sessions during a two week study period, half of the college aged subjects did 90-120 minutes per session of a continuous moderate-intensity cycling routine while the other half did between four and six 30-second intensive cycling bursts. At the end of the two-week study period, the endurance cycling subjects had each invested 10.5 hours. The intensive interval subjects had invested just 2.5 hours. Yet, the improvements in fitness performance and muscle parameters were the same.

A study from the University of New South Wales followed the fitness and body composition changes in 45 overweight women in a 15-week period. The women were divided into two groups and assigned interval or continuous cycling routines. The interval “sprint” cycling group performed twenty minutes of exercise, which repeated eight seconds of “all out” cycling and then twelve seconds of light exercise. The continuous group exercised for 40 minutes at a consistent rate. At the end of the study, **the women in the interval group had lost three times the body fat as the women in the continuous exercise group.** (An interesting note: the interval group’s loss in body fat came mostly from the legs and buttocks area.) The study’s organizers, in their presentations to the Heart Foundation and American College of Sports Medicine, discussed the role of sprinting in metabolic response. Intense interval training, they said, results in higher levels of catecholamines, a compound related to fat oxidation.

Wanna hear even more?

Another collaborative [study](#) organized by universities and health institutes in Denmark and Japan highlighted the same distinction in fat oxidation between prolonged, continuous exercise and shorter, intense interval routines. In addition to additional fat oxidation, the study’s results linked interval exercise with **lower plasma glucose, increased epinephrine response, lower insulin concentration and increased fat oxidation during the recovery period.**

Don’t you just love this stuff?? Folks, this is groundbreaking stuff. Now I just scratch my head at why we keep running ourselves ragged? The message is out there, but it’s not reaching people. Let’s send you packing with a memorable sound bite that might help you design a more effective training program. With regard to ‘how much is too much?’ I’m going suggest that you should burn no more than 4,000 calories through focused exercise over the course of a week. Is this a hard and fast rule? No, not exactly. Going somewhat above is probably okay.

Is it concretely established in numerous studies? There are hints toward its veracity in the literature, but nothing explicit. This is mostly stuff gleaned through experience (but the research does bear it out). Does it apply to everyone, everywhere, whatever their goals may be? No. Someone training for the Hawaii Ironman Triathlon is going to require more if they hope to compete.

But as a general rule for the general population, it really does work well as a guideline. Burning 4,000 calories through focused exercise appears to be the cut off point (yeah, you could go a bit under or over, but the point is that we need to draw the line somewhere) after which health – including [immune](#) function and oxidative stress load – and quality of life – including free time, energy levels, and productivity – begin to take hits. Your performance may increase, and this might be worth it to you if your goals are primarily performance-oriented, but there’s a trade off. Keith Norris often writes about this idea, calling it the health-performance curve. I’m inclined to agree with him.

So – what does 4,000 calories worth of expenditure in a week look like, exactly?

Well, the simplest way I’ve found to describe it is in terms of road miles. If you’re doing 40 miles a week running or 80 miles a week cycling, you’re hitting roughly 4,000 calories. We don’t just run or bike, of

course. We lift weights, we circuit train, we engage in metabolic conditioning, we row, we wrestle, we hike, we sprint, we box, we swim.

You could use an online calculator like FitDay or ExRx to get a better idea. For a 185 pound, 6 foot tall person to burn just around 4,000 calories a week, he could get away with:

- Running six miles.
- Lifting weights intensely for two hours total.
- Biking 13 miles.
- Playing an hour and a half of [field sports](#) (soccer, rugby, football, [Ultimate](#)).

That's a pretty solid week of activity, I'd say, but it certainly isn't excessive, and it would provide a far more well-rounded sense of fitness than just pounding away at the road for 40 miles. Feel free to use the (admittedly imperfect) tools linked above to figure out what your regular caloric expenditure looks like. Not all activity "counts" toward your caloric expenditure. Taking a 30-minute stroll to the store doesn't count as focused work. Taking a 60-minute hike up in the hills does. Going for a nice relaxing ride on the bike around the neighborhood doesn't count, but doing twenty miles in a single day does. Carrying the groceries from the car to the house doesn't count; carrying the groceries from the store to the house just might, though. "You know it when you see it" applies here, so use your better judgment.

I'd also suggest that **expending your calories through a variety of activities is "better" than expending them through a single activity**. As shown above, lifting weights, going for a run, biking a bit, and playing sports is more fun and probably less stressful than expending all your calories through running, which is veering into Chronic Cardio territory. A calorie (expended) is not a calorie (expended).

Look – exercise as often and as intensely as it pleases you. Just be aware that, in my opinion, (having looked at the literature and drawn from my own experience training myself and others), 4,000 calories of focused work per week is the cut off point after which health and happiness begin to suffer for most people. If you're an athlete whose only job is to train, and you're privy to massages and cutting edge recovery techniques and everything else, then you'll probably be able to handle more work. You'll be far fitter than the average person and thus better equipped to mitigate the [oxidative fallout](#) from excessive exercise. But for members of the general population who have to contend with the day-to-day [stress](#) of living in this world, getting up early to feed the kids and beat traffic, balancing exercise time with work time with family time with personal time, sneaking peeks at the latest blog post, hoping to get enough [sleep](#) to make it through the next day? You're going to have a harder time recovering from the stress of a 4,000+ caloric expenditure to make it worth your while.

Brad: Mark, thanks again for some more great points from Mark's Daily Apple summaries and for talking with us today about chronic cardio. Until next time, I'm your host Brad Kearns. Thank you so much for listening to the Primal Blueprint podcast with Mark Sisson.

Hey, podcasts are great, but how about a life-changing weekend at PrimalCon coming up. It is a historic occasion. It is our fifth annual event in Oxnard on the beach in Southern California at the amazing Embassy Suites Mandalay Beach Resort. It is about an hour north of Los Angeles...one of the best kept secrets in Southern California, this resort is right on the sand of the beautiful beach in the town of Oxnard and we have an amazing park there. There is an expanse of grass and all kinds of stuff to play on. We will be spending the weekend out of doors with a slate of awesome presenters talking and presenting on all manner of physical activity, diet, health, nutrition, posture and movement mechanics...all kinds of topics are covered so you will get a great education from the world's leading experts but we will also have a ton of fun and excitement. Of course we will play the annual Survivor Team Challenge just like you see on TV except this one is more fun, more challenging. It includes brainteasers, as well as good team strategy challenges. We will also have, of course, the world famous ocean plunge/Jacuzzi sprint. So you are going to run into the pretty cold ocean, guaranteed, then about a 2-minute sprint where we take over the entire Jacuzzi and the Mandalay Beach Resort. People look at us like we are crazy but it is tons of fun. Then we will dine on the all-time fabulous PrimalCon food, examples of which are shown in pictures on the website. So visit [PrimalBlueprint.com](#). Look for the PrimalCon link. You can see pictures and videos chronicling the awesome times we have had over the past four years. We certainly hope you can join us for the fifth annual PrimalCon in Oxnard. September 25th through 28th, 2014.