

## **The Primal Blueprint Podcast – Episode #17: Human Fitness and Peak Performance Potential with Mark Sisson**

Topic timestamps:

Outside Magazine article, "How Far Has Fitness Fallen?": 01:35

"The Lore of Running," Dr. Timothy Noakes, Central Governor Theory: 07:40

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Brad Kearns: Welcome to the Primal Blueprint podcast with Mark Sisson. I am your host, Brad Kearns and we are so happy to be back in the groove here, Mark, after a nice string of Q and A podcasts. I thought we would do something a little different today. What do you think?

Mark Sisson: Well, it depends on what you have in mind, Brad.

Brad Kearns: Well, there are some interesting items along the lines of human peak performance and fitness potential. I thought we would get in to those things, especially with your interesting background. People might not be aware that you had huge role in the sport of Triathlon, relating to doping and performance enhancing drugs, which is a hot topic these days in sports, and also our respected friend Timothy Noakes from South Africa who is probably the world's leading exercise physiologist and he has advanced something called the Central Governor Theory, which I think you can give some interesting commentary about.

But also we have been getting some emails here about the recent Outside magazine article titled, "How Far Fitness has Fallen." The scientists were giving some juicy quotes about how pathetic the modern human is in comparison to our primal ancestors.

Mark Sisson: [00:01:35] Yeah. That was an interesting article drawn from a study done affecting bone density and extrapolating about strength and mobility in our ancestors and looked at different cultures including hunter/gatherer, cultures from 10,000 or more years ago, up through early agriculturists, up through more recent agricultural societies, and right in to present time. It looked at, as far as I can tell, is mostly bone density and again extrapolate from there. The take home message was that our remote ancestors were wickedly fit and particularly the hunter/gatherers. You could probably conclude that, almost intuitively that somebody who had to endure the rigors of a harsh environment, who had to hunt and gather and lug and build and climb and fight in order to survive, had to be exceptionally strong. So I like where that was headed and then even in the times of early agriculture there was a lot of work done in the fields, moving rocks, cutting trees, and uprooting stuff and bailing things. So you can infer from that that those ancestors probably had to be physically stronger than the typical person of today. But the idea that everyone from 10,000 or 20,000 years ago was stronger than anyone today is a little bit far-fetched. I am wondering if those guys could really outrun Usain Bolt in the 100.

Brad Kearns: Or Meb Keflezighi in the Boston Marathon, who at the age of 40, just ran it 2 hours and 8 minute performance. And Dr. Collin Shaw of Cambridge University's Phenotypic Adaptability Variation and Evolution and Research Group said in the paper that was published in the Journal of Human Evolution, "Even our most highly trained athletes pale comparison to these ancestors of ours and that hunter/gatherers from the time period of 30,000 to 150,000 years ago were much stronger than the long distance runners of today." I find that absolutely preposterous.

Mark Sisson: Yes. Again, we won't know because we can't go back in time, but even if you look at some of the persistence hunting studies and the hunter/gatherers current hunters of today...the Kung Bushmen for instance, and you watch the major persistence hunt, it is a pretty grueling event but it takes place over hours and hours, and when you parse it in to minutes into kilometers that they are running, or minutes per mile, it is really not that impressive. It is not fast certainly. It is not as good as any top elite marathoner would run today, given the amount of training that is allowed by the access to food. The amount of calories that the modern day endurance athlete has as a luxury to be able to refill glycogens stores and go out and train every single day, which is what I did in my marathon days, it was not available to the early hunter/gatherers. So I do think it is preposterous that a statement like that could be made that even our most elite athletes would pale in comparison to the early hunter/gatherers in that specific endeavor. Maybe in overall strength, you could argue that if they showed up at some strong man competition and took all of the different events on balance, the hunter/gatherer would have done pretty well. But not in one particular event. I don't see them dunking over K.D. or out-lifting a guy like Paul Anderson who was the strongest man in the world in 60s. It is kind of weird to make that kind of blanket statement based on bone density studies.

Brad Kearns: Right. I think the main take-away point is when they talk about the average and today's average Joe, and I have observed this from working in kid's fitness for a long time and observing where you have a distance race. We go to schools and put on long distance races and time the kids. Today's average kid, I'd be willing to bet, is way inferior to 20 years ago or 40 years ago in terms of general fitness ability because of our high-tech modern life.

Mark Sisson: Well, high-tech modern life, a decrease in nutrition in the food because of processed food, the ridiculous absence of P.E. classes in a lot of schools because of funding reasons....all of these things combined to create a sedentary society. I am sure that you shared this experience....there was the one kid in school that was the one fat kid. Now there are a lot of kids who are fat. It was an anomaly in the 50s and 60s to have a severely overweight kid and usually it was a true bariatric metabolic issue that the kid was facing. And today it's kind of the norm to be overweight. It is the norm to be sedentary and play video games and be out of shape. Back to that study....just the observation, in general, that the hunter/gatherers were more fit than the average person today is clearly true, but to take it out to the outliers and say that most elite of the athletes today would pale in comparison. I think that's sort of an abuse of the science, if you ask me.

Brad Kearns: [00:07:40] Well, they got their headline attention there just like people say crazy stuff. Let's assume that our listeners are shaking their heads in disgust of today's average decline but if you are interested in fitness in peak performance, we can maybe transition along to the interesting happenings of Dr. Timothy Noakes down at the University of Capetown in South Africa. This guy, for many years has been considered the preeminent exercise physiologist in the world. His book called, "Lore of Running" which is a 800-page masterpiece. It has been lauded as a definitive guide to fitness and peak performance, especially endurance running. He reached out to you recently, to your great surprise and satisfaction. Tell us about that.

Mark Sisson: Well, yeah. I was actually in South Africa and tried to look him up. He was on vacation. It was Easter break down there. When I got home I got a very nice email in which he acknowledged having read some of my stuff. It was kind of a mutual admiration society because I have used the "Lore of Running" as my go-to source for the first 20 years for my coaching and my writing about endurance training and particularly the whole concept of substrate utilization, particularly carbohydrates, glycogen and glucose and fat-burning in running. It turns out that he had in the last 5 or 6 years had been a diametrically changed his position from one of a sugar-burning, carbohydrate-centric endurance guy who was figuring out ways to best conserve glycogen to maximize performance into one who was thinking more in terms of how we best utilize fat, how do we minimize the necessity to continue to use glucose, not just for the muscles, but for the brains in an endurance contest because that kind of drew back from the Central Governor Theory which suggest that it is ultimately the brain that causes us to shut down in an endurance contest. It is the brain that requests that we hit the wall and slow down and maybe go take a nap. I found that interesting. That was one of the former winners of the Ironman Triathlon in Hawaii. One year he dropped out. The reason he dropped out was because he said he felt like taking a nap. That is the brain.

That is the Central Governor...the brain, which is suggesting that with all this monitoring going on during the endurance contest, once you start to run low on carbohydrates, particularly on the muscle glycogen, that is the point at which you hit the wall, you can theoretically dig deeper and you can complete the event, but not without some amount of muscular damage or harm and that's when the brain kind of overrides that and says, " We gotta slow down, we gotta stop, we gotta do..... whatever." I am rambling on there, but basically it was really interesting that Noakes would, after a lifetime of creating and defending the position that looked at carbohydrates as the essential factor in endurance training and racing, would then shift away from that and look at fat as being so necessarily predominant.

Brad Kearns: [00:11:21] Admittedly, he has taken a ton of heat from his colleagues because he actually, all the people in exercise physiology have had to reflect and actually recalibrate their life's work that is predicated on, in the exercise realm in endurance, the fact that muscles run on carbohydrates, and that the carbohydrate diet frames the entire protocol for how to train for endurance sports. Noakes, himself, and his sister, too, who both got in to the primal eating, had experienced great body fat loss, which was a challenge for a while and enhanced performance. He is turning heads slowly but surely with great resistance in a pretty traditional field of exercise physiology and endurance performance.

Mark Sisson: As so often happens with people who are in this low-carb world and the paleo/primal/ancestor world, Tim had a personal experience. He got diagnosed as being pre-diabetic. His uncle and father had diabetes and one or both had died at that time from Type II Diabetes, so Noakes had a really compelling reason to visit this and as he got in to it and started losing weight, and started to have his blood sugar normalized started to realize that, "Maybe I have been wrong in some of my assumptions." What is crazy to me is that that is such a heroic move...what amounts to a life's work and put it through a microscope again, and reexamine it and say, "Oh my goodness. I think I was wrong. I am sorry. I had some ideas that I thought were right and now new research and new data has indicated that perhaps I was wrong. I am willing to rethink my position. I am going to take a new stance. I am going to look at the new data." As you said, Brad, he has got a lot of flack for it. It is really unfortunate because that is the kind of guy that you would believe almost more than anybody else.....somebody who had such an investment in that position and was willing to reconsider and take an almost opposite stance just based on new information.

Brad Kearns: [00:13:47] Right. That's why he is a top guy, being open-minded and willing to look at the big picture rather than being stuck in a dogmatic position. But back to this Central Governor Theory. If you listeners are interested you can Google that and pull up all kind of interesting things. It really is mind-blowing because we have held, for so long, this theory you might call the Peripheral Theory. In other words, that human performance is limited by the actual fatiguing of your chest muscles on that final bench press rep, or legs actually feel tired and heavy in the final miles of the marathon. But when you realize what can this can all encompass.....a quick example is you are doing the bench press by yourself in a quiet gym and you can do 12 and then you are really tired and fail and you rack the weight up, but if you had 20 people around you cheering at the cross-fit workout or at the NFL combine, you are very likely going to break through a prior performance level just because of the psychological extra stimulation.

Mark Sisson: There is so much in high level in peak performance that revolves around tapping in to that ability to override this Central Governor. I don't mean to suggest that is all that it takes, but when you look at world class performances for the longest time, people stop at 4-minute mile could not be broken and then Roger Bannister broke the 4-minute mile in 54:4. And within a year, I think six people had run a 4-minute mile. It was basically Bannister's doing it that sort of freed everybody else's brain to suggest that it is not going to kill me to run a sub-4, and that it is humanly possible and I am well-trained enough to be able to do that. So it invokes an entire discussion on how important the mental game is in athletics, in general, and in endurance competition specifically. We go back to a friend of yours and mine, Mark Allen, who was notorious for his ability to tap in to that mental state that could override the pain. Another example is Prefontaine, who basically said, "I know may not be as fit as the next guy I am running against, but I know I'm mentally stronger, and I know I am willing to hurt more." That is how Prefontaine won a lot of his races. He was able to override that.

Brad Kearns: Tim Noakes said when you look at the end of a close high-level race, the physical ability is so similar and the intensive training that all of the athletes have performed is so similar, he claims that it is in the brains inside these athletes that determines the finisher's position. And so the winner is just a more resilient mental creature who is dead set on winning. Speaking of our old pals...I think Simon Whitfield showed this really dramatically in the 2000 Olympics in Sydney, really dramatically, where he came from behind at the very, very end of the race and was just sprinting full sprint to the line and caught this guy who had been waiting for the crowd for the previous 200 or 300 meters thinking that he was at least going to win but after, when they interviewed everybody that the silver medalist said, "I was just so happy to be in the medals, that it was a dream of my lifetime to win an Olympic medal." But when they interviewed Simon, he said, "All I thought about was going for the gold and putting everything on the line," until the point of death, practically, and he was able to make up this huge deficit off an incredible talented athlete who was ahead of him to win the gold because that is where his brain was at that time.

Mark Sisson: Very good example of how many of these Olympic stories play out. It really comes down to who wants it most. You can apply this to just about any athletic endeavor. Every weekend it is Ultimate Frisbee. I swear to God, every time we pick teams, whoever wins that day, it was the team who wanted it more. You can see it halfway in to the game. You can see which team is sort of on point and working as a unit and which team isn't. You can watch it in the basketball playoffs. It is interesting that it doesn't just apply to the individual and endurance events, but it can apply to almost all sporting events.

Brad Kearns: [00:18:37] Let's take a few steps back and in case you are a listener who is not a super-competitive athlete and you are just trying to get through your routine and be healthy and perhaps have some modest fitness goals like drop a few pounds or whatever. This stuff still comes in to play pretty heavily. I think it is evident by this considering an idea like waking up one day and not feeling that much like working out...just feeling a little tired and dragging. That little sensation which we maybe discount more than we should. That is really everything. Mindset and motivation will lead the body to the promised land, so to speak.

Mark Sisson: Yes. There are a couple of ways to look at that. If you are not motivated that day, maybe you have overtrained. Maybe it is appropriate that you don't go work out. Maybe there is not enough at stake for you because you are not training for a competition. I allocate myself two really hard workouts a week and I'd better be prepared for it. When I am, when I have them scheduled and I wake up feeling fit and ready, then I am able to motivate my brain to get me through the workouts and to dig really deep and to benefit from those workouts. If you are following the Primal Blueprint type training and eating strategy, you also know that you really don't need to do more than two hard workouts a week. The rest of it can be fun or easier or filler or a day off because you are looking to improve in your performance, it's a long term strategy that isn't so much dependent on getting something done every day, as it is depending on getting something kind of over the top done once or twice a week. Over time you improve because of, what I used to call, breakthrough workouts. Everything else is filler, rest and recovery in between. You can do that. You can go to the gym and do your workouts, but make sure that you are rested and prepared and if you are not having a good day, be okay with taking it really easy. If you are tired or sore, maybe even taking that day off. That's is kind of how you tap in to this ability of your brain to recognize when it is time to go hard and really dig deep and when it is time to back off if there is nothing at stake if I take the day off.

Brad Kearns: [00:21:09] Here is a wild question for you, Mark. What if we went back in to examine the Primal Blueprint principle, went back in to the hunter/gatherer studies and with bone density and all of the sudden it came out to be, hey! guess what, you should do 4 hard workouts a week. Do you think that your brain and your body would follow along if that became the norm and the conventions for effective fitness training?

Mark Sisson: It depends on where you are going with that. If you look at a hunter/gatherer, a true hunter/gatherer paradigm, they didn't get up every day and think, "What am I going to do for my workout?" The concept of workout never existed. This was life. What do I need to do to survive day to day? Part of what it takes to survive is conserve energy. So as often as a hunter/gatherer would hang out and do nothing, I suppose that is what he or she chose to do. As often as a hunter/gatherer could say, "You know what, I have enough food to last me through tomorrow, there is no sense in trying to hunt for food for next week

because it won't last that long. I don't have refrigeration. I may or may not have learned how to cure whatever it is I am killing. I am living on a day to day basis. If I have enough food for today, my work is done. I will take the day off." I don't think there was any kind of intention on hard work necessarily every single day, however, when it was time to work hard, when it was time to chase something down and throw a spear, or build a new shelter, or travel across vast expanses of ground to the next fertile hunting grounds, they certainly chose to do that. What is the takeaway from that in a context of somebody trying to achieve peak performance today? It is a different paradigm. We have food that lasts a long time so we can literally afford the luxury of expending all kinds of calories and energy in a workout that has no survival benefits because we want to put another notch in our belt, or get something off our bucket list by entering a 10K. There is nothing really at stake. It is just we are choosing intellectually to undergo this training because we think it is fun or because we want to build our self-esteem. We can't really look at the context of the hunter/gatherers. The hunter/gatherers probably didn't "train" that much the way a lion is really, really strong today because the sleep most of the day. When they are out exercising, they are exercising pretty hard.

Brad Kearns: [00:23:58] It is possible that the takeaway point, we have talked about this Central Governor Theory and how it can literally mean mind over matter, so perhaps we all know deep down that we can always summon the motivation and athletic performance to get through a challenging workout or, in the case of our ancestors in a life or death matter, of course, they are going get off out of nap time and run away from the predator. However, today, we need to interject that element of balance so that we make sensible decisions and don't over train and don't get in to the chronic pattern that we have discussed at length.

Mark Sisson: This is sort of an aside to this. I looked at some race results from the late 70s...a marathon that I was in up in Oregon, the Nike Marathon. I don't know how many people, basically, it was a club race, and invitational. There were 600 people ran the race. There were a couple of hundred who broke 3 hours! And a 7-minute mile basically. I looked at some of the major races today....the L.A. Marathon, Boston, New York and there aren't that many people breaking 3 hours. I don't know whether it is a mental thing, whether it is the ability to run long distance as a recreational citizen athlete, has shifted somewhat with society over the past several decades so that in the early 70s and early 80s when the running boom was big, the mantra sort of went out, if you want to call yourself a marathoner, you have to run a sub-3 hours. You want to call yourself a runner. Other people we sort of thought of as a jogger. Guys had to run sub-3 and girls had to run sub-3:30. That was how you could consider yourself a runner. Almost you cannot talk about being a bench presser unless you can do 300 pounds, for instance. Something shifted in the last couple of decades. I don't know if the brain suddenly said, "I could probably get to a 7 minute mile, but I will run 7:30 or 8:00s and there is nothing at stake so I don't know where my limit is, so I will artificially set my limit at 3:45 marathon, or a 3:50 marathon, or whatever. Not that it is good or bad. You know how I feel about pursuing chronic cardio and endurance events in general, but just sort of an observation about this mind over matter, how this Central Governor Theory might work in all of society two decades later, or three decades later as a result of what has gone on in the world.

Brad Kearns: [00:27:05] Right. It lends itself to all kinds of examples such as in the Framingham Study, the famous study of residents of Framingham, Massachusetts. They studied all manner of health and disease risks. They identified pockets of obesity in such a cultural group like friends or neighbors or people that they hung out with, they had these clusters of obese people possibly because of the cultural influences. Similarly there are examples of fit groups of people, or people that you hang out and nurture interest in being healthy and fit. It goes a lot beyond how strong your muscles are and the literal limiters of peak performance in to even cultural matters that can effect you longevity and fitness.

Mark Sisson: I think the take home message here that there is so much available to us that if we can tap in to the part of the brain, that on the one hand recognizes when we are over tired, over trained, fatigued, poorly rested, poorly hydrated, or whatever, but also takes advantage of those times when we are ready to go and allows us to maybe get to the next level in a workout or to tap in to that system that, as we used to say in the triathlon days, "Go to the well one more time and get that breakthrough workout that will take us to the next level."

Brad Kearns: That was a great summary and I think we have had an interesting chat here. We will probably move on to some other fun discussions for today. Listeners, I know we have encouraged you to send in your questions. We are going to have another Question and Answer feature in the future. You can also throw out general topics of discussion that you want to hear us cover. For today, this week, thank you so much for listening to the Primal Blueprint podcast with Mark Sisson.