Cardiovascular Risks of Endurance Training

Interview with Russ Scala

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When one of his seemingly very fit fellow cyclists, who was only 35 years old, recently had a heart attack while riding his bike, William Scala was, perhaps, the only person around who wasn't completely shocked. Scala, who is the founder of E-JUVEN 8 and an expert in interventional cardiology and performance, has been warning people for years that endurance training can trigger a cascade of potentially heart-damaging complications.

His program is located in Winter Park, Florida. It combines cutting-edge nutritional medicine with custom-designed treatments based on the evidence about his clients’ bodies derived from laboratory testing. In a recent interview, Scala explained his findings about endurance training and the circumstances under which it can damage the heart.

**Interviewer:** For years, you’ve been way out ahead of traditional medical practices in your belief that endurance training, at times, leads to heart disease. What is the source of the problem, as you see it?

Scala: My concern is for people who exercise with the notion that “more is always better,” and that endurance training will provide ultimate protection against heart disease. In fact, improperly managed endurance training can set off a chain of events that lead ultimately to acute cardiac problems. I've seen this happen to many of my clients. Actually, I began observing the phenomenon within my own group of young fellow endurance athletes as early as the 1970's.

**Interviewer:** In the 70's, when those sick athletes went to their doctors with evidence of heart disease, did the physicians understand what was causing their illness?

Scala: Most conventional doctors back then were mystified, because the athletes’ youth and the strength that came from strenuous exercising were widely considered protections against heart illness. But I could see a pattern showing that something in the training was causing the problem, instead of preventing it.

I’d say that my concern for young endurance athletes who were being diagnosed with heart disease and my eagerness to find solutions that conventional doctors couldn’t provide are two of the main issues that propelled me into a lifetime of the research and experimentation that have evolved into E-JUVEN 8.
Interviewer:  I know that E-JUVEN 8 is a unique and advanced medical program. Describe for me more exactly what you and your staff do.

Scala:  E-JUVEN 8 is a health program that combines nutritional medicine with treatments customized to our clients’ individual bodies. We design each person’s treatments on the basis of evidence about his internal biochemistry; and we gather this evidence from the finest laboratory tests available. We work with people suffering from a wide variety illnesses and chemical imbalances.

Certainly, heart disease is one of our main concerns. In fact, we are the first medical group to design specialized programs for pre- and post-heart-bypass patients. Each heart patient in E-JUVEN 8 is put on a carefully planned program suited to his particular body alone. We customize his diet, supplementation, medication and exercise. Mistakes and further illness can result when conventional doctors standardize treatments, as if all patients’ bodies are alike. We determine and respect each client’s unique internal makeup. And, in doing so, we work with and not against his body to bring all his internal systems into a balance that is natural and right for him.

Interviewer:  Are you advising people to stop training?

Scala:  No, not at all. But I do feel people who pursue endurance training need to understand more about it. They need to know how the human body reacts to the physical stress it causes. I’m concerned that running a marathon or performing in a triathlon has come to be viewed as a normal goal for anyone who feels motivated to participate.

Instead, the most recent research may be leading us to conclude that endurance training is not necessarily healthy for everyone. Even for someone in proper physical condition for the exertion, the training program should still be tailored to the person’s age, gender and body weight.

Interviewer:  Are these the only three factors someone considering or already on – an endurance training program needs to keep in mind?

Scala:  No, the body is more complex than that, and there are countless factors that influence how a person is affected by the physical stress of endurance training. It would be convenient if certain rules of proper exercise simply applied across the board to all people. But the real truth is that all people are biochemically different. The internal chemical makeup of every human being is like a unique blueprint – just as our fingerprints are all unique and distinguish each of us from everyone else. And our internal differences make us all respond to the stress of training differently.
Notice that I said, “the stress of training.” Appropriate amounts of exercise can be excellent for our health, but all exercise is physically stressful to some degree, and the amount of stress caused by the workouts is what we need to consider.

When a person pushes his body to the point of overtraining – and especially when he couples that problem with poor nutrition – he is setting himself up for heart disease, as did with my 35-year-old training partner who just had a heart attack. Overtraining in a nutrient-deficient state can cause a host of other illnesses, as well.

**Interviewer:** How aware are athletes of this problem of overtraining in a nutrient-deficient state?

Scala: It’s a medical issue just coming into the light. That’s why all my training buddies were so stunned when one of the very fit members of our group had a heart attack. Athletes should take this matter very seriously.

I’ve been a competitive athlete for twenty years. And for many of those years I was overlapping my endurance training with a job as a special paramedic assigned to be a member of a SWAT team. In this job, we ate whatever we could get on the run, and our diet often wasn’t very good. The intensity and stress were overwhelming, and I was afraid death was knocking on my door. Finally, I took an advanced cardiovascular imaging test which revealed that my heart was healthy. But I was lucky, and I know I could just as easily have been suffering already from heart disease. Many people as stressed out as I was do have cardiovascular problems, but don’t know it.

**Interviewer:** Tell me more about what you’ve learned about these dangers of overtraining – information that is not yet circulated widely among medical professionals or athletes.

Scala: Few studies have defined the cardiovascular risks imposed by endurance training on a person with a presumably healthy heart. However, it is verified that there are diminishing returns from the benefits of exercise, as intensity and duration are increased. Other studies indicate that overtraining also leads to weakening of the immune system.

Also troubling are the tests that determine whether a patient has had a heart attack. These tests may not be accurate.

**Interviewer:** That’s disturbing. What causes the misdiagnosis?
Scala: In the emergency room, the gold standard test used as an early-stage marker for heart attack is the creatine kinase-MB. Doctors have discovered that this test is indicating positive results in runners, bikers and swimmers who have experienced no cardiac symptoms. These confusing results suggest that the test is misleading for this group of athletes. Endurance athletes and their doctors need to be aware of this discrepancy.

It is high levels of creatine kinase-MB in the bodies of these patients that are leading to the misdiagnosis of heart attack. In some cases it is injured skeletal muscle, rather than injured heart muscle, that is triggering the inaccurate positive results suggesting a heart attack.

In contrast, cardiac troponins, as late-stage markers for heart attack, have consistently remained normal in the bodies of runners, bikers and swimmers who have experienced no cardiac symptoms. So we believe these late-stage tests to be more accurate.

**Interviewer:** It’s clear that you are keeping up with tests being performed by other medical professionals. What kinds of tests are you performing in the E-JUVEN 8 program?

Scala: For one thing, E-JUVEN 8 runs the most advanced laboratory tests available to determine the physical problems and needs of our clients’ bodies, and then I base their customized treatments on these test results, which are unique to each of them individually. E-JUVEN 8 doesn’t limit its testing to only certain organs of the body, but examines all the organs together to bring them into balance and help them work together in a harmonious symphony.

As for our tests that determine the cardiovascular health of our patients, they are simply the best on the market. It’s unfortunate that most doctors actually don’t even know they exist.

Also, many of the findings on which I build my treatments of sick clients have come out of tests I have performed through the years to determine how the body functions, reacts, and descends into illness. Since we are talking here about cardiovascular problems, let me explain a test I performed to explore the cardiac risk of long-distance training.

I followed a group of ten endurance athletes using advanced nutritional analysis to observe the effects of running on their blood. I wanted to test my strong belief that overtraining was causing changes in the blood and heart that were leading to heart disease.

Within a normal day’s activities, blood maintains a steady balance between blood-thickening factors (inflammatory and clotting factors) and blood-thinning (or fibrinolytic) factors. Exercise on the other hand, is known to raise the levels of both types of factors.
I found that the balance between thinners and thickeners, which existed in a correct way in the athletes’ blood before their long-distance run, was still maintained in their blood just after a long-distance run. In other words, just after training, the athletes’ thinners and thickeners remained equally elevated. And this balance is what is needed for the health of the heart.

However, as the athletes’ bodies relaxed again after the endurance exercise, the blood-thinning activity returned to normal, while clotting and inflammatory factors remained elevated. As you would guess, the elevated blood-thickening factors increase the risk that dangerous clots might form. And when clots travel to the heart, they trigger a heart attack. When they travel to the brain, they trigger a stroke.

Interviewer: Why does the body keep the blood in a thickening mode, if this is detrimental to the heart? It sounds like the body is sabotaging itself.

Scala: You’ve come right to the heart of the issue! When an athlete exercises his heart too fast, too hard, or too long, the body feels threatened and takes self-protective measures. It responds, actually, as if it has been in battle. When the heart beats more than 160 times per minute, the body reasons that injury may be imminent, and it thickens its blood so that – if the athlete is hurt – he will not bleed to death. So, as you see, the body is not sabotaging itself – it is shielding itself. And it is the runner who is sabotaging his own body, while thinking incorrectly that all this strenuous exercise is making his heart healthier.

A second part of the experimentation I did with these ten athletes was to test their urine for signs of oxidative stress or free radical damage, which can injure the walls of the arteries. Also, I was able to discover if there was severe B-vitamin deficiency, which can elevate homocysteine, another source of damage to the walls of an athlete’s heart arteries.

Interviewer: I was listening carefully and I remember that you mentioned two kinds of blood-thickening factors: clotting factors and inflammatory factors. I understand about the clotting now, but what do you mean by “inflammatory factors”?

Scala: Yes, that’s the other half of the problem that leads to heart disease. The thicker blood alone – even without the formation of clots – can scratch the tender walls of the arteries. Then, as fatty substances in the blood pass through the arteries, some of them adhere to the rough, damaged places.

This fatty buildup weakens the arteries, and so the body produces a protective thickening of the artery’s middle layer. Deposits of various substances in the
blood continue attaching themselves to the roughened artery walls, creating a soft plaque. All this thickening and building up then bulges into the artery channel, restricting blood flow.

In time, this buildup hardens and increases the risk that pieces will break off and completely block the artery channel, causing a heart attack. If athletes already have the dangerous buildup, then they are at extra risk when they elevate their heartbeat to above 150 beats per minute. And they can do this by sprinting or biking at fast intervals. The jolt can disrupt the plaque, which then clogs the artery.

As I try to describe this process in words, I’m reminded that we have on our website an animation of this deterioration of a heart artery. Viewers have said the illustration helps to make this deterioration process much easier to understand. You may want to go to our website at http://www.e-juven8.com/. On the menu panel, you’ll find a tab for “Heart Animation.” Click there, and I think the explanation and illustration will clarify what I’m describing.

**Interviewer:** You said your 35-year-old training partner was on his bike when he had the recent heart attack. Is what you just described the same situation that happened to him?

Scala: You’re absolutely right. My friend already had a blockage from congested artery tissue, and when he made a jump on his bike pedaling at more than 30 miles per hour, the blockage ruptured, causing his heart attack.

The onset of a heart attack doesn’t often result from one sudden complication alone, such as a single jolt. I believe that first there is the increase in inflammatory and clotting factors, which lead to heart disease, as I just described. And then a sudden jolt triggers a dangerous cardiac event – such as disruption of plaque – and it is this jolt and the ensuing disruption that produce the actual heart attack.

**Interviewer:** It’s as if the rise in inflammatory and clotting factors loads and cocks the gun, but it takes another sudden complication to pull the trigger.

Scala: Yes, sudden death during strenuous exercise rarely occurs without earlier deterioration of the heart arteries. Most of those who die during exercise had pre-existing conditions that were augmented by the strenuous exercise. Even if an athlete can’t feel himself in jeopardy, testing is available to determine if he has a heart condition. In the E-JUVEN 8 program, we look for that pre-existing condition, and focus on correcting it, before that trigger you spoke of gets pulled.
We are way ahead of the conventional medical industry in our treatments of clients’ elevations. Most doctors don’t know what to do if a patient has elevations. But within our program, we are constantly correcting these elevations and reducing men and women’s risks of heart attack.

Because all the systems of the body work together and affect each other, we examine a comprehensive array of metabolic functions every time we work with a heart patient. This is the only way to access everything happening within a person that can contribute to cardiovascular disease. Many of the risk factors can be reduced or eliminated with the advanced individualized therapies we provide in order to prevent further development of problems.