

Hello all,

Welcome to the second issue of “Alternativz”, an *occasional* journal of complementary and alternative solutions for health, well-being, performance, and longevity. This issue is the 2nd in a series on breathing and sports performance, with [Dr. Bob Ward of Sports Science Network, Sports Scientist, Conditioning Coach of the Dallas Cowboys, and winner of the 2012 NFL Lifetime Achievement Award.](#) This issue, *Maximizing Performance*, focuses on peak functioning *during an event*, where Issue 1 focused on *breathing during training* and Issue 3 will focus on *breathing for recovery*.

Sports performance is a culmination of accuracy, agility, balance, endurance, power, speed, strategy, and strength. In this regard, performing at a high level is a holistic undertaking requiring peak mental and physical execution. Ultimately this requires the mind and body to act as one, the body naturally following the smallest changes of intention, even as the body may be under extreme aerobic deficit and breathing may be extremely labored. *But how do we breathe to maximize the outcome even under the grueling conditions of competition?* With a few exceptions, this is a question that has garnered little attention in the Western sports performance community. I see this lack of interest as the consequence of a limited understanding of the part that breathing plays, or more correctly “may play”, in our physiology given that we understand how to breathe correctly. As we will see, Bob’s coaching was an exception to this, even in the 70s.

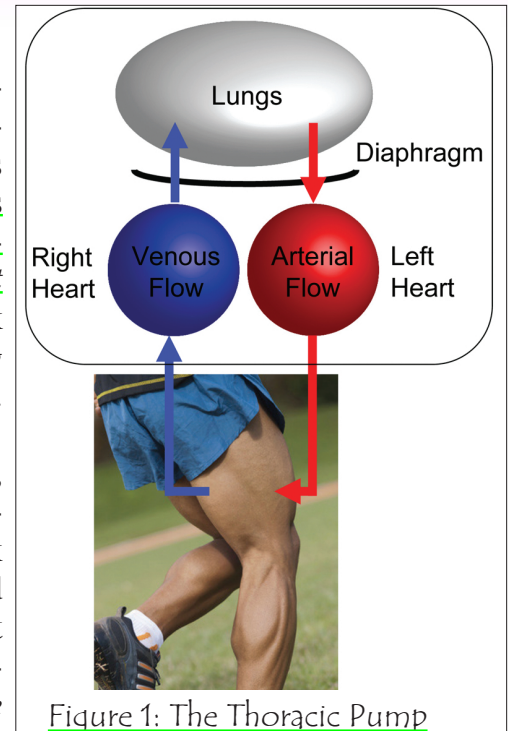


Figure 1: The Thoracic Pump

The limited understanding to which I refer is “that breathing is simply about gas exchange”, which it isn’t. Its about “circulation” of which gas exchange is a vital part, but no less vital than the transportation of blood by which gas is carried. If either stop we perish and when either is compromised we suffer. Relative to sports, when either is sub-optimal a loss of performance follows and with it lost opportunity to excel.

So how do we breathe to maximize sports performance? The answer is this: **“Breathe as slowly, deeply, and rhythmically as is comfortable – to the extent possible – given our activity.”** While various sports are radically different in their demands, this underlying principle remains the same. If you’re a runner, you may already know that this is how one accesses the runner’s high, not just every now and then but each and every time you run.

Why? Because breathing “coherently” facilitates the transport of blood and blood flow has everything to do with energy production and management of the extra-cellular environment, both micro and macro, e.g. muscles, nerves, organs, the brain, etc. But wait! Isn’t the heart charged with the function of circulation? Yes, but it’s primary emphasis is the facilitation of arterial flow and pressure. The right heart, while it can and does facilitate venous flow in the absence of significant breathing depth, *relies* on breathing to facilitate it, the only other mechanism involved in venous flow being the “leg pump” that moves blood from the feet and lower legs upward against gravity each time we flex the calf muscle. The right heart facilitates venous flow by generating a vacuum that draws blood to and through the right heart and into the lungs (See Figure 1). When we inhale, the “thoracic pump” generates this negative pressure so the right heart doesn’t have to. The result is that the heart is afforded a rest period 50% of the time. This translates into reduced burden on the heart and arterial tree at large and increased capacity for work which might be utilized in the moment or kept in reserve for a final sprint.

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Steve: Bob, first let me congratulate you on winning the *2012 NFL Lifetime Achievement Award*. That's quite an honor!

Bob: Thank you Steve, I'm very honored to receive the award. Of course I'm humbled to know that my colleagues appreciate my 19 years with the National Football League.

Steve: Bob, you're really a pioneer in what I like to refer to as "integrative" sports performance. By this, I mean that you were one of the first to introduce cross training of yoga, breathing, and martial arts training into professional football, even in the 70s.

Bob: Yes, I think that's right. My interest in this and the team's interest in this is that we were always looking for that edge that would yield advantage on the field. You have to be in endless pursuit of that edge to excel in professional sports, any professional sport.

Steve: "Manster", Randy White, is possibly a best example of the kind of results that your players realized via your integrative coaching methods. If you're familiar with martial arts systems, you can clearly see the martial training in his movement, wedging, parrying,...hitting with his whole body.

Bob: I had the good fortune to work with many great Dallas players including Randy White, Hershel Walker, Michael Irving, and many others. While they were gifted players, I'm confident that integrating the best-of-the-best methods, old and new, made a difference in their game and their excellence.

Steve: You know me, I'm *extremely* confident that you're right. In my view, one cannot hope to achieve their personal best without addressing the physiological fundamentals - and breathing is one of those. Breathing in particular cuts across both the physiology and the psychology of sport.

Bob: Yes, I agree with you. We used "Ki Breathing" or what I referred to as "combat breathing" in particular to help players generate explosive

power and to avoid injury on the field. The results were clearly demonstrable. You've seen the film.

Steve: Yes, I have. The results you achieved with the Cowboys using Ki breathing are astounding. One must see it to believe it!

Bob: Steve, you make the broad argument that *Coherent Breathing* is the fundamental method for achieving peak athletic performance.

Steve: Yes, that's right. We need to see "breathing coherently", i.e. breathing slowly, deeply, and rhythmically as a dynamic principle that applies to all activity, regardless of pace. As the pace of our activity varies, so does the pace of our breathing, but it still remains consciously, slow, deep, and rhythmic.

Bob: Why is breathing relatively slowly, deeply, and rhythmically important?

Steve: I see it as a matter of efficiency. If we *breathe coherently*, we're consciously involving the diaphragm in the movement of blood, specifically venous blood - which relies on the act of inhalation to return to the lungs where carbon dioxide is exchanged for oxygen. The diaphragm is a large strong muscle that is optimized to perform this role, but many athletes have no particular awareness of it.

Bob: And for those that don't know of this method?

Steve: Well, I'd offer that they are not developing or employing one of the most important muscles of the body. The body has few "singular" muscles, those not duplicated on the left and right. The diaphragm is one of them.

Bob: So, if we're not training and engaging the diaphragm consciously, then we're missing something...

Steve: Yes, when we breathe "coherently" during exercise, the heart synchronizes with the movement of the diaphragm yielding circulatory advantage, an "edge" known to Eastern martial arts for millennia.

Thank you Bob. Thanks all for your interest and consideration. Stephen Elliott

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