The Triathlete's Pyramid

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I am about to get another year older. I find that every so often, something during the day will trigger a myriad of flashbacks from days of yore. Case in point - do you remember the TV game show â€œThe $10,000 Pyramidâ€•? In it, a team member would give clues to his/her partner to describe a topic or phrase. The goal of the partner was to guess the topic. If you worked your way up the pyramid, you could win $10,000. Ahhh yes , the things that we remember ...

Before we go any further, I can guarantee you that $10,000 isn't at stake in this article! But, today I present to you â€œThe Triathlete's Pyramidâ€• - and I will be your host. Who needs Dick Clark anyways?

In the first round, your partner shouts out - â€œaerobic system, maximum VO2, heart rate monitor ...â€•.

Your answer â€“ an emphatic â€œLimiters To Endurance Performanceâ€•.

Cue up the harsh sounding buzzer. Ouch. The correct answer? â€œPerceived Limiters To Endurance Performanceâ€•.

The operative word here is â€œperceivedâ€•. For many years, the perception has been that all of these concepts are directly related to the limitation (or measurement) of success in triathlon (or any of a plethora of endurance sports). The theories of â€œenergy systemsâ€• and aerobic capacity has run rampant in the endurance sports. The belief has been that the aerobic system is in fact the primary limiter to performance. The problem is that your maximal aerobic capacity changes very little (perhaps 15%) - so this may explain a small portion of your improvement - but over the course of an athlete's career, is this 15% improvement all that is to be expected? Of course not! The next thought is that training allows you to use a greater percentage of this aerobic capacity â€“ therein lies the concept of the lactate threshold. Unfortunately, this is also a challenging discussion because it is then assumed that lactate is the factor that prevents muscle contraction (â€œtheâ€• limiter) when in fact it is but another energy source! Muscles will utilize lactate for fuel. Something to think about ... but wait, no time to think, here's the next question ...

Next topic: â€œendurance, muscles, muscular endurance, economy, efficiency, ... â€œ

Your answer - â€œLong Slow Trainingâ€•.

Cue up the buzzer sound again. Double ouch. The correct answer - â€œMitochondriaâ€•.

The bottom line to â€œenduranceâ€• is the ability to produce energy for the cells. The energy producers in the cell are called mitochondria. In the neuromuscular system, if you can continue to provide energy, the muscle will contract. An acidic environment (such as that created by lactate) will, unto itself, not cause the muscle to stop contracting. Active muscle fibers (and nerve fibers) have more mitochondria than inactive fibers. In order to have more mitochondria, you have to have more active muscle fibers. In order to recruit more muscle fibers, you need to provide an appropriate stimulus â€“ in this case, resistance. Flashbacks to a previous article, perhaps?

Next topic - â€œOutput, intervals, fartleks (always gets a chuckle from the audience), neuromotor system, efficiency ...â€•

Your answer â€“ you're seeing the trend in this game show now - â€œPower trainingâ€•. Ding ding ding!!!

In these pages I have discussed the concept of power training â€“ and what the phrase truly means. Hopefully, you remember that Power = Work/time â€“ the rate at which work can be done. We also know that Power = Force x Velocity. I would propose that there are two primary aspects to training. One is to build power â€“ and the other is to build efficiency. When we delve further into these, we are looking at neuromuscular power and neuromuscular efficiency. Your neuromuscular system is the primary limiter to your performance â€“ and if you delve even further, the primary limiter is probably your central nervous system â€“ the piece of the puzzle that ultimately makes the muscles contract in the first place.

The first training stimulus is the neuromuscular power session. Briefly stated, you need to develop greater power output than you plan on using in your race/event. For example, when training for a marathon, you would do interval training at your 10K pace (or faster). The same rationale would apply to training for a 5K.

The second training stimulus is the neuromuscular efficiency session. In other words, you need to become more efficient at your goal race pace. You need to know how to find that pace and maintain it for prolonged periods of time. In the example above, when training for a marathon, you would do longer runs at your goal race pace â€“ or periods of time during your long runs in which you maintain your goal race pace. This will certainly be at a power output that is far lower than your neuromuscular power sessions and is effectively learning how to â€œdial back the power outputâ€• (and continue an effective race fueling/hydration plan â€“ another discussion of it's own!).

For many, there is almost a â€œfearâ€• of doing higher intensity work â€“ be that building your peak power output or your goal power output. We must remember that the tissues of the human body adapt to the imposed demands â€“ given an environment in which to do so. Be it the cardiovascular system or the neuromuscular system, both respond favorably to an increasing intensity of loading. Simply â€œdoing more repetitionsâ€• won't affect the tissue integrity (and loading capacity) favorably at the cellular level. And yes, training is all about facilitating changes at the cellular level!

These two types of workouts would function year-round to provide you with the building blocks for a training program that will have you making steady progress â€“ both in your peak power output and your goal power output. Should we expect to stop progressing at some point in time? Absolutely not! Why? Because we can always build our power â€“ with the appropriate training stimuli. Your ability to generate power â€“ and to use it wisely â€“ are the keys to your triathlon success.

On the next episode of â€œThe Triathlon Pyramidâ€• we will explore the differences between training for short course and long course triathlon â€“ and that is certainly a $10,000 question, isn't it?

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