



Hi, <<First Name>>!

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Psychological fatigue! This week's episode was a must-listen. It was fascinating to learn how much of our perception of effort comes from factors other than physical fatigue.

You can follow my guests here:

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Here are some of the major concepts from this amazing episode.

Your perception of effort limits your endurance performance. If you can change perception of effort, you can change performance. There may be factors you are not aware of that affect your mental state and therefore your perception of effort and therefore your performance. Peripheral fatigue, which you learned about in episode 18 with Michael Joyner, M.D., contributes to increasing your perception of effort but there are other key factors that contribute as well.

What can you do or practice in training and continue in racing to minimize psychological fatigue?

1. Self-talk can have a substantial effect on how well you perform on endurance tests. Keep your self-talk positive, motivating, and

encouraging, and practice it in training, even when you don't 'need' it.

2. Setting goals, whatever they may be, will boost motivation. It is often useful to set short term goals. Don't start thinking about the finish line when you're just 20% into a race. Your next goal may be over the next hill, or reaching the next aid station. Be happy for yourself each time you reach the next goal.

3. Visualizing your success. In training, imagine yourself performing well in a race. In a race, imagine yourself coming into the next aid station, powering over a long climb, or maybe crossing the finish line if you're near the end.

4. Start mentally fresh. Be sure to minimize mental strain and stress in the days before a race and especially the day of a race.

5. Sleep, because sleep deprivation increases perception of effort. In very long races, you may perform better by sleeping a bit more because you can perform well enough to overcome the time loss and then some.

Brain endurance training is a concept pioneered by Dr. Marcora. It is based on the principle that practicing 'response inhibition' actually improves endurance performance even if the tasks have nothing to do with physical effort. An example of response inhibition is the Stroop effect, where the names of colors are written in a different color (e.g., the word red is written using blue ink). You have to inhibit your natural tendency to read the word and, instead, choose to name the color you see. This engages and trains the same areas of the brain that are used to overcome psychological drain and fatigue. The game of 'Simon says' is another example of response inhibition training. There are many versions of these on the web, and you might try doing these sorts of tests on a regular basis as part of your normal training. Dr. Marcora is working to develop auditory versions of response inhibition where you are to do a task only when you hear a certain sound and then are presented with many sounds. You have to resist performing the task (maybe it's raising your arms or sprinting 3 steps) until you hear the right sound...stay tuned!

Caffeine, at 3 – 6 mg/kg of body mass, reduces your perception of effort. Consider practicing with this in training before trying it in a race.

We wrapped up with two big-ticket questions.

1. What are the most common mistakes/misconceptions athletes have regarding psychological training?

ANSWER: The false belief that some people are naturally mentally stronger than others and that there's nothing you can do about it. That's not true because anybody can become mentally strong and tough through training and practice...do it, learn it, practice it, and perfect it.

2. What can an endurance athlete do in their next workout to begin improving psychological performance?

ANSWER: Know that there is hope for new mental training paradigms and tools through the great research being done right now. Know that perception of effort is your limiting factor for performance, which can be liberating. Try the motivational statements. Make sure you cheer yourself on. Say to yourself exactly what you'd want someone cheering you on to say.

During ultra-distance events, there are a lot of opportunities for things to go wrong, which can be stressful. Take time to plan how you will respond when these events come up. Plan this as seriously as you plan other aspects of your race. Have mental strategies you can employ quickly.

Do good event planning. Allow plenty of time to arrive, etc. so you don't have that additional mental stress. Plan for before the event and during the event to reduce mental stress.

Dr. Marcra promised several research papers and articles during the episode. Here are links if you want to read more:

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4473096/pdf/40279_2015_Article_319.pdf

<http://journal.frontiersin.org/article/10.3389/fnhum.2014.00967/full>

<http://jap.physiology.org/content/106/3/857>

<http://www.newyorker.com/tech/elements/what-is-fatigue>

**All the Best,
Shawn
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