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What's New This Year

What's the latest medical and scientific info about bicycling? Do you read the ad copy in the magazines to figure out what might be worth trying? Do you look to the pro athletes, who are sponsored, and figure if they do it or use it, it must be great? Do you ask you friends, or just spend your time, effort or money and try everything yourself?

For most of us, it's a combination of all of the above, plus a little hope. And, unfortunately, that little hope is what lots of companies cash in on when they manage to sell us plain old water, for example, at a couple of bucks a gallon or more.

There's another way—the scientific way. Looking at what studies/experiments really show.

Here's my spin on some of the published information on bicycling-related medicine and science that's come out this year.

Breathrite Nasal Strips

You've seen these nose band-aids on lots of athletes—from football players to mountain bikers. They cost about 50 cents each. They claim to improve performance by letting you get more air in through your nose?

Do you breathe through your nose when working hard? Or do you open your mouth?

I found five published studies from four different sets of investigators. Not a shred of evidence that these "external nasal dilators" improve anaerobic or aerobic performance.

Accusport Portable Blood Analyzer

Heart rate monitors have arguably revolutionized the approach to bicycle training and racing.

How much lactic acid are you producing at maximal or submaximal efforts? Is measuring the production of lactic acid worthwhile? Will the measurement of lactic acid be the next step in coaching and training?

I'm not convinced that this information is important, but others are. There is a small, portable, relatively inexpensive (few hundred dollars rather than few thousand) device that claims to do this accurately.

I was not impressed when I tried this unit for measuring blood lactate six months ago.

I tried it with lactate samples of known concentrations and found poor results. I also found my wife's and my own resting lactate levels gave false high readings—in the neighborhood of 4 millimoles per milliliter instead of the expected 1-1.5.

The company has claimed to have improved the device.

I've found three published reports about its accuracy, and all reports conclude that the unit has merit. I'm still not sure.

One study for example, found one analyzer gave a value of 13.9 millimoles for a blood sample at maximum effort, another machine gave a value of 13.2 for the same sample. The good news is that both units gave high numbers for hard efforts.

But I think we athletes may require more accuracy. After all, there's a difference

when your heart rate monitor says 139 and when it says 132. If you are time trialing, you wouldn't be happy if your heart rate monitor says 180 instead of 170—the same range of accuracy. That's a big "real-world" difference.

Aging and the Masters Athletes

Baby boomers—your time has come. Studying middle-aged masters and older athletes is probably one of the top three topics of research (along with nutrition and drugs).

The bottom line is that all those inevitable age-related declines are overstated. You know—max heart declines one beat per year, maximum oxygen uptake declines, maximum power declines, etc.

Turns out your body probably changes at a rate less than half of what appears in most physiology text books—as long as you stay active.

A lot of the previously observed declines were related to the fact that people used to just stop exercising and being active as they grew older. For many of us, that's not only not the case, it's the opposite—we're more active now than we were as kids.

Many studies find that the difference between active and inactive people is more than the difference between younger and older people.

The amount of oxygen your body can use, or its aerobic capacity, VO_2, turns out to be the same in older and younger athletes when the effect of leg mass is factored in.

Another study found that muscle strength in active people need not decline until the mid 60's.

Cramps

Muscle cramps are common. And they remain something of a mystery. The conventional wisdom (all your friends will tell you it's true) is that muscles cramp in athletes because of electrolyte imbalance—not enough sodium or potassium.

Three scientific investigations I reviewed this year were not able to show any truth to this often-repeated yet poorly supported theory.

Effects of Altitude

I've reviewed about a dozen new studies from this year.

Acclimatization to altitude may be necessary for racing at altitude.

Since less oxygen is present at altitude, and less work can be performed, traveling to altitude can result in detraining—athletes can lose fitness.

Studies have confirmed that sea-level athletes racing at altitude perform less work, and have lower time trial and maximum heart rates—about 1 beat per minute lower for every 1,000 feet of altitude gained.

Studies have confirmed that living and training at altitude doesn't help, and probably worsens sea level performance.

The Finnish group, led by Heiki Rusko, continues to experiment with an altitude house in the elite athletes, mostly cross-country skiers.

The athletes train at sea-level, but live in a house with less oxygen to simulate altitude. The idea is to get the benefits of altitude living, and the benefits of sea-level training.

These athletes almost always perform better than those "control" athletes living low with normal oxygen levels.

Living high and training low offers the most promise for improved performance for both aerobic and anaerobic riders.

Biomechanics

Continued research into optimal crank length and optimal cadence has failed to provide helpful insight into the correct approach to the long-time controversy.

Stretching and Massage

Although many riders swear by their value, past studies have shown limited if any effect on performance. Two more studies this year came to the same conclusion.

Hormones, Neurohormonal Fatigue and Overtraining

Training increases the body's metabolic rate and again has been shown to lower testosterone levels in men.

The answers are by no means here, but a dozen bits of research move us closer to the chemical reasons why we get fatigued with overtraining. And they overlap more and more with clinical depression.

Asthma and Exercise-Induced Bronchospasm

Studies have shown that this condition affects 10 to 25% of competitive aerobic athletes.

With proper testing I believe the percentage of elite cyclists subject to suboptimal lung function may be even greater. Medical treatment can improve lung function in those affected.

Music and Perceived Effort

Listening to music while working out appears to decrease perceived workload at low, but not at high intensities.

In the next issue: Dr. Baker reviews 1996 research about performance, nutrition and drugs.