Tried & Tested get tested!

And not for COVID for a change! Last weekend, Sean Kinane from My Health Matters brought his mobile fitness testing equipment to Dungarvan Rugby Club and embarked on a mammoth schedule of back to back fitness tests for the members of Tried & Tested Triathlon Club starting on Friday morning and running through to Sunday evening. There were 3 tests offered; Run V02 Max Test, Bike V02 Max Test and a Resting Metabolic Rate test.

VO2 Max is the amount of oxygen your body uses while exercising as hard as you can. The higher the amount, the longer the body can perform at high intensity exercise. It is measured in millilitres per kg body weight per minute and ranges from 30 ml/kg/min in non-active adults up to the high 80’s in professional athletes. The highest ever recorded VO2 max is 96 ml/kg/min, attributed to Bjørn Dæhlie, who was a Norwegian Olympic cross-country skier and not the commonly believed 100 of legendary cyclist Miguel Indurain which was later found to be unsubstantiated. But the VO2 Max score is only part of the puzzle and for triathletes, the ability to maintain maximum effort is not as relevant as the performance of the body at lower intensities. That’s why the more important numbers that Sean’s analysis provides are the VT1 (also known as aerobic threshold) heart rate and VT2 (also known as anaerobic threshold) heart rate.

Heart Rate is defined as the numbers of heart beats per minutes and requires a Heart Rate Monitor chest strap or watch to measure. The VT1 heart rate is the maximum intensity that an athlete can train at without producing any lactic acid. It is an intensity that a well-trained triathlete should be able to sustain for hours. In fact, at this intensity it is very unlikely that respiratory fatigue (energy production from glucose (carbohydrate) and oxygen) would be the over-riding factor causing an athlete to tire and it is more likely to be muscular, neuro-muscular (strength of the electrical signals from the brain to the muscles) or psychological fatigue (convincing yourself you’ve done enough) as long as the athlete was eating or drinking enough sugar for fuel. Long training sessions between VT1 and about 10 beats above (often referred to Heart Rate Zone 2) results in improving the bodies efficiency at generating energy from glucose and oxygen by increasing the number of mitochondria in muscle cells. These micro-organelles are where the energy conversion process takes place and so the more of these little fella’s in each muscle cell, the more bang for your buck!

As intensity of effort rises from the VT1 heart rate towards the higher VT2 heart rate, the body starts to require more energy to sustain the increasing effort than can be provided by the amount of oxygen in the blood so the anaerobic respiration process kicks in. This still involves converting glucose molecules into energy in the mitochondria in the muscle cells but does not use oxygen and produces much less energy per glucose molecule. It also produces hydrogen ions and blood lactate. The blood lactate is simply an indicator and has no negative effects on the muscle but the hydrogen ions interfere with the respiration process which is the main contributor to fatigue at this intensity. Above your VT2 Heart rate, the amount of hydrogen ions being produced outpaces the muscle cells ability to clear them out and it starts to accumulate. This means you’re burning matches and you have a limited time at the intensity before the pain and suffering will force you to stop.

So how can these 2 Heart Rate numbers be used? Training Heart Rate Zones can be built around the VT1 and VT2 and training sessions can be conducted in each of the Zones with the general rule that 80% of training for an endurance athlete like a triathlete should be done in the gentler Zones 1 and 2 (in and around VT1) and 20% in Zones 3 and above (in and around VT2) with the other general rule that Zone 1 and 2 workouts are long, continuous workouts and Zone 3 and above are ever decreasing interval durations ranging from 20 min intervals in Zone 3 (moderate) to 1 minute intervals in Zone 5 (flat out) with increasing rest intervals between efforts to allow recovery as one accelerates up through the Zones.

The final test offered was to assess Resting Metabolic Rate which is the amount of calories you burn doing nothing (except breathing and thinking etc). This can vary quite substantially from person to person and is a very useful piece of information to help determine the right diet for you based on the level of exercise you do on a daily basis.

The club would like to thank Sean Kinane for his insightful analysis and guidance and Anne Marie Hayes from the Tried & Tested Club Committee who made it all happen. We look forward to having him back later in the year to let us all know how much we have improved!

And now that the Tried & Tested faithful are all armed with their brand new VT1 and VT2 heart rates and can put together a plan to get to their ideal race weight, there is nothing stopping the club moving even further up the list of top performing Irish triathlon clubs in 2022!