



Electrostimulation and Triathlon

By Stéphane Janssoone

Formerly used for its analgesic properties, electricity is now an essential part of sports training, delivering increased strength, endurance, stamina and powers of recovery...all of which help maximize performance.

How does it work?

When we make the decision to contract a muscle voluntarily, our brain sends the order to the muscle in the form of a flow of nervous electrical impulses, called the action potential. This moves at high speed along the motor nerve by inverting the polarity of the cells across which it travels. At the end of the path, the information is communicated to the inside of the muscle cell by a neurotransmitter (acetylcholine) to trigger a complex process that finally results in the shortening of the fiber. Contrary to common wisdom, the electricity used in the electrical stimulation process has no intrinsically beneficial effect on our muscles. The truth is that the process of electrostimulation stimulates the muscle via the motor nerve. This is most efficient and effective for two reasons. First, electrical stimulation of a motor neuron requires much less current than would be needed for direct stimulation of the muscle fiber and, second, the surface excitation effect achieved by using the nerve to distribute the current to all muscle fibers transmits the flow deep into the muscle.

The physiology of muscle contraction and effort supplies us with very precise values of how the various muscle fiber types (slow, fast, intermediate, etc.) work and gives us a fairly detailed understanding of how different work rates correspond to the development of special types of muscle performance. The programs offered by the Compex Sport are particularly well suited to the physical quality the user wants to enhance. The pulse repeat frequency, the duration of each contraction, the rest time between contractions and the duration of each training program can all contribute to tailoring the training program to suit the precise objectives of the user.

How about Triathlon training?

With the evolution of the triathlon and its associated training methods, muscle development has, quite naturally, found its place in the preparation of every triathlete. Endurance is certainly vital, but the modern triathlete must also be fast and strong. The Compex Sport offers the perfect response to these



requirements and, with carefully planned preparation, triple event athletes can easily exploit their full physical potential.

Triathlon competition puts demands on a great number of muscle groups, so electrostimulation training requires prior analysis of the main muscles involved. The quadriceps is undoubtedly the most important, but attention must also be paid to the thigh, calf (for cycling and running) and major back muscles (for swimming) because they also contribute to the movements specific to triathlon disciplines. The same applies to the abdominal and lumbar muscles that contribute so much to the application of strength.

Which programs are available?

The Endurance and Strength programs are the most relevant for triathlon competitors. The former helps improve muscle blood supply, boosts the oxidative properties of slow fibers and is an effective supplement to the long, medium-intensity training sessions undertaken by triathletes. The latter applies more particularly to muscle building sessions (whether specific or in the gym) and helps develop maximum muscle contraction force. It's then up to the triathlete to apply the perfect technique required to transform the resulting strength into speed of movement. The Resistance and Explosive Strength programs can be of benefit to triathletes who have already achieved a good level of fitness and who can continue to make progress by diversifying their training techniques and options. There are also two other programs of particular importance to triathletes: Active Recovery, which as its name suggests, improves and accelerates muscle recovery and Potentiation which is used as a super warm-up preparation. Our physiological research has enabled us to develop a new type of complementary warm-up: Potentiation. After just 4 minutes of potentiation, an athlete is able to use maximum strength faster and is ready for competition immediately after.

A few basic rules...

Each of the strength, explosive strength, resistance and endurance programs include five different levels in terms of the quantity and power of work imposed by the electrostimulation process. Generally speaking, it is not a good idea to work through those levels quickly, because they are designed to be addressed progressively as part of training. You should give your muscles the time they need to adapt and position themselves after overcompensation. On the other hand, we strongly recommend that you use high current levels, because the higher the level, the more fibers are stimulated. The more fibers you stimulate, the more of them you will be strengthening. The type of current delivered by the Compex Sport allows you to increase the level without feeling any electrical



pain...the only pain you will feel is muscular pain, which just shows that the Compex is doing its work!