



Electrostimulation and Cycling

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 Cycling training?

Sports that require immense exertion, such as cycling, require athletes to spend many hours in the gym to increase muscle strength, often with poor results. Besides the overall general fatigue that is experienced with the voluntary workout, valuable training time is lost that could be spent on technical training. The risks involved with weight training include osteo-tendinosis stress imposed by the heavy loads on the joints and cardiac wall hypertrophy, as seen among weightlifters. Utilizing electrostimulation is an interesting solution to many problems. Not only does electrostimulation decrease the amount of physical and



mental fatigue, but there is no risk to the articular joints. These are the reasons road cyclists and mountain bikers use the CompeX Sport for muscle conditioning. Utilizing the CompeX Sport allows the cyclist to improve the quality and quantity of training sessions. Primarily utilizing CompeX Sport on the quadriceps for cycling, the key beneficial effects follow:

- The intensive muscle output allows for progression through the brackets (Strength Program).
- An increase in the quantity of muscle fibers recruited in long distance cycling (Endurance Program)
- An increase in the velocity of the sprinter (Explosive Strength Program)
- The gains observed with interval training sessions are more than that observed with voluntary efforts (Resistance Program)
- Acceleration of muscle recuperation (Active Recovery Program)

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!