Maintaining a Competitive Edge Using Pulse Oximetry

By: Daniel Watts

ENDURANCE. SPEED. EFFICIENCY. THESE GOALS are critical to athletes in their pursuit of excellence. Whatever the sport, it becomes increasingly challenging to achieve an optimal workout and stave off the competition. Monitoring the effects of exercise is important as a means of ensuring progress and subsequent success. After all, finishing second isn't an athlete's goal – it's to win.

Maximizing lung function is important for optimizing major body functions. Metabolism, blood pressure and muscle function are all dependent on the lungs ability to deliver oxygen throughout the body. Ensuring that oxygen levels stay within normal ranges can actually help enhance workouts. With advancements in science and cutting-edge technologies available to athletes, measuring oxygen saturation levels before, during and after workouts is now practical with compact and accurate pulse oximeters.

What is a pulse oximeter? Simply stated, pulse oximeters are medical devices used to measure the oxygen level (or oxygen saturation, Sp02) in the blood. Non-invasive and painless, they are widely used in the medical field and commonly used by pilots and people that work or train at high altitudes. For the athlete, oxygen delivery to the tissues is absolutely imperative for optimizing performance results. The manner in which a finger-pulse oximeter works is actually quite simple. When oxygen is inhaled into the lungs and passes into the blood, the majority of the oxygen attaches itself to hemoglobin (a protein located inside the red blood cells) and is transported into the bloodstream. Once this occurs, the oxygenated blood circulates and is dispersed to the tissues. A body deprived of an adequate supply of oxygen can develop a condition known as generalized hypoxia. This malady can also occur in various regions of an athlete's body and is commonly referred to as tissue hypoxia. Definitely, not a good thing! Fortunately, it is now possible to easily monitor heart rate and blood saturation levels with affordable finger pulse oximeters.

Finger pulse oximeter technology utilizes the light absorption properties of hemoglobin and the pulsating nature of blood flow in the arteries to determine oxygen saturation, Sp02. In a pulse oximeter two different light sources (red and infrared) shine light through a finger and onto a photodetector on the other side. Since the two light sources are absorbed differently by deoxyhemoglobin and oxyhemoglobin, analysis of the signal allows the oxygen saturation and heart rate to be measured. Acceptable normal ranges are typically from 95 percent to 100 percent, although values down to 90 percent are common.

For athletes during periods of high intensity training, there is a tendency for blood oxygen levels to drop. The objective is to keep muscles working harder and longer for extended periods of time. It refers back to the general physiological principle, that oxygen-rich muscles will improve overall muscular function and overall performance. In addition, pulse oximeters can be used

to evaluate clients with compromised lung or heart function. In this case, monitoring can be used to guide training and increase stamina.

Finger pulse oximeters are valuable training tools. They are easy to use and compact so they don't interfere with training workouts. Models are now available that comfortably fit around a client's wrist, are motion resistant and consistently accurate. Some models are capable of recording up to 30 hours of data for extended monitoring and coupled with analysis software allows progress to be tracked over time. Additionally, they offer a bright LED digital display of real-time values including Sp02, pulse rate and arterial pulse.

Pulse oximeters are a great way to help clients unleash their true potential with more effective workouts. These powerful performance-monitoring tools are low cost, easy to use and accurate. A win-win for you and your clients!

DANIEL WATTS IS AN ACCOUNT EXECUTIVE WITH INTELAMETRIX, INC. HE CAN BE CONTACTED AT 925.606.7044 OR BY E-MAIL AT DAN@INTELAMETRIX.COM.