

PACE's physiology lab is aimed at providing expert physiological testing and interpretation to the athlete AND coach. Our role as a service provider to athletes is to examine the objective physiological strengths and weakness of the athlete as they pertain to their goals, and to provide suggestions to the athletes coach and the athlete herself on how to systematically improve critical weakness that are barriers to athletic performance.

PACE values fostering relationships with a variety of coaches of athletes of various competitive abilities in order to provide sound baseline information for these athletes to achieve their goals. The art of coaching is not replaced by the scientific approach to the determination of the physiological dynamics of the athlete, it is enhance by these testing services.

How does PACE physiology lab assist coaches in providing better services to their athletes?

-Determination of athletes aerobic capacity: This important physiological benchmark indicates a 'natural selection' for endurance sports that can be useful to ensure appropriate goal setting by the coach and athlete.

-Estimation of the aerobic threshold: The aerobic threshold is a term used by some coaches and athletes to identify the initial net accumulation of lactate in the blood stream at sub maximal levels, indicating a greater contribution of the energetic demands of exercise coming from anaerobic pathways that cannot be oxidized. This is useful to the coach in gaining insight into the speed the athlete can run while using predominately fat as the main fuel source. This pace is indicative of the athletes overall endurance and may be related to their specific running speed for a marathon or during half and full Ironman triathlon's.

-Estimation of the lactate threshold: (defined as OBLA) The lactate threshold is a popular term often misused to estimate the running speed that the blood lactate begins accumulating at an exponential rate. This pace is therefore illustrative of one that can be maintained for 45 min to 1 hour in athletes with appropriate endurance training. The running speed at lactate threshold has been shown to be predictive of performance in running events from the 5,000m to the marathon.

-Determination of the anaerobic threshold: The anaerobic threshold is the point at which the respiratory exchange ratio (ratio of CO₂ and O₂) indicates that 100% of energy for that activity is being provided by carbohydrates.

-Analysis of running efficiency: the energetic cost of running at the 4-5 sub-maximal steady states is expressed as a percentage of maximal oxygen consumption. When athletes are tested at regular intervals (8-12 weeks) this becomes an excellent tool for determination of improvement in overall and specific running efficiency, a factor predictive of success in recreational and competitive athletes.

-Recommendation on training paces for key training zones with heart rate ranges: Utilizing the details from the test outcome listed above, coaches and athletes will receive training paces for key zones. The paces are as follows:

Recovery- optimal lower end running pace to improve aerobic power and the power that can be obtained from predominately fat as a source of energy.

Moderate aerobic- optimal higher end running pace for improvement of aerobic power and power from fat fuel source.

Marathon pace- recommended marathon pace for those athletes that are or will be training to compete in a marathon in the near future.

Stamina- lower end pace to improve the running speed at lactate threshold by improving the lactate shuttling of the body.

Stamina +- higher end pace to improve running speed at lactate threshold and the aerobic metabolism in the body.

Max VO₂- pace predictive of 100% of velocity at max vo₂ for the enhancement of the oxygen transport and utilization in the body.

-Testing schedule to use physiological testing as benchmark for improvement on key pieces of the physiological puzzle: Testing can be used not only to establish appropriate training zones for the athlete, but it can also serve as a marker for progress on the athletes speed at critical aerobic and anaerobic levels. PACE can provide recommendations on how to take the results of these tests to the field and periodically check your athletes yourself to ensure they are developing in the ways your training program has intended.

-Online training log for coach and athlete: PACE will provided a online training log for each athlete tested to document their training and if they wish the test provider can review this prior to each testing services to provide maximum customization of the test and interpretation.

-Consultant to coaches: PACE test providers are coaches themselves and are available to discuss how best the testing process can benefit their athletes, including what test is most appropriate for their athlete at that period in their training.

PACE physiology lab wants to be part of the success you have as a coach when working with your athletes. To discuss the ways our physiological testing can improve the performance of you runners, contact Sean Coster at 503.593.1396 or email at sean@crpusa.com.