

## Exercise Physiology and Human Performance Lab

Whether you are a competitive or recreational athlete our Exercise Physiology and Human Performance Lab provides the best services available in applied Exercise Physiology.

### Meeting Your Needs

At CU Sports Medicine, you will receive the same services as world class athletes. We use the latest tests, techniques and approaches in applied exercise physiology in our state-of-the-art Exercise Physiology and Human Performance lab. The elite athlete and the weekend warrior will benefit from the knowledge and expertise of our staff accumulated throughout the years with world class athletes.

Dr. Iñigo San Millán, director of the lab has worked with many elite and world class athletes in track and field, rowing, basketball, university athletics, and cycling (including a Tour de France winner and 15 Grand Tours podium riders).



Dr. Iñigo San Millán

### World Class Care

We have state-of-the-art laboratory equipment as well as experience in working at the highest level of the sport. You don't have to be a world class athlete anymore to be able to enjoy the highest level of applied exercise physiology as well as the newest and most sophisticated methodology that is out there.

### Results Oriented

The assessment of the physiological status is of great importance in planning specific and individualized training programs for athletes and exercise engaged individuals of all levels, to assess the assimilation of training and competition, as well as the fitness level of each athlete within a team or individual. For many years, elite athletes and top coaches have utilized physiological testing to provide crucial information needed to improve performance of individual and team athletes.

By performing two or more physiological tests throughout the exercise season, we can monitor the degree of fitness improvement. Often during the season, teams and athletes question why performance is deteriorating or not going as planned. In many situations inaccurate training decisions are made due to lack of objective knowledge of the cause of the decrease in performance. By performing physiological profiling throughout the season it is possible to detect and correct abnormalities before performance decreases.

Physiological testing assists the athlete/team with accurate information to assist in peaking physical performance in the best possible point of the season. For coaches, physiological follow-up during the season provides invaluable information to improve performance with their athletes.

**720.848.8208**

2000 S Colorado Blvd, Colorado Center Tower 1, Suite 1000  
Denver, CO 80222

## Services and Tests Offered

### Blood Profiling Consultation

Through blood profiling it is possible to detect ahead of time decreases in performance caused by fatigue and overtraining and help any athlete to return back to performance levels as well as to monitor the assimilation of training and competition. There are a number of blood parameters that help us to detect overtraining and fatigue ahead of time or when once overtraining has showed up, they help us to detect the cause and help the athlete to get back on track as soon as possible.

**Price: \$100 Follow-up consultations: \$65**

### VO<sub>2max</sub> Test

#### (Maximal Oxygen Consumption)

#### + Body Composition

VO<sub>2max</sub> is the maximum capacity of an individual's body to transport and utilize oxygen during exercise. It is considered as the best indicator of cardiorespiratory fitness level and an excellent estimation of aerobic performance potential. It is possible to estimate ventilatory threshold (an estimate of lactate threshold) and establish training zones and intensities for any athlete. **Price: \$200**

### Individual Exercise Metabolic Profile

#### (IEMP) and Metabolic Crossover Point + Body Composition

A great value for those interested in losing weight. It is possible to estimate fat and carbohydrate rates of utilization (grams/minute) at different intensities during exercise so we can more accurately and individually determine exercise zones where an individual can burn the most amount of fat and therefore be more successful in prescribing specific and individual training intensities to lose weight. We can also study an individual's metabolic behavior during exercise as well as the "crossover" point which represents the point at which the body starts using more carbohydrates (sugars) than fat during exercise. We have recently done a slight modification of the original "crossover concept" proposed by Brooks and Donovan so that it can be more easily applied to any individual (*San Millán et al.; Sensitivity of Crossover Concept to Discriminate Different Levels of Performance: A New Approach. Med Sci Sports Exerc 40:293. 2008. Gonzalez-Haro and San Millán; Application of Crossover Concept to UCI Pro Tour Level Professional Cyclists: A New Approach. Med Sci Sports Exerc 40:396-397. 2008*) **Price: \$250**



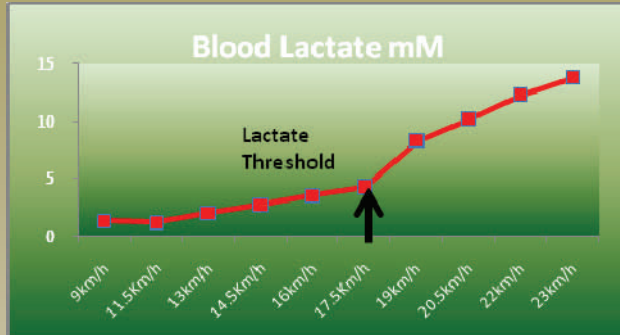
A cyclist undergoing VO<sub>2max</sub> testing

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## Services and Tests Offered

### Lactate Profile and Metabolism + Body Composition



We have worked extensively studying lactate metabolism in athletes of all sports and successfully applying new approaches and testing protocols based on scientific studies. Currently, blood lactate concentration measurement is probably the best indicator for endurance athletic performance. As exercise intensity increases, blood lactate production increases as well. The net blood lactate accumulation is the result of the lactate production and lactate removal.

Measuring blood lactate concentration can:

- indirectly measure muscle metabolism during exercise
- estimate muscle fiber recruitment pattern
- predict athletic performance
- investigate nutritional status of the athlete
- prescribe specific individual trainings

**Price: \$150**

### Body Composition (Anthropometry)

(Included in any of  $VO_{2\max}$ , Lactate threshold and IEMP tests)

Through an anthropometry it is possible to measure percentages and total weight for body fat as well as muscle mass and individually determine an ideal weight according to the sport and level of any individual.

Note: Blood work is done outside our facilities (under the athlete's expense) and sent to us for reviewing. We can recommend laboratories based upon location and convenience.

### Special Packages:

$VO_{2\max}$  + Lactate Metabolism + Body Composition:

**Price \$250 (\$350 value)**

$VO_{2\max}$  + Lactate Metabolism + Body Composition + Individual Exercise Metabolic Profile (IEMP):

**Price \$300 (\$600 value)**

Triathlon Package: 2 tests, running and cycling with  $VO_{2\max}$  + Lactate

Metabolism + Body Composition:

**Price \$350 (\$500 value)**

**Team/Club/Group members (10 or more members) + CU and DU Students receive a**

**20% discount**

 **Sports Medicine**

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**University of  
Colorado Hospital**  
ANSCHUTZ MEDICAL CAMPUS