Reverse Engineering Performance

A 4-Day Hands-on Camp on Physiology, Diagnostics, Nutrition, and Training Adaptation

This 4-day immersive camp teaches how performance emerges from physiology — and how training and nutrition adaptations follow from it.
By the end of the camp, you will be able to assess an athlete's metabolic profile and, based on the data, immediately make physiology-informed decisions on how to design training and nutrition strategies that improve performance.

No opinions. No training philosophies. Just scientific causal relationships and physiological mechanisms.

Program

Day 1 - The Building Blocks of Power

Masterclass: How Power is composed – the energy metabolism that enables performance

Creatine & ATP energy system

- **what is are the ATP and PCr energy supply mechanisms**
- **in which training and racing scenarios can they make a difference**
- **how to measure it**
- **energetic contribution of the PCr system**
- **link to fatigue and maximum power**

Glycolytic energy metabolism

- **what is glycolytic energy supply**
- **in which training and racing scenarios does it matter**
- **how to measure it**
- **influence on endurance performance**
- **influence sprint performance**
- **Determining the optimal VLamax**

Aerobic energy metabolism

- **What is aerobic energy supply**

- **In which training and racing scenarios does it matter**
- **How to measure it**
- **Influence on endurance performance**
- **Influence on substrate (fat / carbo) utilization**

Anaerobic Threshold

- **What is anaerobic threshold**
- **In which training and racing scenarios does it matter**
- **How to measure it**

Fat & Carbohydrate Combustion

- **What is substrate utilization?**
- **In which training and racing scenarios does it matter**
- **How to measure it**
- **Mechanism that regulates fat/carb combustion in training and racing**

Day 2 - Practice Tests VO2 & Lactate Testing Session

1. Practical Session: Testing Protocols & lactate sampling

- **Testing protocols**
- **Tricks & tips how to take lactate samples**
- **Most common mistakes in lactate testing**
- **Introduction to VO2 analyzers and its application**

2. Practical Session: Run testing at the track

- **Lactate testing in running**
- **Measuring VO2 in running using COSMED K5 Mobile Analyzer**
- **Testing running economy**
- **Determination of threshold, VO2max, VLamax, FatMax**
- **Protocols**
- **Creating a 360° metabolic profile**

3. Practical Session: Bike Test

- **Lactate testing in cycling**
- **Protocols**
- **Determination of threshold, VO2max, VLamax, FatMax**

Day 3 - Phenotype based training – learn how the athlete phenotype determines training efficacy

1. Masterclass: Phenotype Based Training Part I

- **What is athlete phenotype & how to determine it**

- **Training to increase aerobic performance**
    - **How athlete type determines the most efficient training intensity**
    - **Polarized vs. pyramidal training models – the physiology of your athlete determines which model to choose**
    - **How to pick the correct training intensity**
    - **Physiological reasons why a training program that worked in the past now may not work anymore**
    - **How to pick the best training volume**
- **Training of the glycolytic system**
    - **Training to lower VLamax**
    - **Training to increase VLamax**

2. Masterclass: Phenotype Based Training Part I|

- **Physiology-based interval training**
    - **Intervals to increase VO2max**
    - **Intervals to stabilize VLamax**
    - **Intervals to increase buffering capacity**
- **Training to increase fat combustion**
    - **Periodized nutrition**
    - **Training intensity**
    - **Hacks to increase fat combustion**

Day 4 - Metabolic Profiling & Training planning: real world use cases how to use test data

1. **Practical session: evaluation of the test data**
    - **Processing test data of day 2**
    - **Applying the knowledge gained on day 1**
    - **How VO2max & VLamax are determined using incremental tests**
    - **Creating a full metabolic profile of an athlete**
    - **Interpretation of the metabolic profile**
    - **Accuracy and Reliability**
    - **Influence of device measurement error**
    - **Influence of testing protocols**

2. **Practical session: from test data to training programs**
    - **Applying the knowledge gained on day 3**

5 Use cases of different athletes in different sports:

- **Analyzing the metabolic profile to identify what to train**
- **Specific fueling and periodization strategies based on the metabolic profile and goals of the athletes**

- **How to decide which intensity zones to choose based on the metabolic profile and the goals**
- **Designing training zones and interval sets**
- **Rolling out the program and retesting**