

Basics of Cycling Training

Bicycle racing demands a wide range of physiological capabilities, from being able to ride at race pace for hours and then finish with a sprint at full speed, to be able to climb long and short hills, to accelerating anaerobically several times per mile in a criterium. Unlike cycling, many endurance sports do not require the extremes in physiological capabilities (e.g. marathoners don't need a fast sprint). Because cycling requires such a wide range of capabilities, it is a challenge to develop a training plan that prepares a cyclist for all aspects adequately.

Cyclists ultimately need well developed **Cycling Proficiencies**. These are supported by **Physiological Capabilities**, which in turn are supported by **Physiological Systems**. To improve these physiological systems requires developing **Training Adaptations** which in turn determine the type of **Training Sessions** required.



A. Cycling Proficiencies

Let's start by looking at the required **cycling proficiencies** required by an all-around road cyclist. Those discussed here include only the physiological proficiencies, not skills, tactics, or mental proficiencies, which are also required for success. The main ones include:

- Sprinting
- Climbing (long mountains and short hills)
- Time trialing
- Attacking/chasing breaks/accelerations
- Multi-hour road racing

B. Physiological Capabilities

To support these cycling proficiencies, there are several **physiological capabilities** that are called upon to provide the required output. These can be categorized in three general ways. Every form of cycling is some combination of **strength, endurance,** and level of **intensity.** Intensity level is described and measured in several ways (% of maximum heart rate; % of V02 max; heart rate zones 1-5; % of Lactate Threshold; watts; relative perceived exertion (RPE) values 1-20).

CYCLING = STRENGTH x ENDURANCE x INTENSITY

The combination of these three capabilities is different for each of the cycling proficiencies. Time trialing is a rather equal combination of strength, endurance, and level of intensity. Sprinting requires maximum intensity and strength but no endurance. Chasing down a break requires a fairly high intensity level (anaerobic) with limited endurance.

The following diagram shows how these cycling proficiencies fit into the three major physiological capabilities. Each of these types of cycling types requires a different combination of the three physiologies. Note that there is not a type of cycling that requires high strength at an aerobic pace (upper left), just as there are no types that require high endurance and anaerobic conditions (lower right). These pairs of capabilities don't go together.

Understanding this chart will allow you to think about the three sets of physiological capabilities you need to develop.

Sample file

