

A dark blue, irregular ink splash or watercolor blotch serves as the background for the text. The splash is centered and has a textured, painterly appearance with some lighter blue and white areas around its edges. The text is white and centered within the dark blue area.

Preparation for the Middle-Distance Athlete

outline

- Effort line
- Aerobic system and how it interacts with Lactate and why is so important to get it right.
- Identify the miler (Cross country vs the Miler)
- Aerobic development and sensitivity with the Miler – Why is so important for the miler to develop it correctly for that athlete.
- Vo2 Development of the miler and managing it
- Anaerobic Endurance for the Miler

Pace

0mph

23 mph

Heart Rate

36 bpm

215 bpm

Lactate Levels

< 1 mms

15 or more mms

Vo2

Minimum utilization
of Oxygen

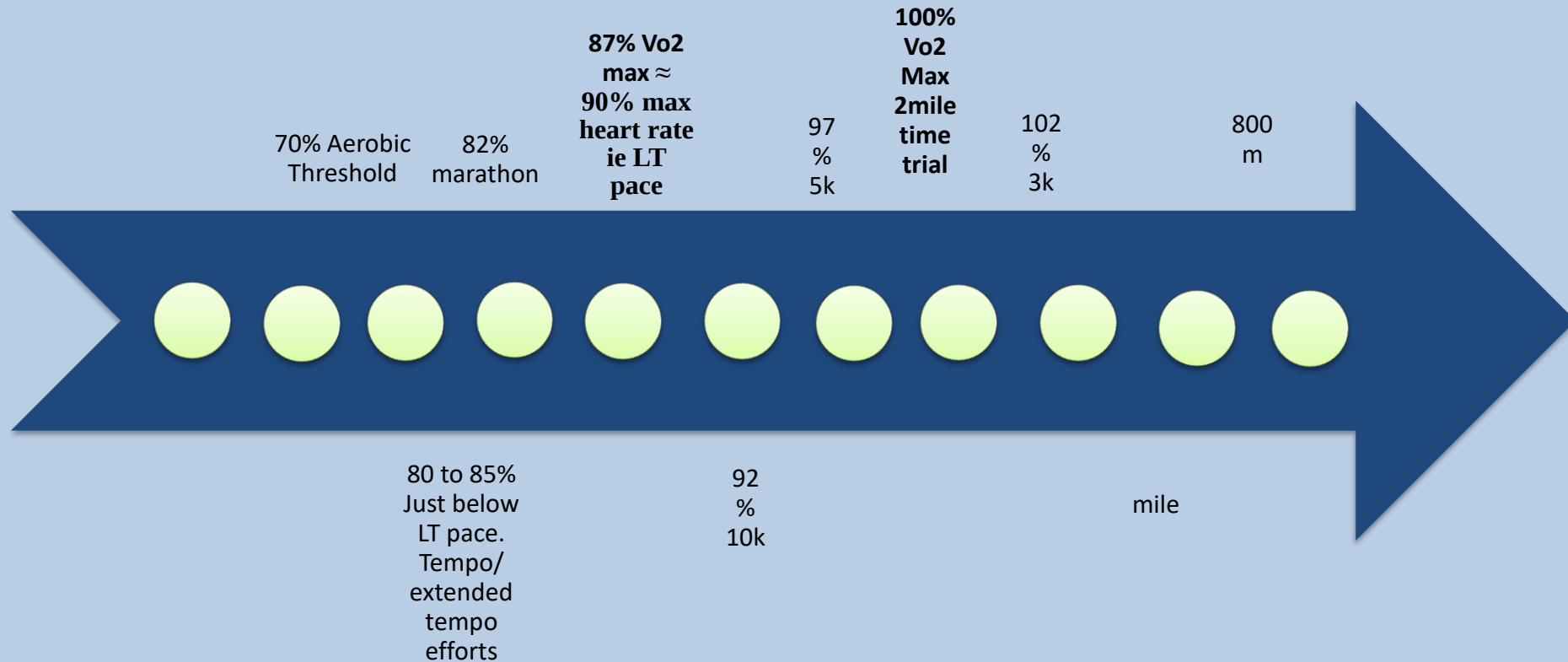
Maximum utilization of
Oxygen

Perceived Effort

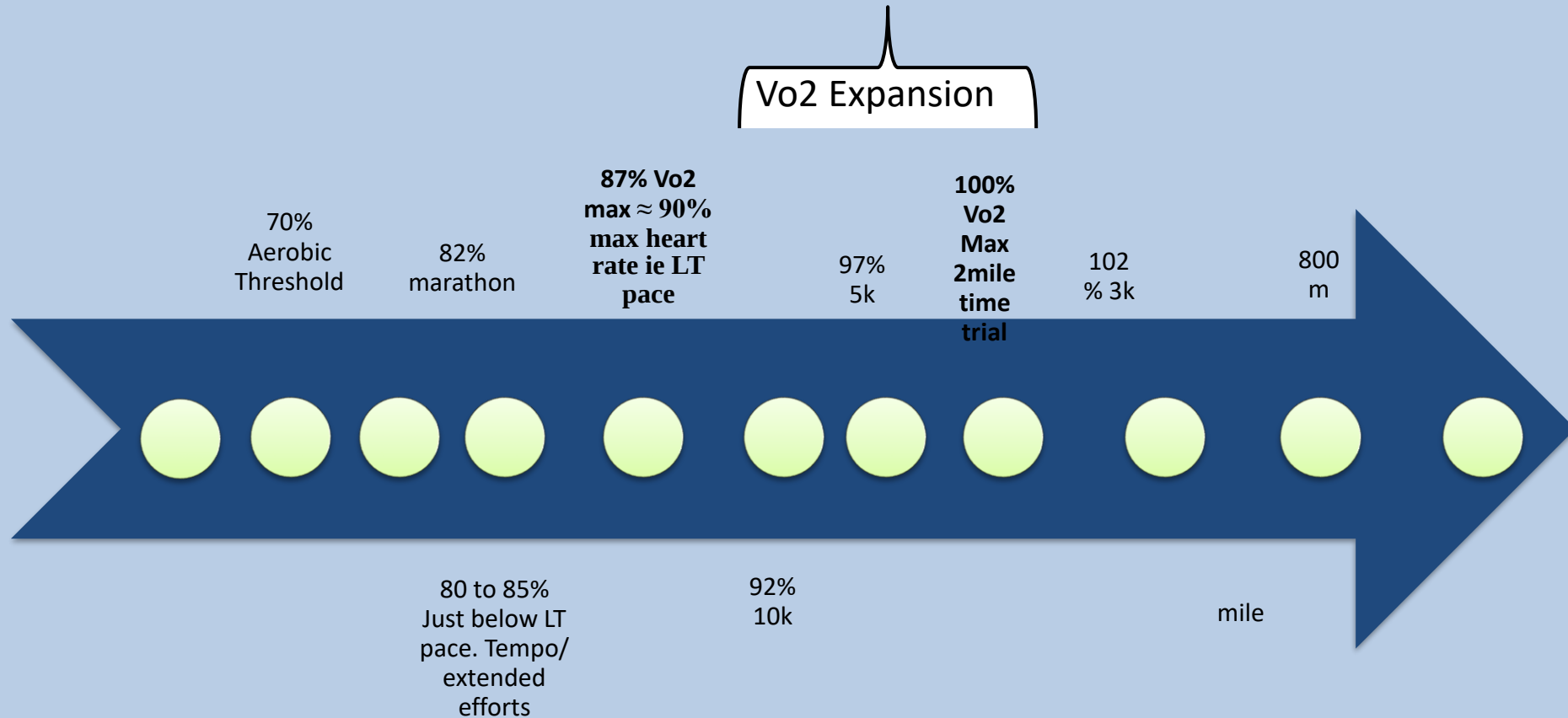
Very Easy

Very Hard

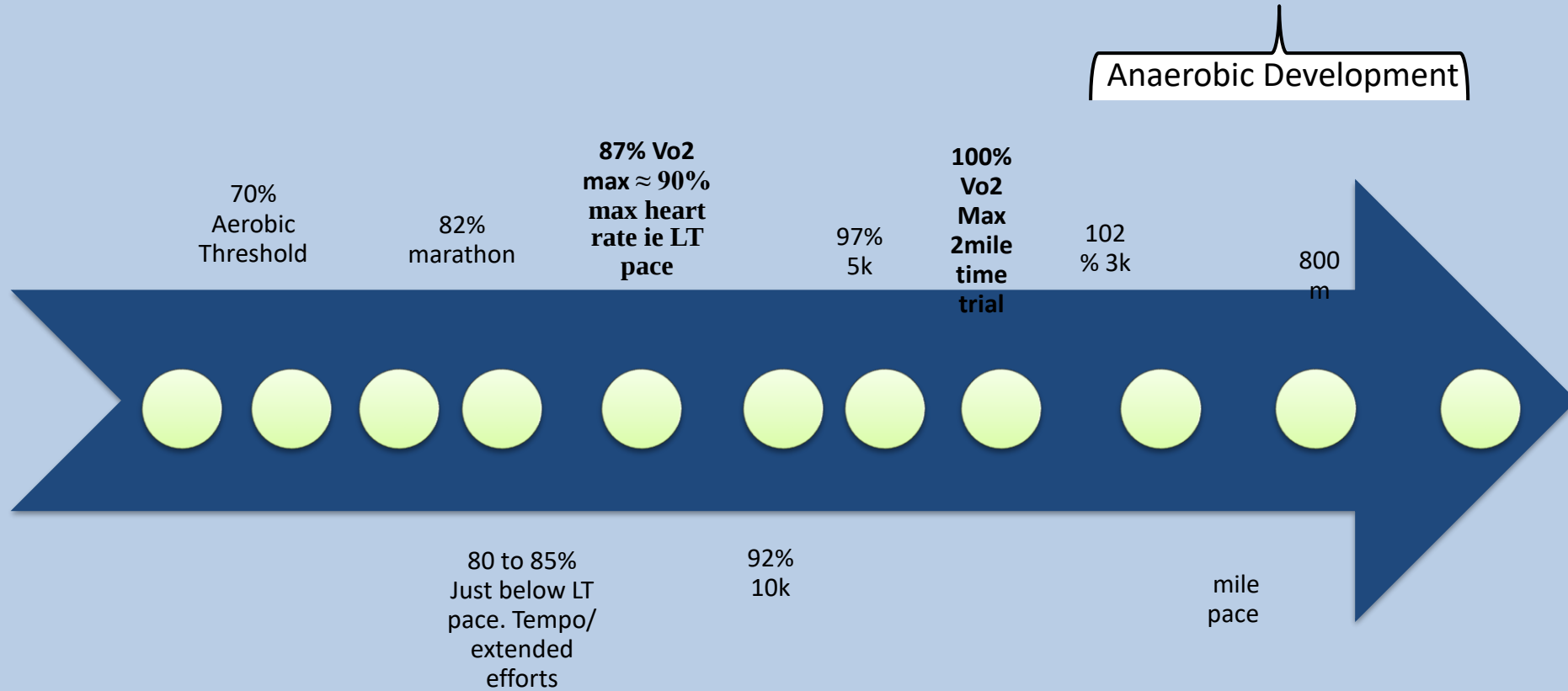
Effort Line



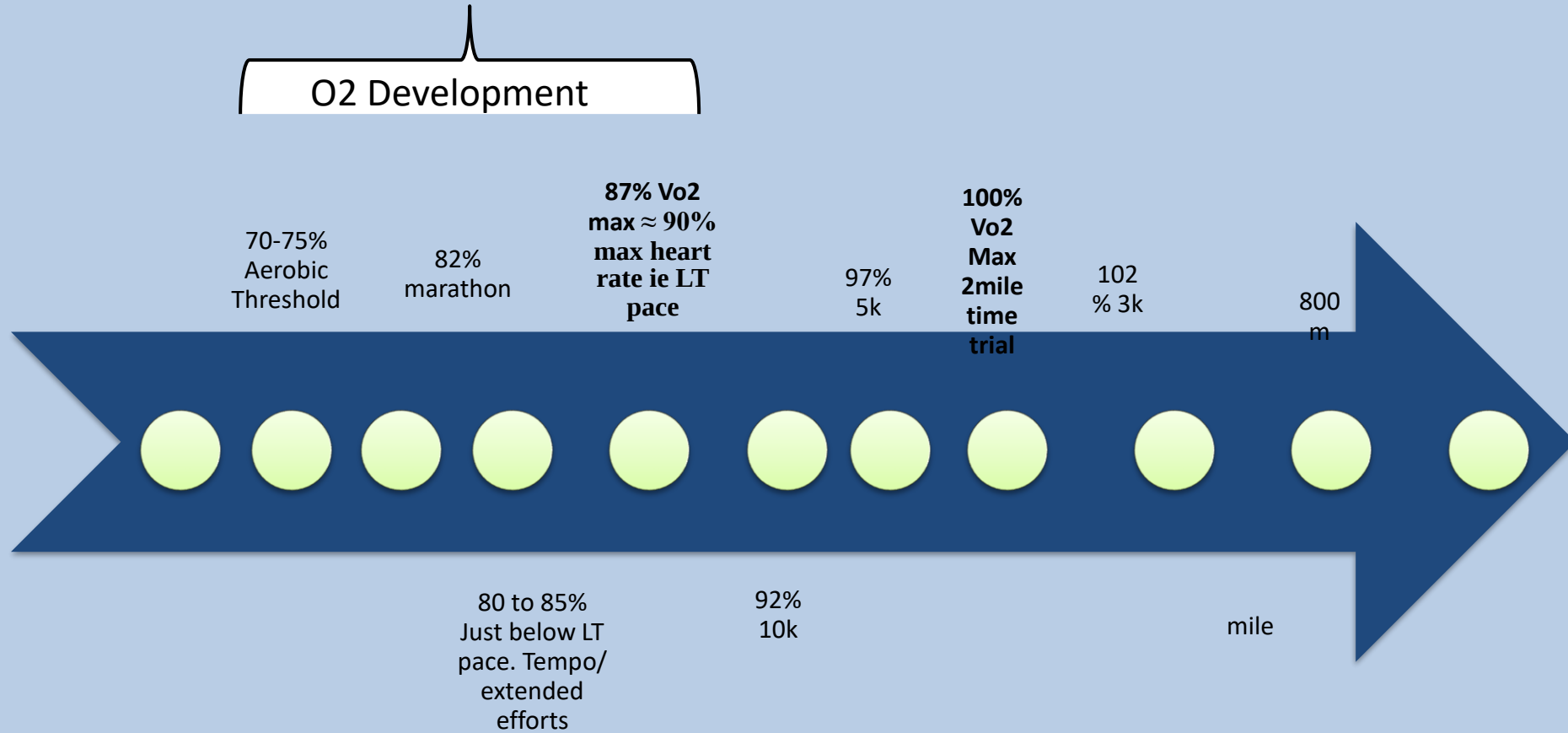
Effort Line



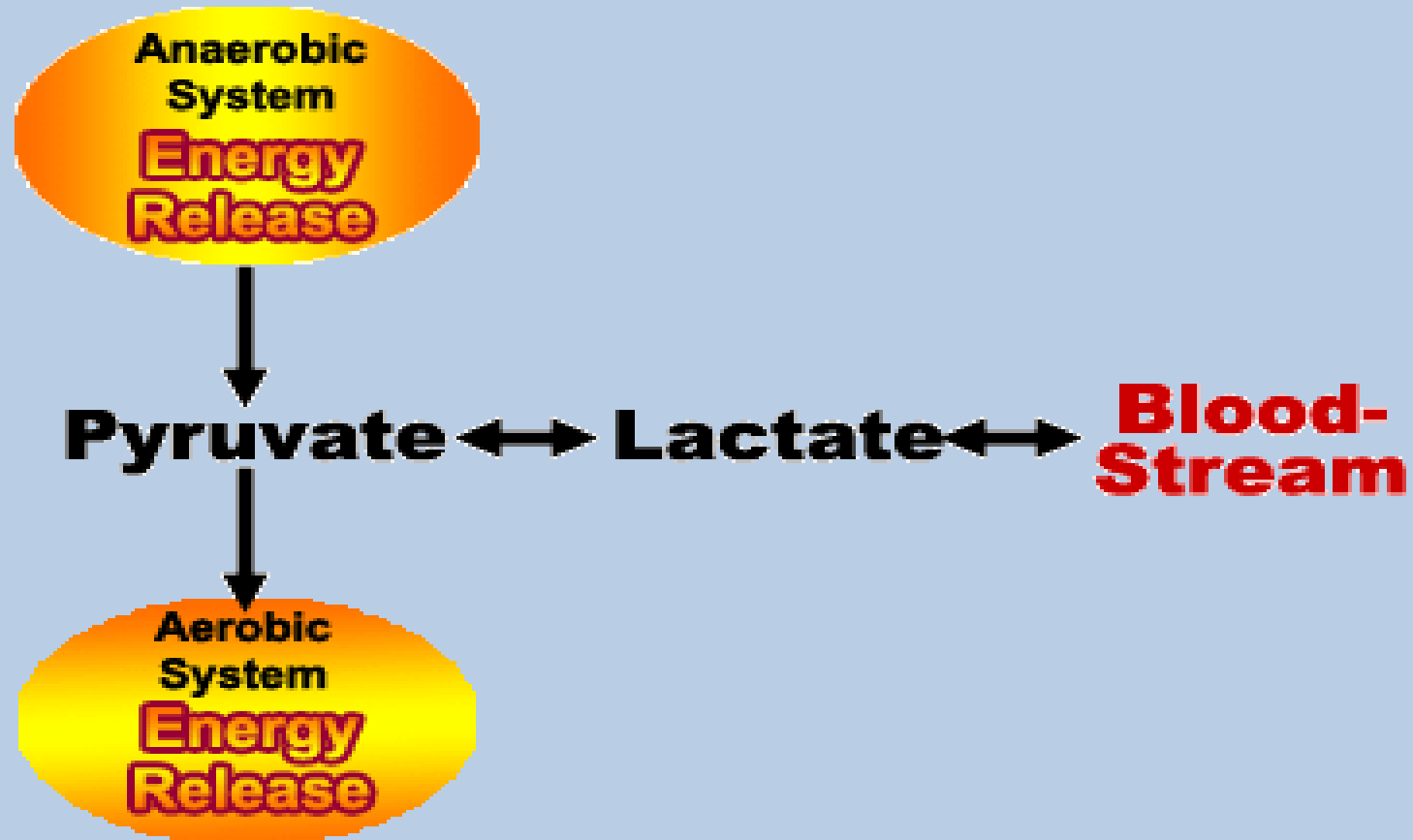
Vo2 Effort Line



Vo2 Effort Line



Follow the Lactate



Develop the energy system to accommodate the lactate to form more energy

Anaerobic



Blood Stream

Vo2 System

Remainder of O2 System
threshold

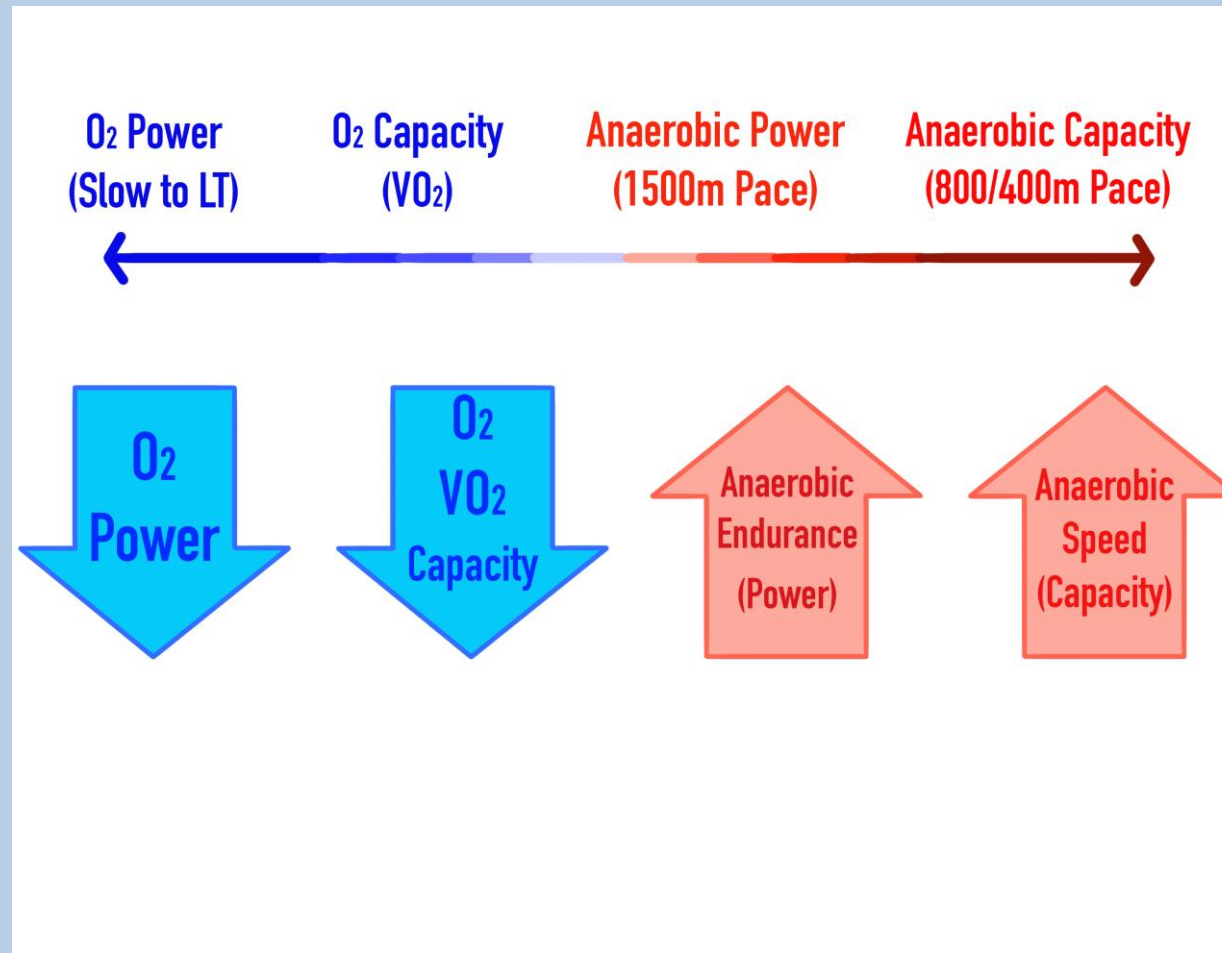
tempo

zone runs

easy runs

Aerobic System

Aerobic System Vs Anerobic System



Aerobic Development For the Miler

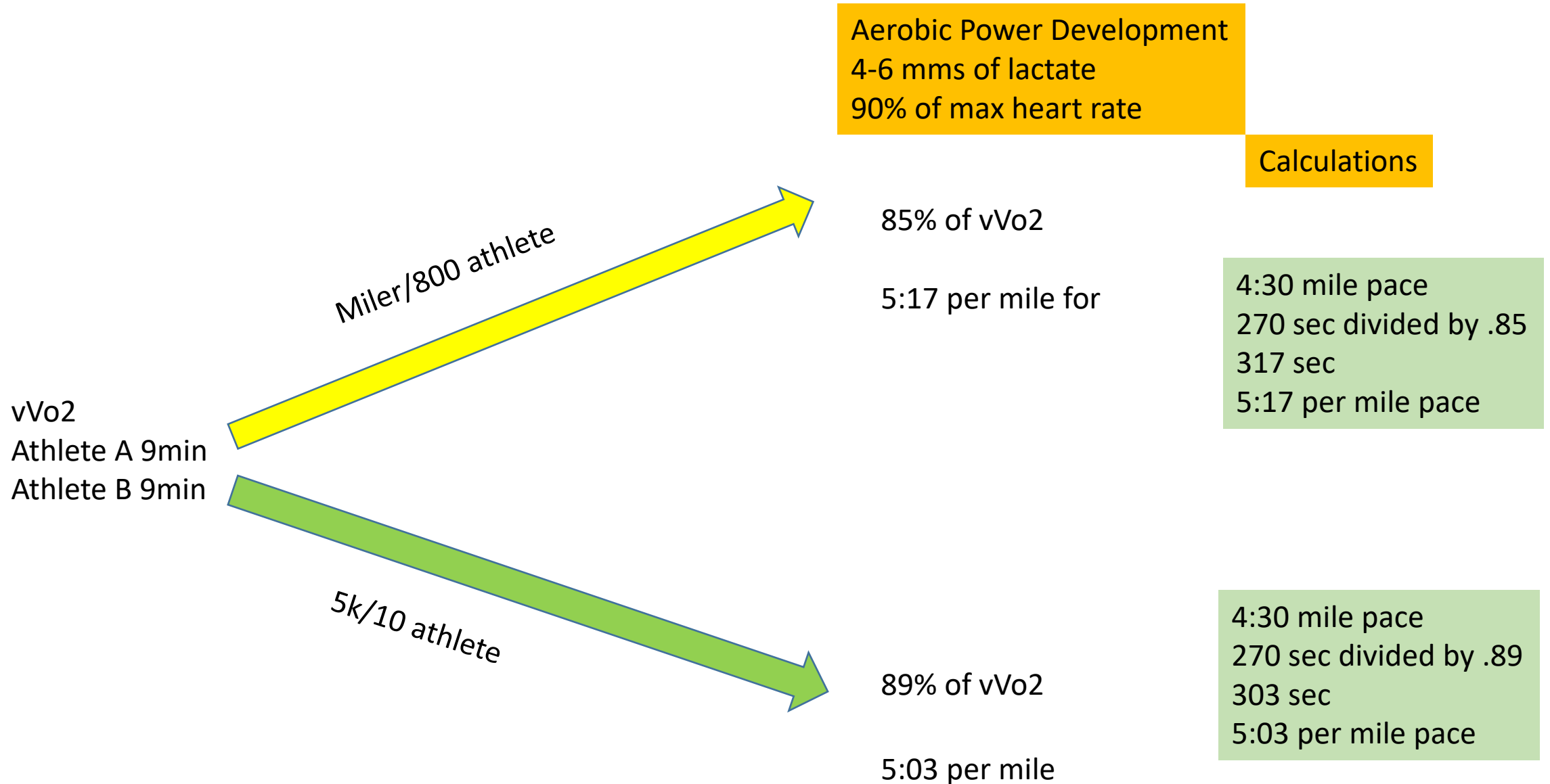
- LT pace is 85% of vVo2 max
- Tempo run 80% of vVo2 max
- Zone or Progression Run will be somewhere between 75 to 60 % of vVo2 max
- Note: all percentages are usually plus/minus 2%

Assess what type of Miler you are working with.

The Aerobic Calculations will be based on the vVo2max pace

Adjust accordingly to the athlete

9 min for 2 miles athlete A and athlete B



02 Development for the Miler vs the Distance Runner

- **10 K distance Runner**

- Total volume in weekly mileage is higher
- Long zone runs; 60 to 70 min
- Lactate Threshold > 1k repeats. 8 to 10k of total volume
- The LT pace will be steady and faster than the miler.

- **Miler**

- Total volume in weekly mileage is lower
- Shorter zone runs – easier pace. 30 to 40 min
- Lactate Threshold < 1 k repeats. The repeats can be shorter. 6 to 8k of total volume
- The LT pace may be slower relative to distance athlete.

Guidelines for the Miler:

- ***College:***
 - Mileage: 50 -70
 - Zone 45 min @ < 80% of vVo2 max pace
 - LT pace 85% of vVo2 max pace; volume at 8k and below.
 - Vo2 max Reps < 600 meters with total volume 5k total
- ***High School:***
 - Mileage 30 to 50
 - Zone 30 to 40 min @ < 80% of vVo2 max pace
 - LT pace 85% of vVo2 max pace; volume < 6k and below.
 - Vo2 max Reps < 400 meters with total volume < 3.5 k total

Relationship between Power and Capacity

- Aerobic Power:
 - Sustainability of a pace over a significant time.
 - How long can you go and at what pace maintaining about 85% max heart rate, or about 80% of $\dot{V}O_2$, or sustaining about 3.5 to 4mls of lactate.
- Anaerobic Power/ Endurance
 - The miler can run repeat 400s at 62 second pace but can they put 4 of them back-to-back.

Aerobic Capacity and Anaerobic Capacity

- Aerobic Capacity is developed through the Vo2 workouts and consequently allows for more aerobic power to be developed.
- Too much Vo2 work will eventually suppress the Aerobic Power and if it is mis managed it will certainly suppress the Aerobic Power.
- Anaerobic Capacity:
- Workouts that will involve an intensity that will provoke a great deal of Lactate to be produced.
- It will allow for more Anaerobic Power/Endurance to be developed but it can also lead to injuries.

Sustainability of A Pace over Time



Aerobic Power is a constant pace you can run at for a length of time at a constant effort.

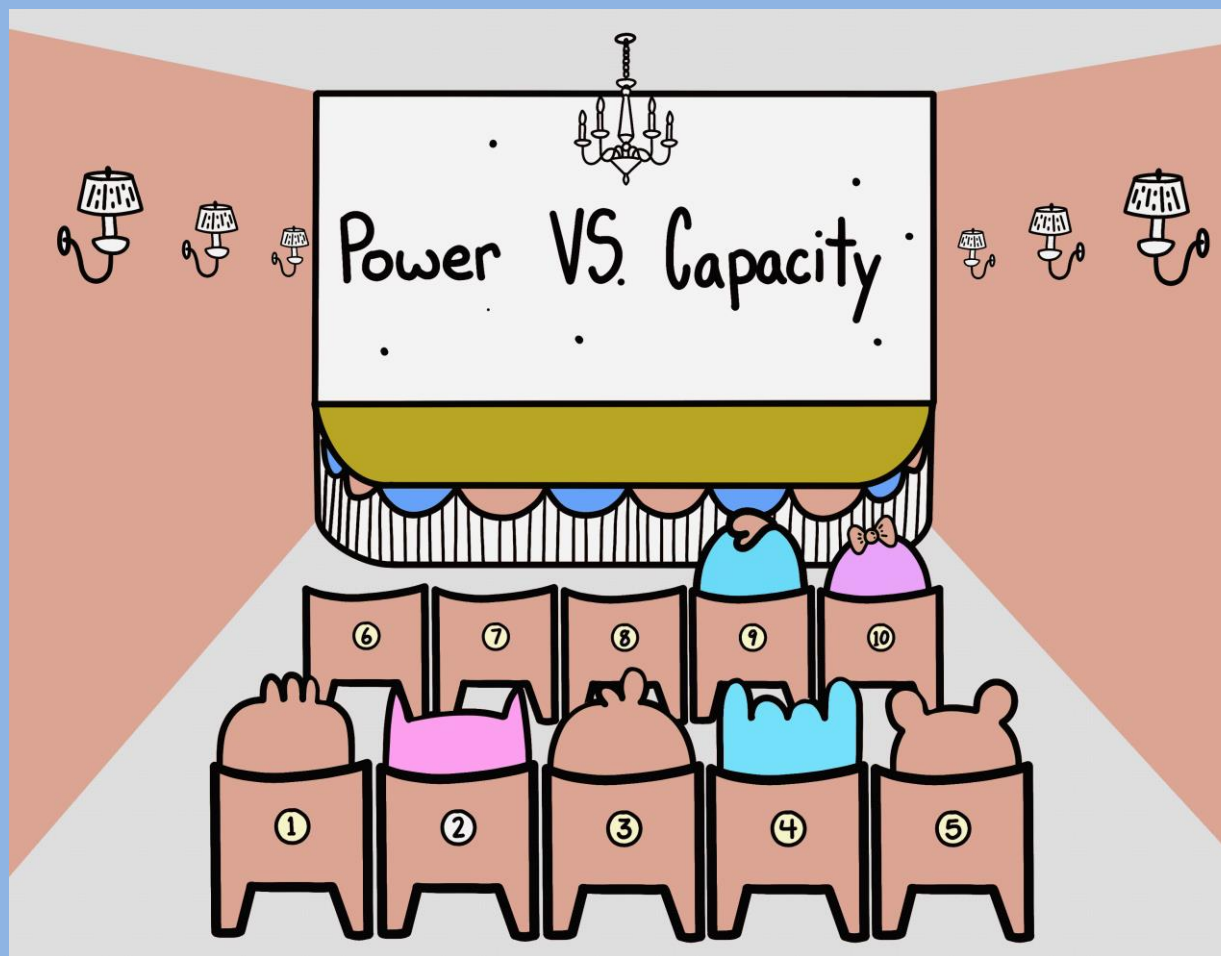


Capacity is increasing the space that will allow you to develop your aerobic power

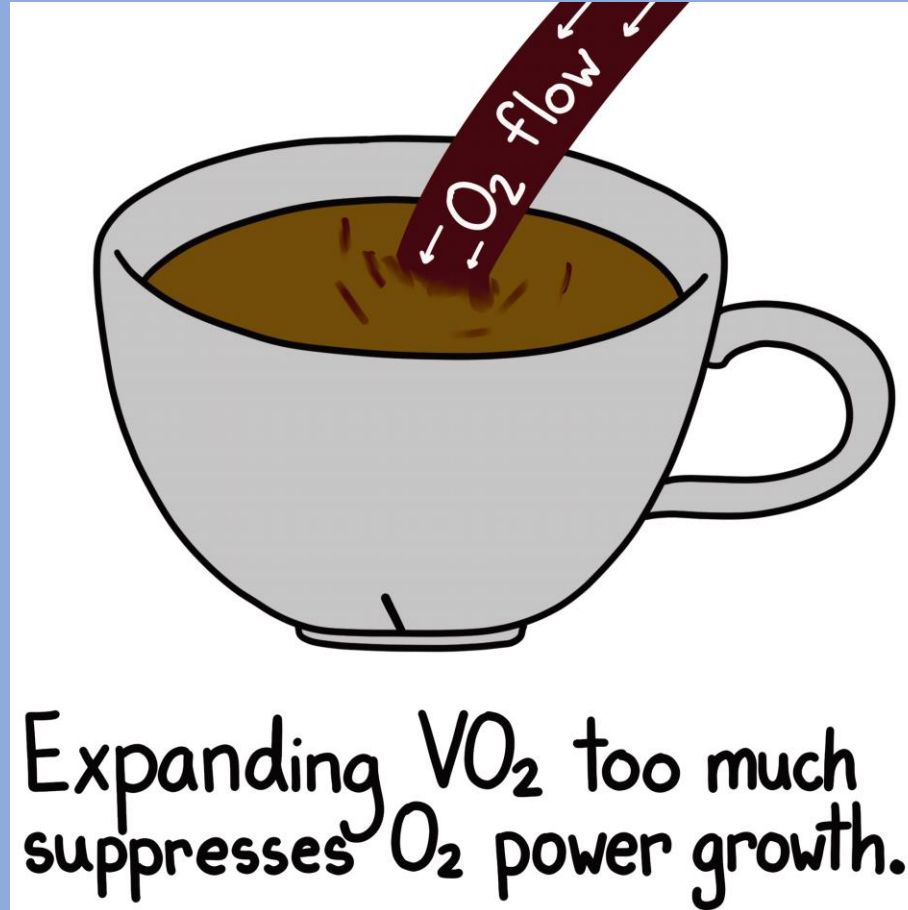


Increase capacity through additional VO_2 training.

Capacity provides more room for Power to Develop



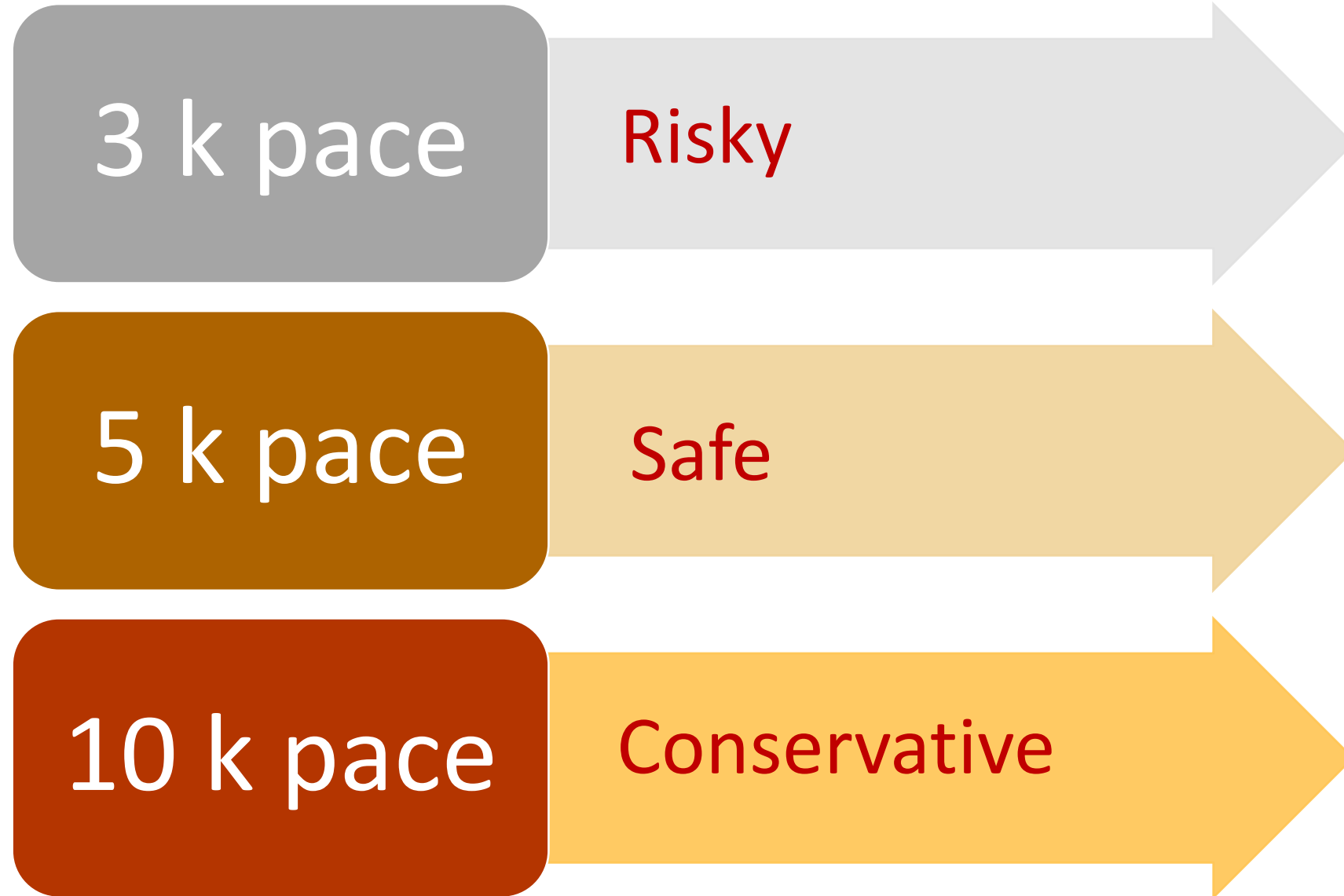
As you expand the Vo_2 system to provide a better development of Aerobic power you will reach a point where it begins to off set each other – More so if the Vo_2 is over extended.



Expanding the Vo2 to increase the Aerobic Capacity

- 10k pace is enough to stimulate the Vo2.
- You will be above LT pace which means the heart rate will be 92% of Max Heart Rate and above or 92% and above of velocity of Vo2 max (vVo2). It is essentially 10 k pace and faster to about 3k pace.
- You can utilize a variety of distances, paces and recoveries.
- Depending on the various components of how you put the training can lead to mismanagement especially in the Miler.

Developing the Vo2



3 k pace

This is your Vo2 pace
Use the 2 mile race time

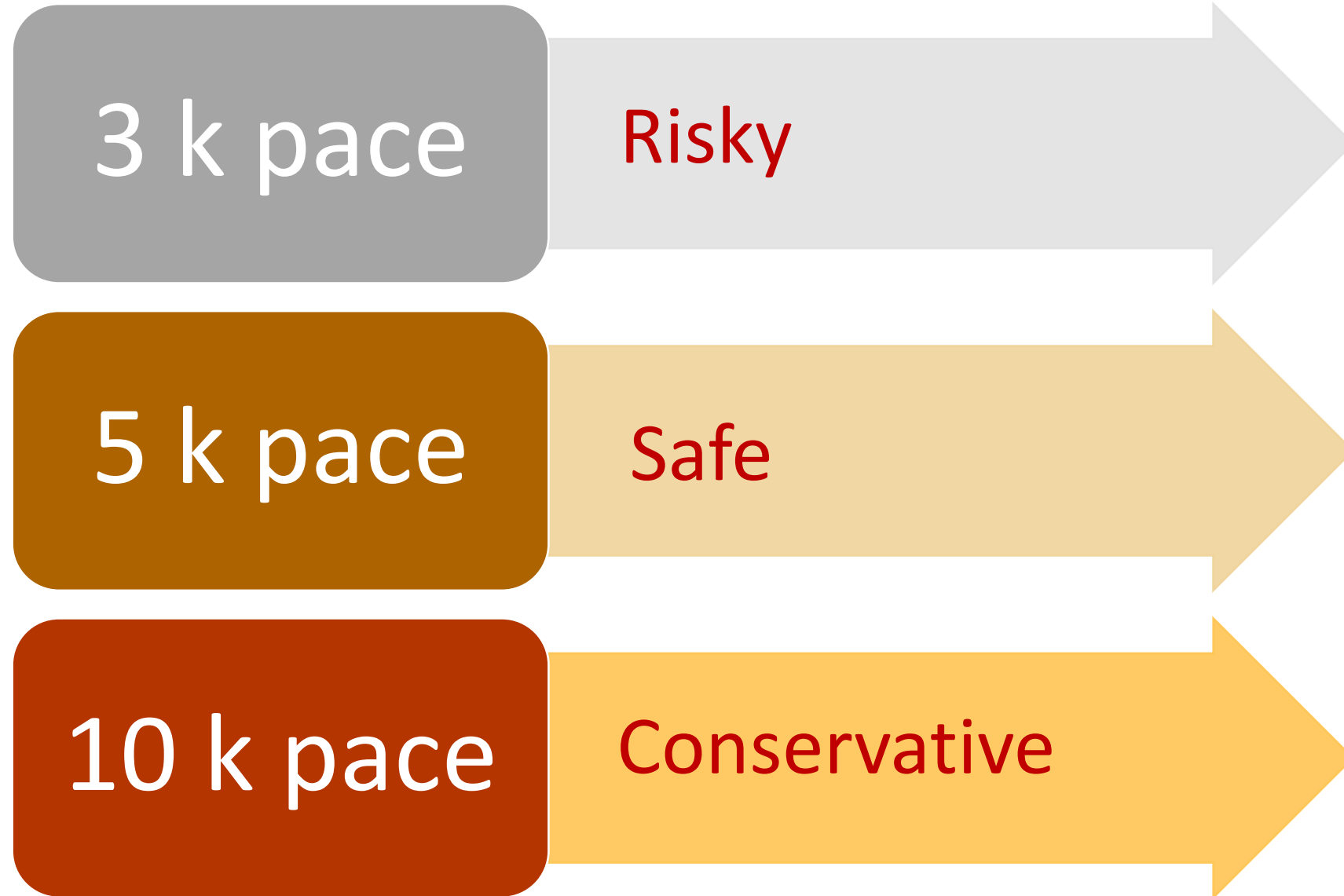
5 k pace

This is 97% of the Vo2 pace
Use the 5k race time

10 k pace

This is 92% of the Vo2 pace
Use 10 k race time

Developing the Vo2



**length of the
repetition/intervals**

**Recovery between the
repetition/ intervals**

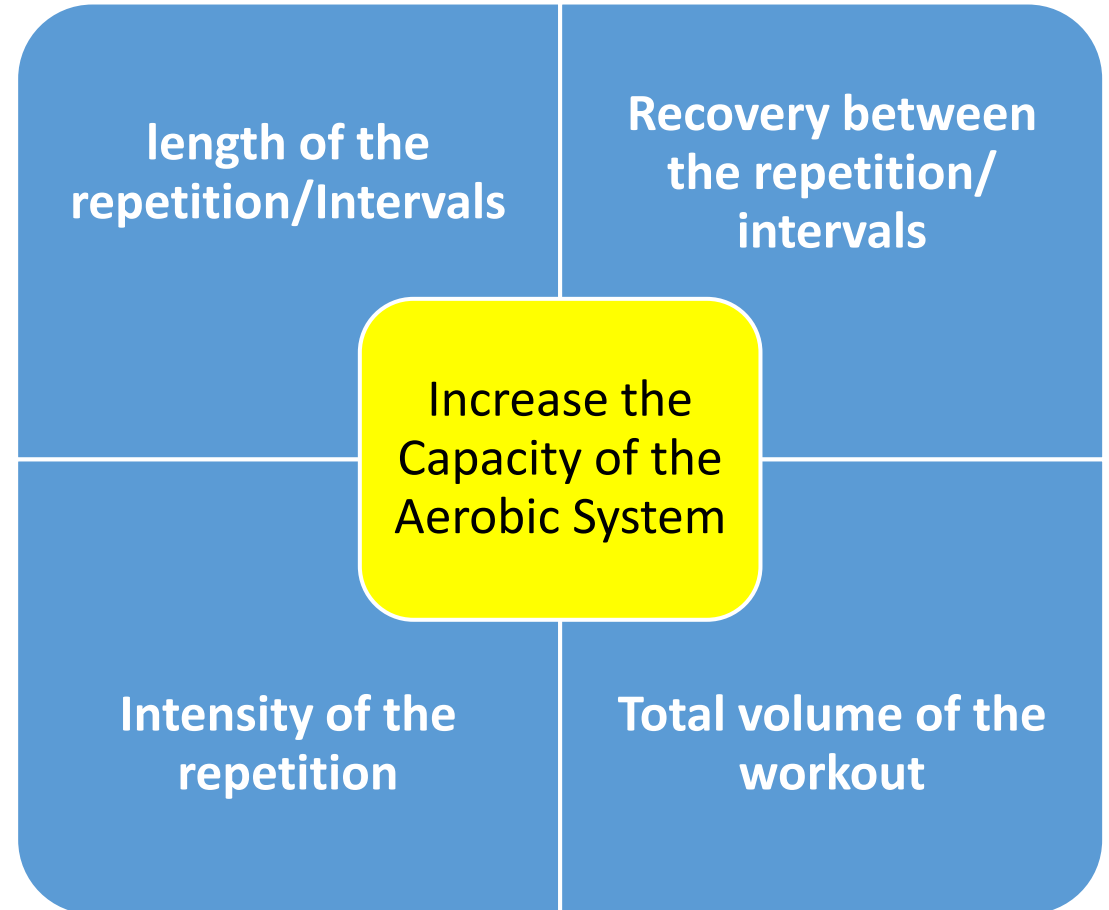
**Vo2 Development
(the increase in
Aerobic Capacity) is
managed here with
these components**

**Intensity of the
repetition**

**Total volume of the
workout**

Common Sense Approach

- Start out with 5 k pace and assess the intensity
- Assess the total volume
- Assess the length of the repetition
- Assess the recovery



Complete Development of Oxygen System:

The complete development of the Oxygen System will depend on the interaction of both O₂ power, and O₂ Capacity (VO₂).

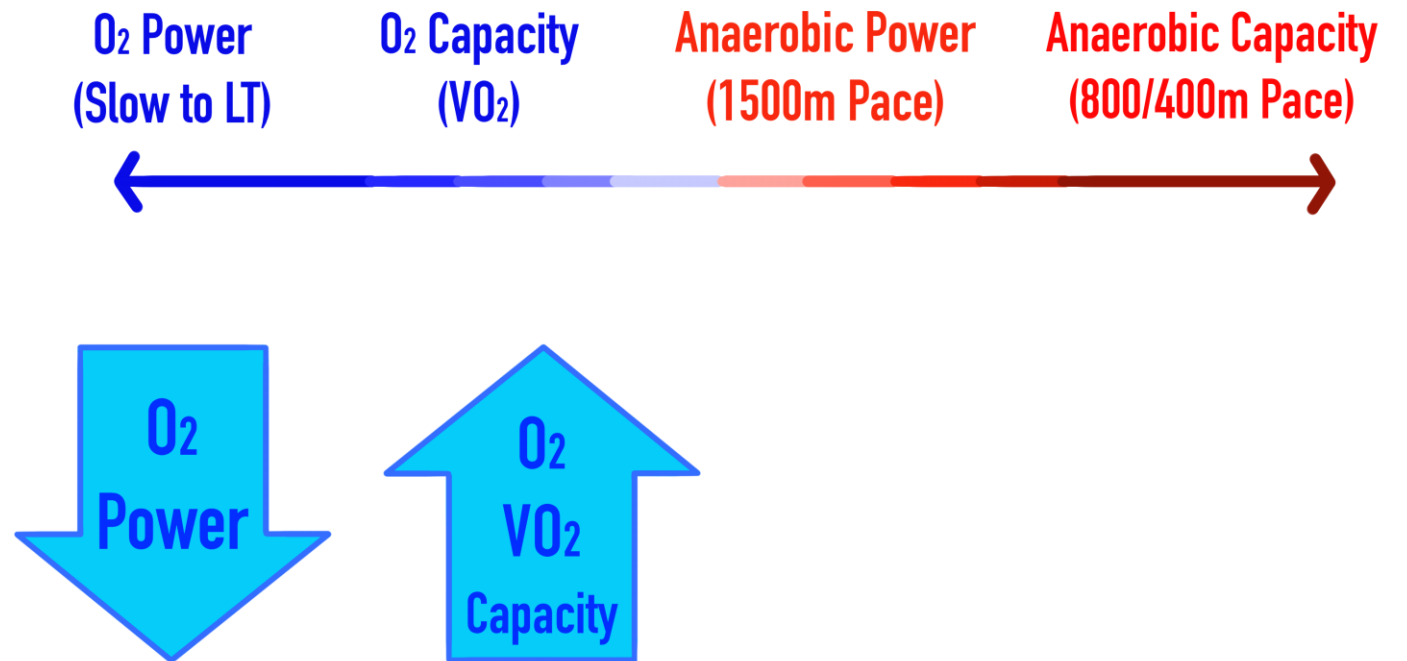
If you work the VO₂ system too often or too hard it will have a negative effect on the O₂ Power system.

Too much of either one will have a suppressing effect on the other.

You want to strive for a balance between the two systems that make up the Complete Oxygen system development.

This will depend on the event and the athlete you are working with.

While they work together to provide the maximum Oxygen output, they can off set each other to provide submaximal output.



Sample Works of Anaerobic Endurance/Power

- 3-4 x [4 x 200 @ mile pace, 100 jog] ; 3-5 min recovery
- 3-4 x [3-4 x 300 @ mile pace, 100 jog] ; 5 min recovery
- 4-5 x [2 x 400 @ mile pace, 100 jog] ; 3-5 min recovery
- Note: The volume will be around 2 miles of work plus or minus 800 m. You can start the workout with high volume with a set of repeats between 5k and 3k to warm the body up especially in the early part of the preparation/ season.

Sample of the Anaerobic Speed

- 2 x 400 @ sub 800 speed and 2 x 200 @ sub 800 speed with full recovery in between (2 to 4 min)
- 2 to 4 x 300 @ 39 to 42 pace with full recovery (closer to 400 meter speed.
- 6 x 200 @ 400 speed with full recovery or 3 to 4 min
- Keep the Volume low and the intensity high and long recovery

Efficiencies

- Fall/Cross Country
- 2x1200 w/800 jog in between.

Each 1200 can be broken into 200's or 100's

Pace will be faster than race pace so 34 for the 200 and 16/17 for the 100's

Recovery is same distance where you walk for 50 meters and Jog for the rest of the recovery

- Spring/Track
- 2 x1000 w 800 jog in between

Each 1000 can be broken into 200's and 100's

Pace for the miler will be 29/30 for the 200's and 14/15 for the 100's

Recovery is the same distance where you walk 50 meters and jog the rest of the recovery

Time Line

