

Energy Systems / Training

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Where Does Energy Come From?

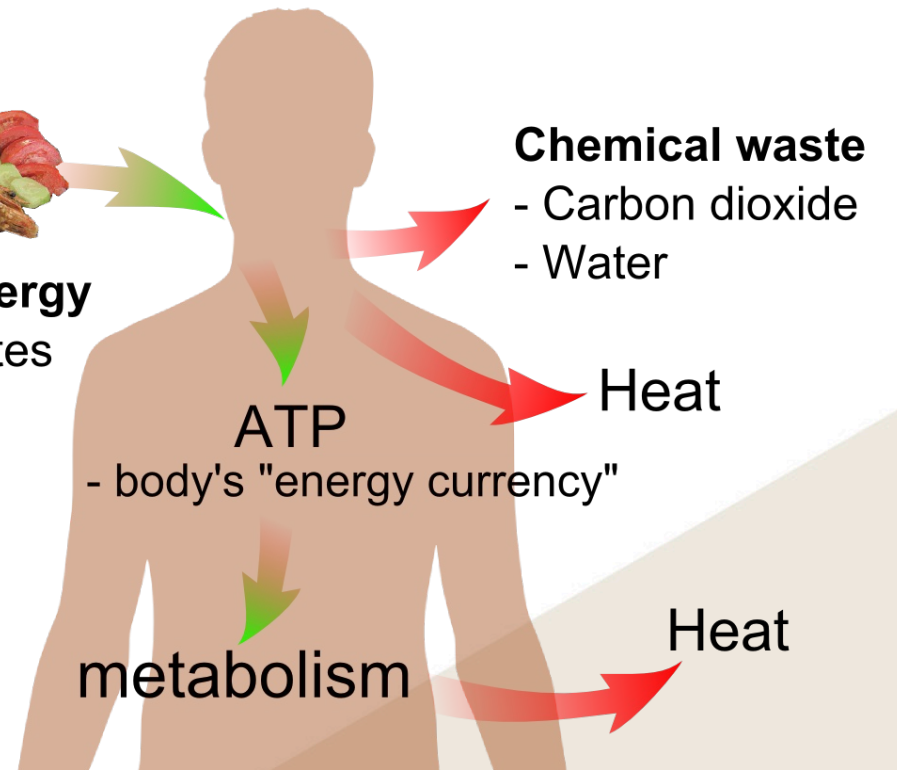


Energy and human life



Chemical energy

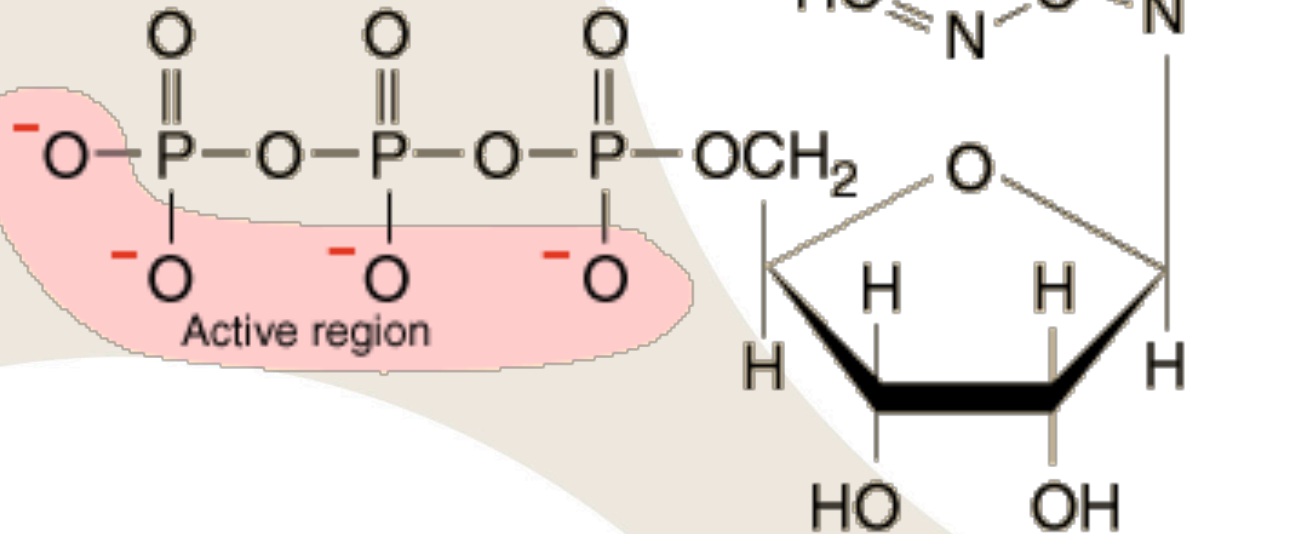
- Carbohydrates
- Fats
- Others



The Energy Currency

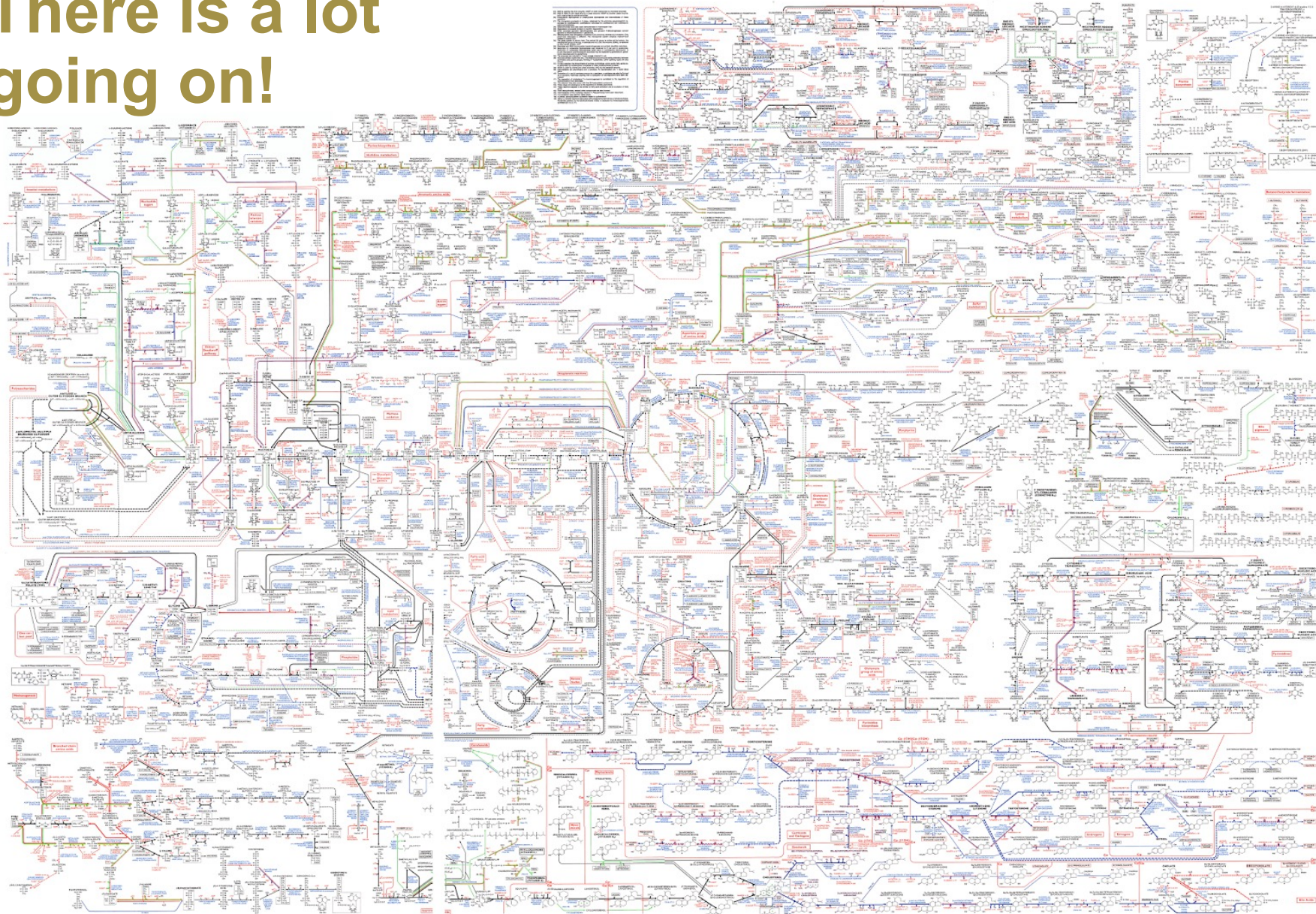
Adenosine triphosphate

ATP



Types of Energy Systems

There is a lot going on!



Types of Energy Systems

Anaerobic Exercise

Aerobic Exercise

ATP/PC

(Phosphagen)

Lactate System

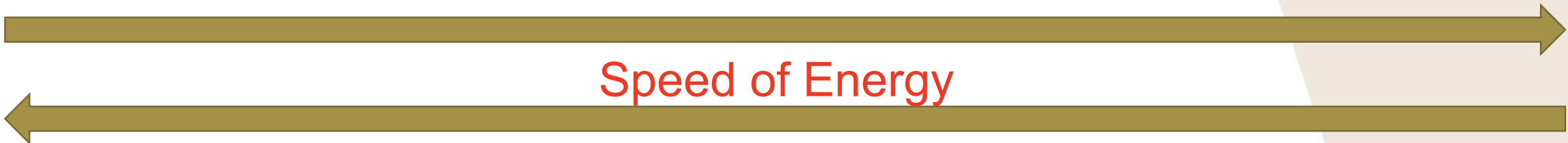
(Glycolytic)

Aerobic System



Duration of Exercise

Speed of Energy



Types of Energy Systems

Anaerobic Exercise

Aerobic Exercise

ATP/PC

(Phosphagen)

Speed of Energy: Immediate

Duration: 0 – 10s

Fuel: Stored ATP/PC

Yield: 1 x PC = 1 x ATP

Lactate System

(Glycolytic)

Speed of Energy: After ~10s

Duration: 10 – 90s

Fuel: Glycogen/Glucose

Yield: 1 x GLY/GLU

= 3/2 x ATP

Aerobic System

Speed of Energy: After ~90s

Duration: 90 s +

Fuel: Glycogen/Glucose/Fat

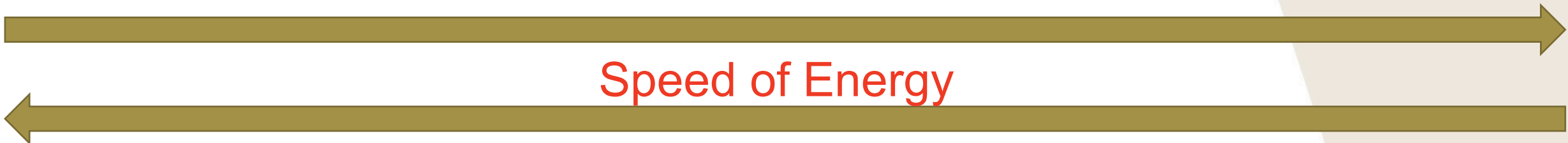
Yield: 1 x GLY/GLU

= 36 (38 with La Sys) x ATP

(1 x Fat = 130 ATP)

Duration of Exercise

Speed of Energy



Racing Events

Anaerobic Exercise

Aerobic Exercise

ATP/PC

Lactate System

Aerobic System

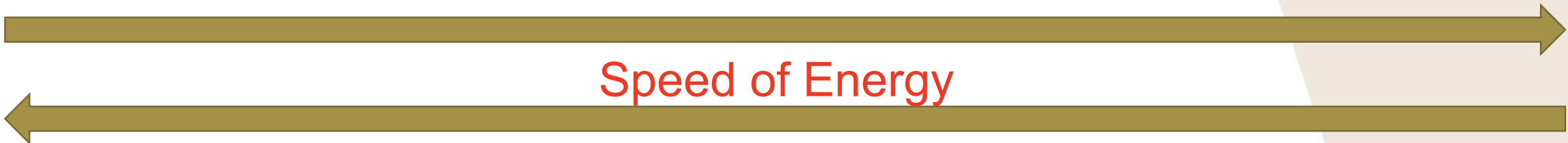
(Phosphagen)

(Glycolytic)

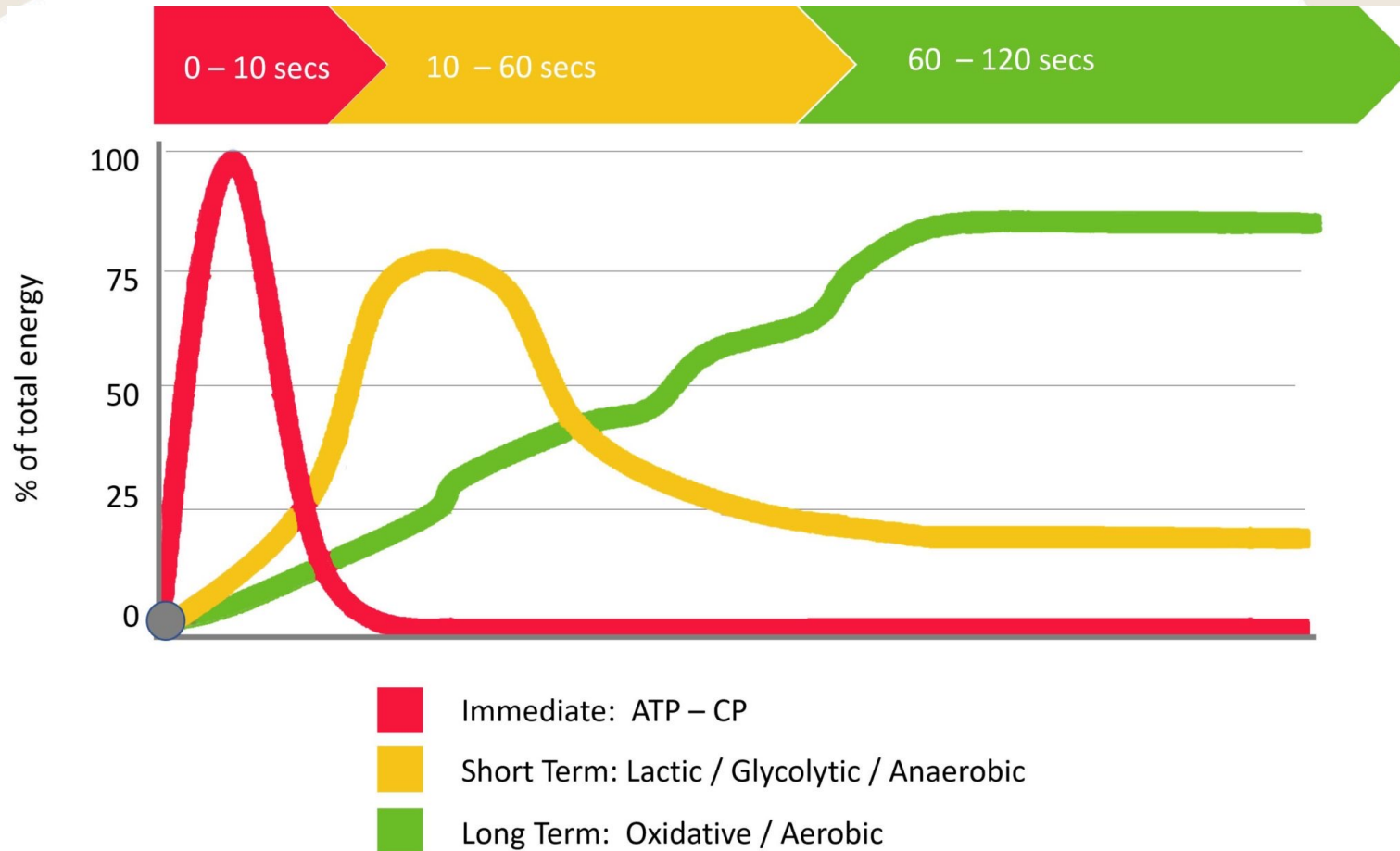


Duration of Exercise

Speed of Energy



Working Together!



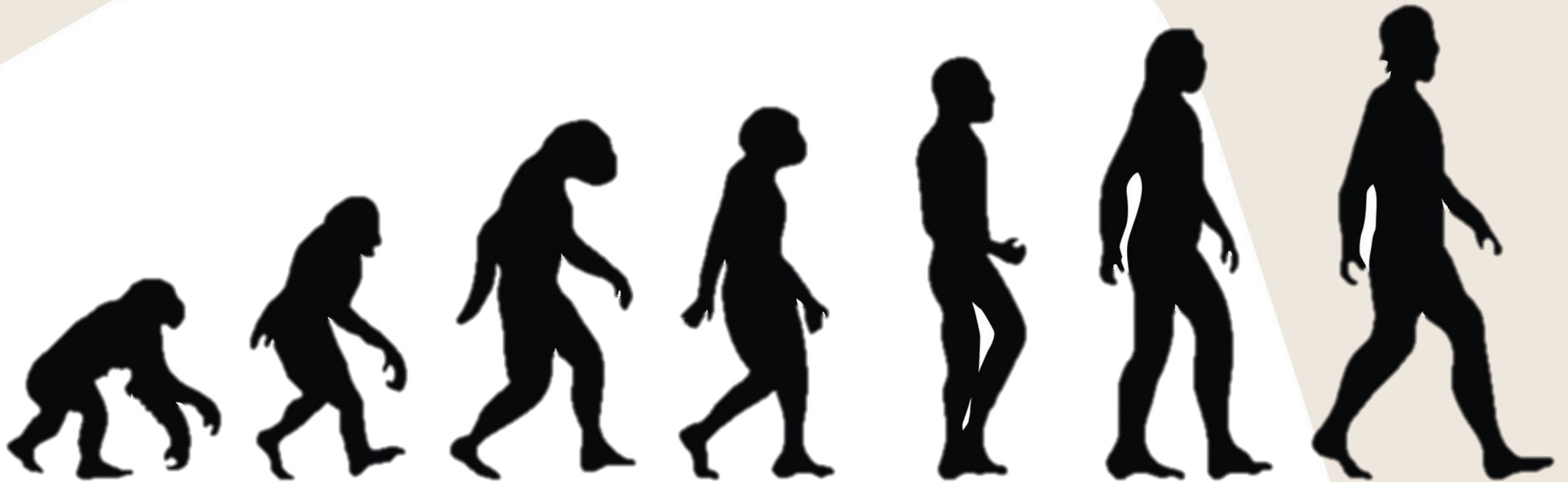
Working Together!

Distance*	Phosphagen (%)	Glycolytic (%)	Aerobic (%)
50 m	15-80	2-80	2-26
100 m	5-28	15-65	5-54
200 m	2-30	25-65	5-65
400 m	0-20	10-55	25-83
800 m	0-5	25-30	65-83
1,500 m	0-10	15-20	78-90

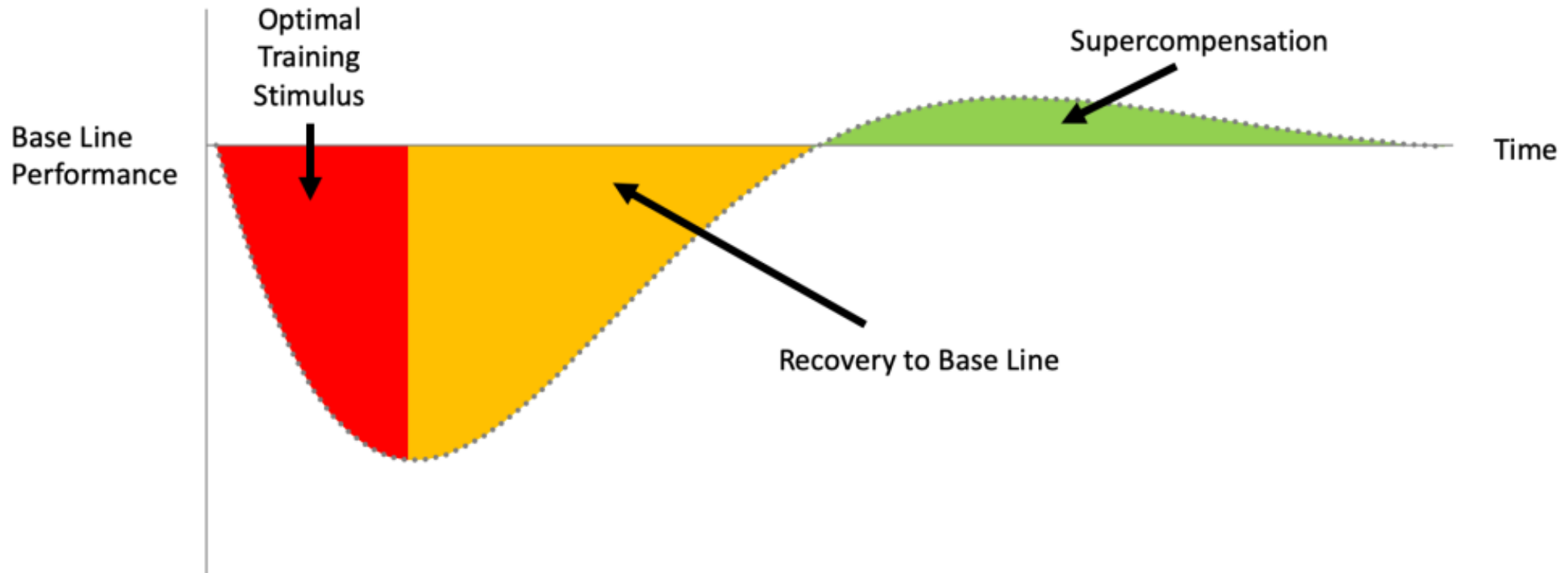
All Systems work together all of the time.

The Aerobic System is essential for all events above 50m.

Adapt to Thrive



Adapting to Training



Structure



Function

Training to Build Structures

“Capacity Training”

Higher Volumes

Low Intensity

Larger Distance Repeats

Shorter Rest Short Repeats

Long Term Improvements

Put the Structures in place to enable you to both race and recover FAST.



Training to Improve Function

“Power or Utilisation Training”

Higher Intensity

Lower Volume

Fast Improvements – Short Term

Improves the function of the body structures that are in place



Capacity vs Utilisation

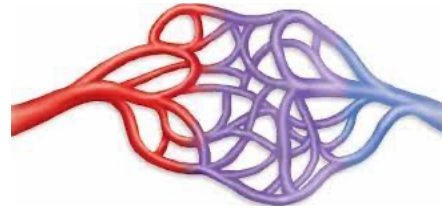
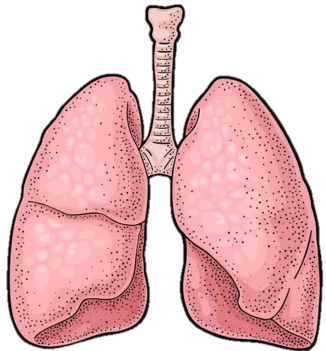
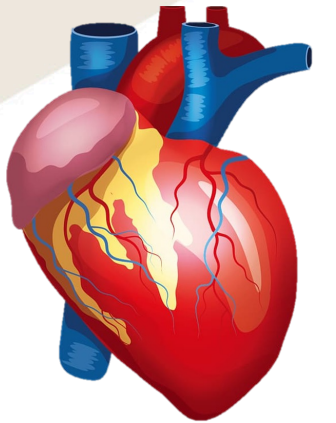
- What is the aim?
- Are you training for Adaptation (The Future)
- Or
- Are you training to race? (The Present)



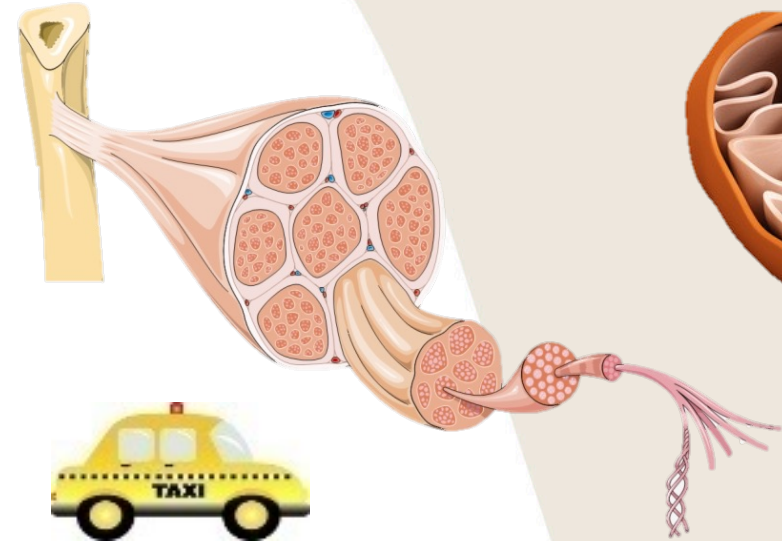
“Build the Foundation!”

Aerobic Adaptations

Take in & Deliver



Use

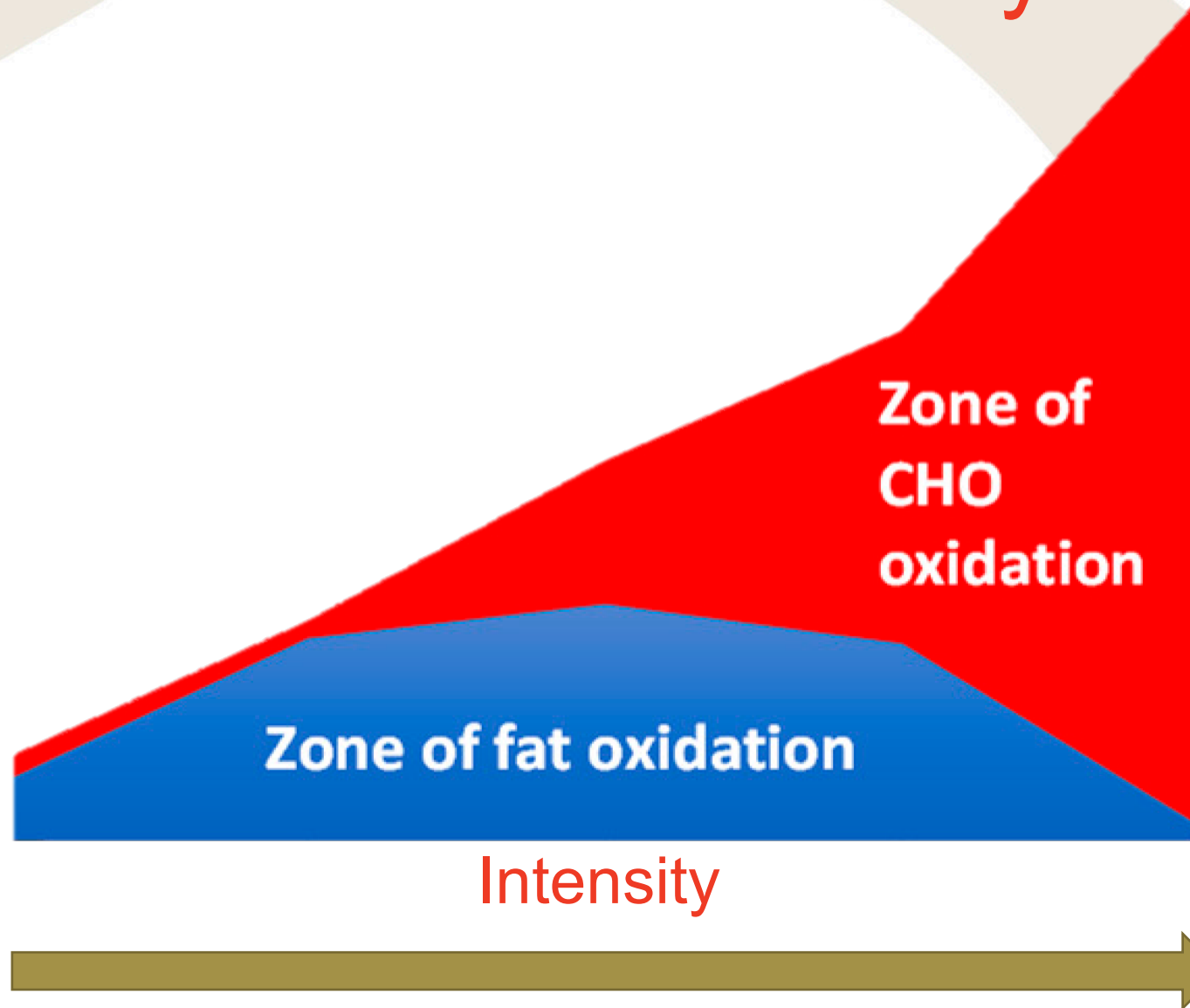


MCT1



MCT4

Volume & Intensity



How Will I Know?



How to Take Your Pulse

POLAR®



RATE OF PERCEIVED EXERTION (RPE) SCALE



MAX EFFORT
feels almost impossible
to continue,
difficult to catch breath

10



VERY HARD ACTIVITY
difficult to maintain exercise
intensity, short of breath and
can only say a few words

9



VIGOROUS ACTIVITY
borderline uncomfortable,
short of breath, can speak
a full sentence

7-8



MODERATE ACTIVITY
comfortable,
heavy breathing, can
still hold a conversation

4-6



LIGHT ACTIVITY
comfortable, moderate
breathing, easy to have
full conversation

2-3



BASELINE ACTIVITY
base movement or
active rest

1



Training Zones – Coach Language!

Slow

Medium

Fast



Intensity

Volume

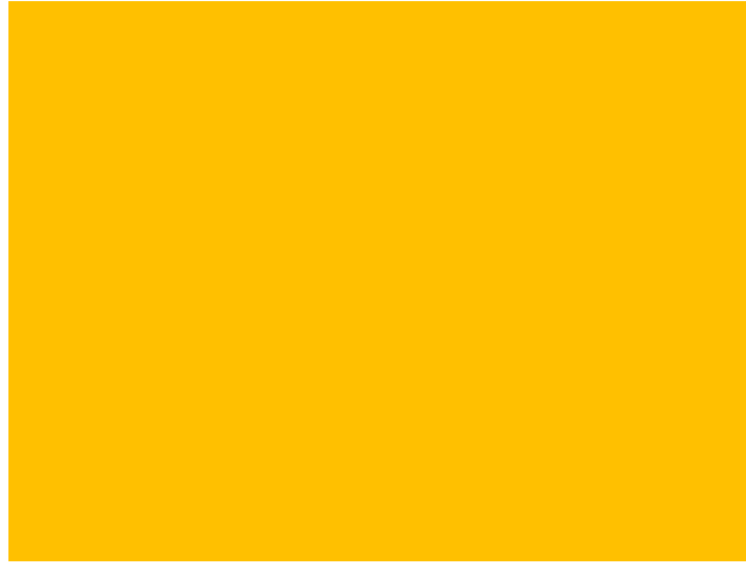
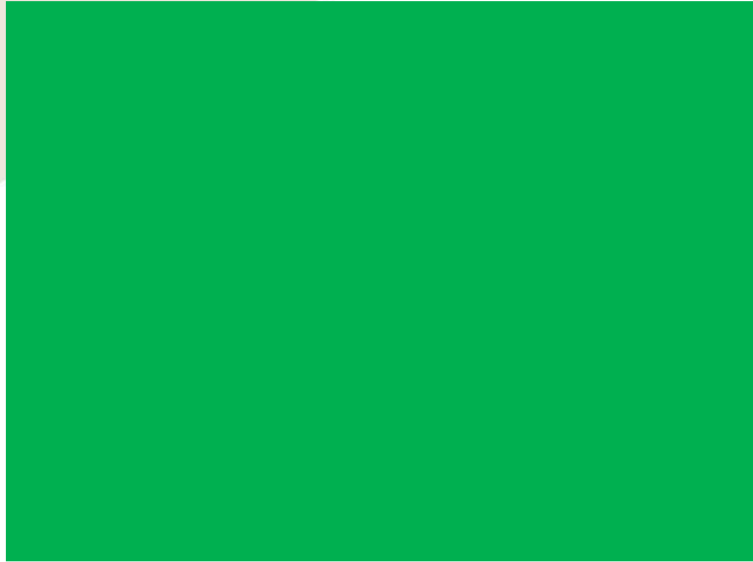


Training Zones – Set Examples Activity

Slow

Medium

Fast



Go through your training week and try and understand your sets, why you do them and what energy systems are being used.

How does the Volume/Intensity affect your scores on Metrifit?

*“There is no race day magic that
lets you outperform your
physiology”*

