



2012 • 2012 • 2012 • 2012 • 2012 • 2012 • 2012

Art & SCIENCE

OF TRIATHLON

2012 INTERNATIONAL COACHING SYMPOSIUM

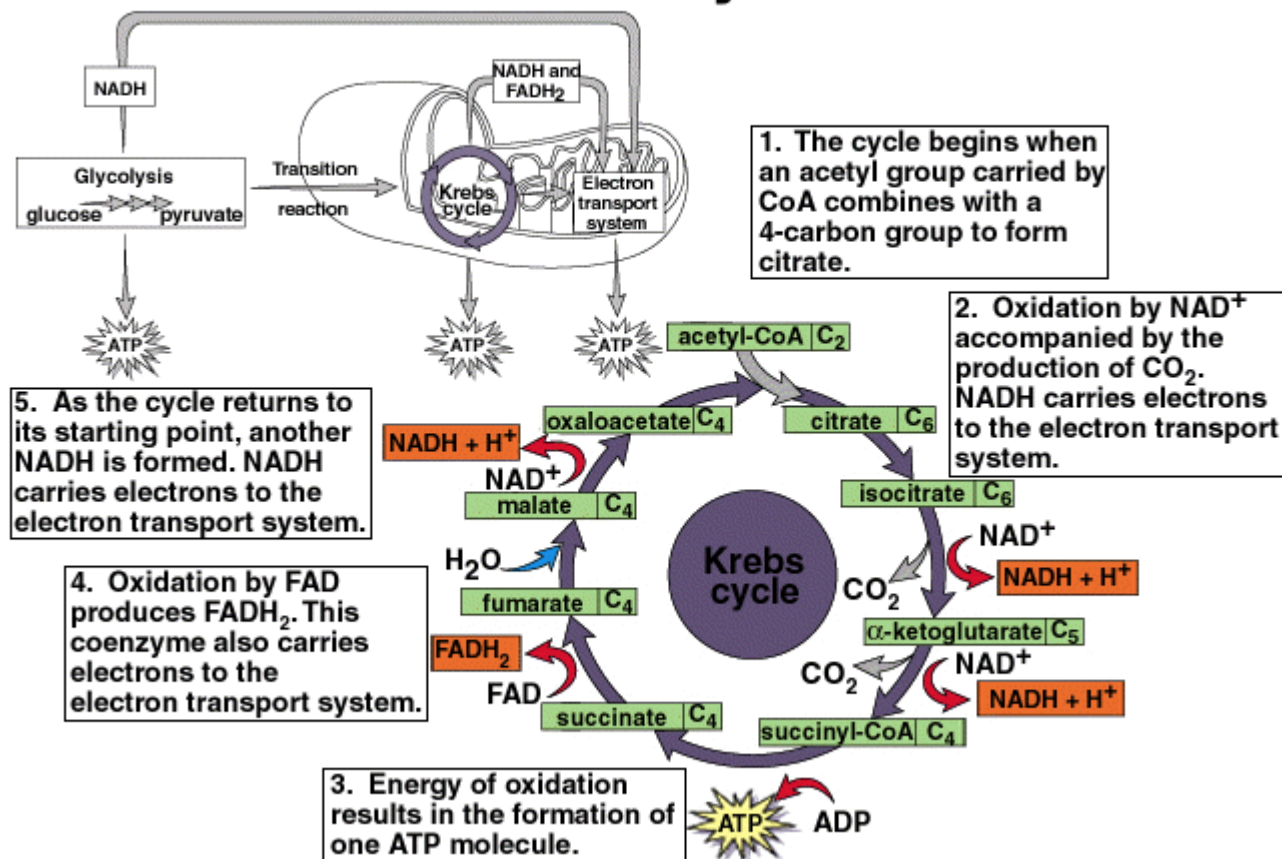
Training Intensity for Every Level of Athlete

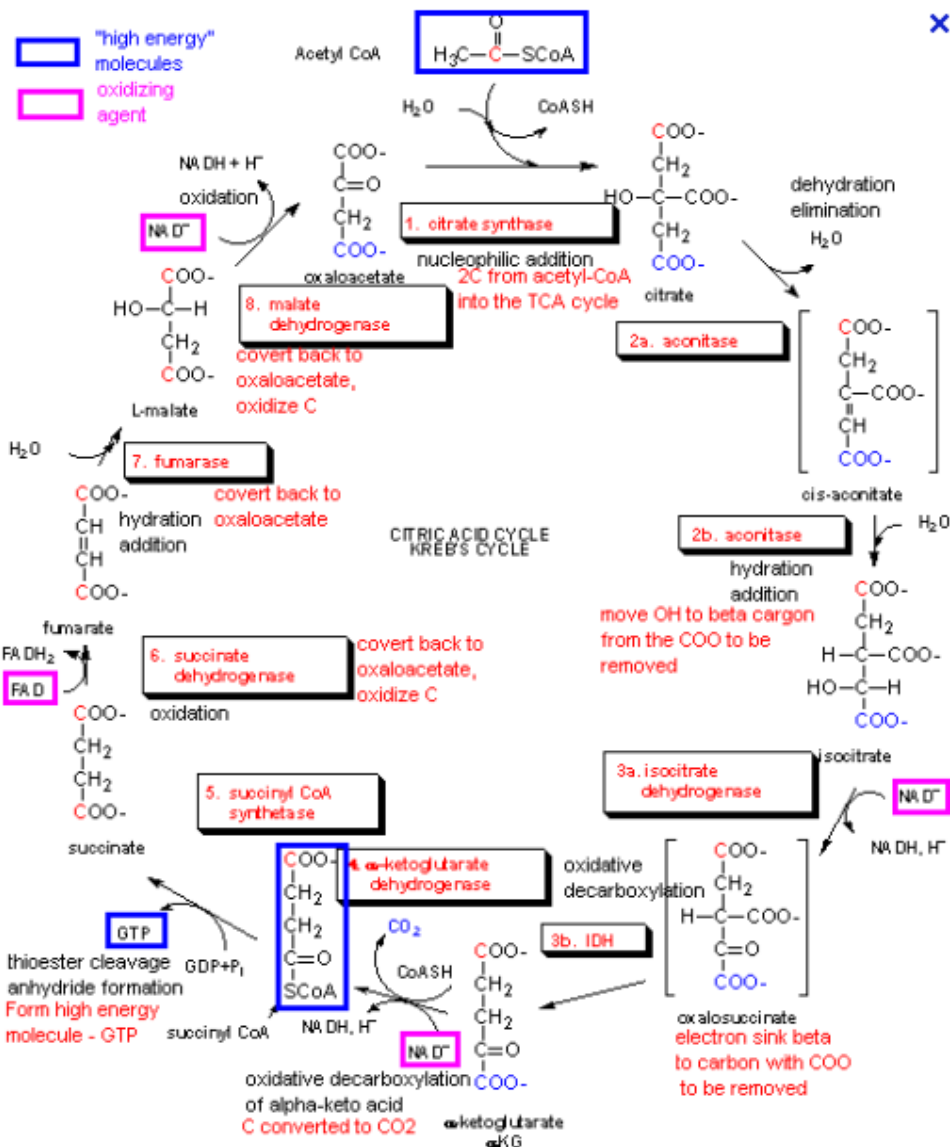
Bridging the gap between the Krebs cycle and writing a detailed program

Ian Murray

USAT L3, ITU L2

Kreb's cycle







Cornerstones of Coaching

- Art

- Science

Science \neq Math

Math

$$2 + 2 = 4$$

Science

- A pursuit
- A systematic way of gaining knowledge
 - Objective: make the athlete faster
 - Method: set some training zones, decide how long athlete will spend in those zones each week for about a month.
 - Results: Did the athlete get faster?
 - Conclusion: continue on or change the approach?

RPE Training Intensity Zones

(Rate of Perceived Effort)

None

- Workout.... Run: 40min

RPE Training Intensity Zones

Easy	Hard
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- Workout....Run: 40min – 10' easy, 20' Hard, 10' easy

RPE Training Intensity Zones

Very Easy	Easy	Sorta Hard	Hard

- Workout....Run: 40min
 - 5' very easy 5' easy, 10' Sorta Hard, 10' Hard, 10' easy

Training Intensity Zones: Combo

Recovery	Aerobic	Endurance	Threshold	VO2max
Super easy	Easy	Moderate	Hard	Brutal
Warm up and cool down	Go all day pace	Long Course Race Pace	Sprint race pace	Finish sprint

- Workout....Run: 40min
 - 5' Rec, 5' Aerobic, 10' Endurance, 10' Threshold, 10' Rec

Heart Rate Based Zones

$220 - \text{Age} = \text{Max HR}$ $220 - 44 = 176$

Recovery	Aerobic	LT	Anaerobic
50-60%	75-85%	90-95%	95-100%
88-106bpm	132-150bpm	158-167bpm	167-176bpm

- Workout....Run: 40min
 - 5' 90bpm, 5' 135bpm, 10' 148bpm, 10' 165bpm, 10' 95bpm

Heart Rate Based Zones

Tanaka: $208 - (0.7 \times \text{Age}) = \text{Max HR}$ $208 - (.7 \times 44) = 177$

Recovery	Aerobic	LT	Anaerobic
50-60%	75-85%	90-95%	95-100%
88-106bpm	132-150bpm	158-167bpm	167-176bpm

- Workout....Run: 40min
– 5' 90bpm, 5' 135bpm, 10' 148bpm, 10' 165bpm, 10' 95bpm

Heart Rate Based Zones

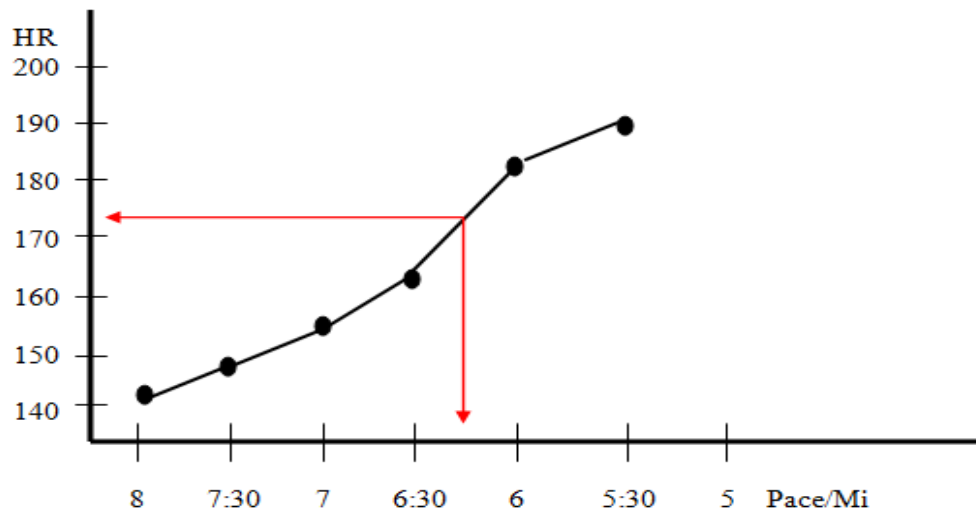
Karvonen: $220 - \text{Age} = \text{Max HR} - \text{Resting HR}$

$220 - 44 = 176 \dots 176 - 52 = 124 \text{bpm} \times \text{intensity} + 52$

Recovery	Aerobic	LT	Anaerobic
50-60%	75-85%	90-95%	95-100%
114-126bpm 88-106bpm	145-157bpm 132-150bpm	163-170bpm 158-167bpm	170-176bpm 167-176bpm

- Workout....Run: 40min
 - 5' 115bpm 5' 124bpm, 10' 154bpm, 10' 168bpm, 10' 115bpm

Presumed Lactate Threshold



What Matters?

Not so much how zones came to be...

Not so much how many types of workouts...

But....did the athlete get faster?

Confirm that through testing.

Suggestions for Testing

- “Fix” as many elements as you can.
- Allow just one variable.
- Make the test repeatable.

Suggestions for Run Testing

- Fix a distance: 1 mile, 2 miles etc.
- Fix the intensity: 150bpm for example
- Measure the time.

1 mile at 150bpm = 8:19

4 weeks later:

1 mile at 150bpm = 7:53

Suggestions for Swim Testing

- Fix a distance: 10x100 SCY, 5x50s LCM, etc.
- Fix the time standard: 10x100s 1:30, 5x50s 1:00
- Measure the time into the wall.

10x100s on 1:30 into wall at 1:19 (3), 1:21 (5), 1:24(2)

4 weeks later:

10x100s on 1:30 into wall at 1:14 (4), 1:17 (4), 1:21(2)

Suggestions for Bike Testing

- A power based test

Failing that...

- Up a long hill, measure all you can
 - Time, avg HR, cadence, avg speed and RPE

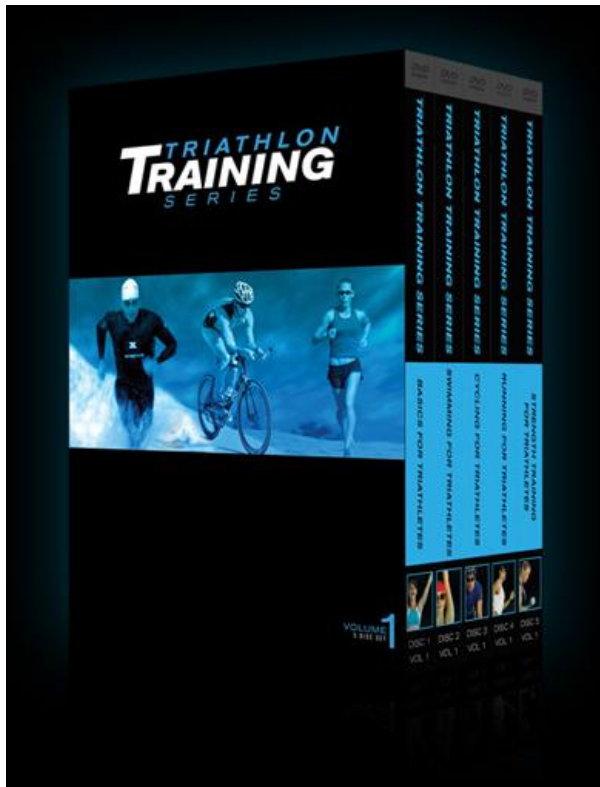
What Matters? The Result!

- Did the athlete get faster?
- FROM THAT, DRAW THE CONCLUSION:
- Workouts either did or did not improve fitness
- On to next month of training based on that
- Now you're the scientist

Odds and Ends

- Never assume
- Coach meets athlete at their level of technological comfort
- Agree on the definition of terms
- Excellence in communication

Ian Murray



- TriathlonTrainingSeries.com
- Code.....USAT99
- 5 CEUs
- Swim instruction techniques
- Great clips to show at camps and clinics