HOT TRAINING APPROACHES
GETTING TO ‘FAST’:
A OPEN-FORUM DISCUSSION ON THE ‘HOW’

1.) General overview of trends meant to GENERATE DISCUSSION!

2.) Fads come & go, but Certain Precepts are Universal

4.) Strategy Spectrum – Some Popular Beliefs/Approaches

5.) Discussion!

6.) Definitions

7.) What to consider when creating your own approach
Physical benefits both of rowing and horseback riding are obtained on this exercising machine.

Riding and Rowing Machine in One

Said to provide the healthy exercise of both rowing and horseback riding, a new machine, shown in use above, has hinged handlebars, foot rests, and seat which move through arcs to simulate the beneficial motions of both sports. A hydraulic piston provides resistance.
1970's

“I want the best workout my body ever had… I want Jazzercise!”

If you want to be fit, look great and have fun getting in shape, join a Jazzercise class today. No other dance exercise program is like the original Jazzercise. We have expertly trained instructors and a constant supply of new, imaginative routines.

- No contracts to sign—pay monthly or per class
- Join anytime
- Combines the best of aerobics plus a well-rounded workout
- Great for men and women of all ages
- Affordable prices—one of the finest fitness values available

Join the class nearest you. CALL TOLL FREE.
1-800-FIT-IS-IT
In California, 1-800-352-9200
In Canada, contact local instructor.

Judi Sheppard Missett's Jazzercise
The Original—The Best, The Leader

ONE FREE CLASS
GET FIT, STAY FIT AND HAVE FUN
BRING THIS COUPON AND RECEIVE ONE FREE CLASS

The photo on the left shows a man running, and the photo on the right is an advertisement for Jazzercise.
1980's

Jane Fonda's Original Workout

Boogie Down The Pounds!
Richard Simmons Super Sweatin' Disco Workout

Gilad Step Aerobics
1990’s / 2000’s
“There is no such thing as a new idea. It is impossible. We simply take a lot of old ideas and put them into a sort of mental kaleidoscope. We give them a turn and they make new and curious combinations. We keep on turning and making new combinations indefinitely; but they are the same old pieces of colored glass that have been in use through all the ages.”

- Mark Twain, A Biography
SOME TRAINING PRINCIPLES ARE IRREFUTABLE & UNIVERSAL
(“IF YOU FAIL TO PLAN, PLAN TO FAIL”)

Principle of Progression (Create Stimulus & Manage Adaptations)
- In order to create adaptations, you must create adaptable work
- How you identify & track these progressions is up to you

Principle of Threshold (Pushing the Limits)
- Find both the physiological & mental thresholds of your athletes to create appropriate challenges
- How you define Threshold (en3/vo2max, fast, etc.) & push those limits is up to you

Principle of Periodization (Season Planning & Goal Setting)
- Manipulate variables to avoid overtraining and achieve peak performance
- Plan and cycle through variety of training phases
- Know the short AND long-term goals (meets/times/skill-achievement), Plan from target date & move backwards
- Coordinate with the Periodization in S & C
- How you define your seasonal phases & cycles is up to you

Principle of Function/Application
- Identify the strategy or ‘quickest win’ to enable your athlete to drop time & succeed
- How you apply that is up to you

Principle of Individualization (Every Athlete is Different!)
- Every athlete is different physiologically & emotionally, with varied experience/backgrounds
- How you individualize their training is up to you
Training

- Training is simply
  - Stimulus → Adaptation
  - In order to improve, must provide enough stimulus to change, but still can recover and bounce back

Source: Science of Winning
Jan Olbrecht
Model of Endurance Performance

Capacity
- Aerobic Capacity (VO₂ Max)
- Anaerobic Capacity (VLa Max)

Power
- Aerobic Power
- Economy
- Lactate Threshold (applied aerobic power)

Performance
- Other
- Physical Result
- Resultant Physical Parameters
- Expression of Metabolic Activity into Physical Activity
- Metabolic Activity
- Metabolic Capacity

PRINCIPLE OF THRESHOLD

WHAT IS AEROBIC CAPACITY?

Definition:
The ability to provide and sustain energy aerobically

VO2 max:
The maximum amount of oxygen that can be taken in, transported and consumed by the working muscles per minute
PRINCIPLE OF PERIODIZATION: FACTORS & PHASES

Factors affecting competitive performance

<table>
<thead>
<tr>
<th>Technique</th>
<th>Physical Conditioning</th>
<th>Psychological Conditioning</th>
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</thead>
<tbody>
<tr>
<td>Stroke technique, coordination</td>
<td>Aerobic conditioning (endurance)</td>
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<td>Starts and turns ...</td>
<td>Anaerobic conditioning</td>
<td>Motivation</td>
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Tab. 1 Competitive performance depends primarily on the status of these components.

<table>
<thead>
<tr>
<th>Cycle</th>
<th>Volume</th>
<th>Intensity</th>
<th>Over-distance</th>
<th>Endurance</th>
<th>Tempo</th>
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# Principle of Periodization: USA-Swimming’s Planning Template

## Sample Annual Plan

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## Postgrad/Sprinter: 2016 Training/Taper Plan

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| VOLUME | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
|--------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 45G  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 40G  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 35G  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 30G  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 25G  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 20G  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 15G  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 10G  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 5G   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
"It's taken me 'till I'm 27 that you can hit your head against the wall as much as you want, but until you start to think about things, that's when it's going to work. So I'm done hitting my head against the wall."

~ Matt Grevers after winning the 100m, backstroke with the second best time in history
PEOPLE WHO THINK! A SPECTRUM OF PHILOSOPHIES

High-volume—low-to-mid intensity

Low-volume—High intensity
STANDARD (GENERAL) STYLES OF TRAINING

Endurance:
- Highest-volume training emphasizing a long period of oxidative (aerobic) training, Descending sets
- Yardage is high, and intensity varies
- OW & Long-Distance swimming/training

Traditional:
- Aerobic Training: Higher-volume training emphasizing a long period of oxidative (aerobic) training at slower than race pace/sprint pace.
- Can be general or race-specific
- Relies on test-sets to evaluate progress
- Yardage & Intensity Varies widely amongst programs

Speed:
- Low-volume training emphasizing speed/neurological imprinting – Sprint/short distance
- HIT: High-intensity training (HIT) involves performing maximal efforts with long rest. (25s sprint on 3:00)
- HIIT: High-intensity interval training (HIIT) utilizes maximal effort training with short rest. (8×25 @ :10 RI)
- USRPT: Ultra short-rest race pace training (USRPT) uses a similar approach to HIIT, but provides slightly longer recovery for avoidance of fatigue and a larger emphasis on motor skill learning. (30×25@ ~:10—:20RI), emphasizing one biomechanical improvement at a time
**VOLUME-BASED TRAINING**

**DICK SHOULBERG**: (from Swimming World Mag., Jan 2007)
- Swimming is a way to instill discipline
- Strong base goes a long way in developing a career foundation
- High-volume workouts (up to 15K/day SCY) that emphasize all 4 strokes

**BILL ROSE**: (LA Times 1997)
"I don't believe in a lot of the stuff we've done in this country in the past, this trend toward trying to work faster and work less, to save energy and time in the name of efficiency."
- The Over-distance approach pays best dividends
- Allows swimmer to perform better at a later age (when physically fully-developed
- Allows swimmer to reach stage where they can compete at highest levels of event

"We're talking about totally opposite training philosophies and the ultimate result is where the debate comes in. I think it's clear that a sprint-type training approach with younger swimmers will produce more immediate results, but over-distance base training will give better ultimate results"
YARDAGE IS NOT GARBAGE!

GREGG TROY:

(ASCA World Clinic 2014 / Garbage Yardage & Other Things That Work)

“It is not all about volume, it is about commitment. There are very few things you do in life that if you put LESS time into it, that you are going to be successful.”

- More volume=more commitment
- Over-distance (train 400 for 200, 200 for 200, etc)
- Lifetime mileage base matters for planning late career training
- Must isolate one aspect of swimming to improve that area. Can't train same proportions all year round (specificity)
- Learning moments come from pushing to edge of ability in practice. Not always bad thing to fail.
CREATE A BIG CUP, FILL IT UP

BOB BOWMAN (ASCA World Clinic 2011)

“Capacity is defined as the ability to provide and sustain energy aerobically. Capacity Training is enlarging the size of the cup you have to pour training into and Utilization Training is the work you do to go fast for a specific race.”

“Capacity training prepares you for tomorrow, Utilization training prepares you for “next week”

“When you read stories about older elite athletes, what are you reading? The real question is, what were they doing at 10-18. When you are around long enough to trace it, you realize only those who DID capacity training, GET to be successful with Utilization Training.”

Inspired by Dr. J. Olbrecht’s Book
LO & SLOW (AEROBIC BASE TRAINING)

MICHAEL LOHBERG:
Successfully trained sprinters and middle-distance swimmers with the same approach. HOW?

Used SCIENTIFIC TESTING
➢ Aerobic-base identification & gradual buildup
➢ Aerobic threshold development thru use of lactate testing.
➢ Established CORRECT training paces for each swimmer so that same workouts worked for many types
➢ Believed in his athletes ALWAYS

"IT'S SCIENCE, STUPID!"
JON URBANCHEK:
- Known for adding “COLORS” to the USA-Swimming Zone charts
- Believes in aerobic systems and making it simple
- Plans all training for the mid-d swimmer and then specifies
- Uses SCIENCE

Jon Urbanchek’s School of Training

Jon with some of his Olympians
“MIXED BAG” APPROACH:
OLD-SCHOOL WITH INNOVATION, EMPHASIS ON TECHNIQUE, & SOME PASSION

EDDIE REESE
(from SwimNews 2006, USASwimming.org 2014)

“I don’t know why the things I do, work, but they do!”
I tell my swimmers they have 2 main phases of the season:
1.) Real hard work
2.) (Drop) taper

Trains individuals not for specific races, but for aerobic background
Believes in the passion for racing (strategy)
“90% of potential” – Give athletes the tools, but it comes down to their desire/potential
COLLABORATION, EXPERIMENTATION, & MODERATION

"WELL-ROUNDED ATHLETES"

TERI McKEEVER:

- Cal program is one of 5 in the country that gives swimmers an afternoon off
- Looks for ways to train swimmers that will alleviate the monotony of training: (pilates, boxing, yoga, hip-hop classes)
- Writes highly unique workouts to keep interest high
- Provides swimmers w/ the rationale behind chosen drills and sets
- Asks swimmers for feedback/collaborates

Result: athletes who become more self-determining, and therefore able to find the training tools that work best for them as individuals
“EVERYTHING UNDER 800 IS A SPRINT FOR ME” ~K.L.

BRUCE GEMMELL:

- Specificity builds speed!
- In 2014 worked to teach Katie L to learn to swim the same race multiple ways
- Trains Katie w boys: Hold the Interval!
- REPEATS. REPEATS. REPEATS.

"INTERVALS!"
DAVID MARSH:
“This approach is the big experiment.” (discussing 2016 OT) (Charlotte Observer, May 2014)

- Wants to disrupt monotony of swim-eat-sleep.
- Training variety could make the sport more attractive and help with retention.

“Let’s make swimming less boring, instead of kids going to school, hair still wet and exhausted,” he says. “We’re trying to turn these guys into fish.”

“A swimmer should always work on distance per stroke first, and once they have the desired stroke rate, and then add in tempo” (SwimSwam April 2016)
SPRINT-SALO IS NOW ‘A THING’, BUT DON’T FORGET THE YARDAGE BASE

DAVE SALO:
Volume isn’t as essential…. Use over-driven athletes to strive for perfection, not over-training

- Quality-based race-pace training
- Power: work per unit of time
- LOTS of resistance work!
- Emphasis on technique/execution
- Data-tracking; make up test sets and do them
USRPT: IT’S NOT NEW

Professor Brent Rushall
Began experimenting in 1960’s!
Focused on teaching the technique used for racing
Emphasizes that psychology determines results (mental prep for racing)

Benefits include:
1. Short intervals allow swimmer’s body to maintain a low level of lactate in the blood while keeping a high level of glycogen in the muscles.
2. Neuromuscular patterning — will not deplete glycogen levels and as a result will not drastically hinder/prevent the neural learning needed for quality performances.
3. Shorter work intervals (no rest more than 23 seconds) - body is able to sufficiently repay accumulated oxygen debt (AOD) and restore the body’s energy systems in a relatively short amount of time.

USRPT
ULTRA-SHORT RACE-PACE TRAINING
WHAT’S YOUR VIEWPOINT?
7 Energy Zones (USA-Swimming)

5 NRG Systems (European)

Colors (Michigan/Urbanchek)

RSS/RSP (Alabama/Skinner)
3s Coaching

Heartrate
BPM or BBM

MANY NAMES; BUT ALL THE SAME (SYSTEMS)
# TRAINING TO RACE - INTENSITY

## CHARACTERISTICS OF ENERGY ZONES

USA Swimming – Genadijus Sokolovas

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<thead>
<tr>
<th>7 ENERGY ZONE SYSTEM</th>
<th>Set Distance (m)</th>
<th>Set Duration (min)</th>
<th>HR (bpm)</th>
<th>HR (% max)</th>
<th>Work:Rest</th>
<th>Sample Set (for Sr. Age Group swimmer)</th>
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<td>4-6 x dive 15m / 1 min rest or 6-8 x 12.5 Swim / 45 sec rest</td>
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Energy Systems

“Correct use of the training principles will create superior organization and more functional content, means, methods, factors, and training concepts.”

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<td>1-15 seconds</td>
<td>MAXIMUM</td>
<td>ATP-CP</td>
<td>100-95</td>
<td>0-5</td>
</tr>
<tr>
<td>2</td>
<td>15-60 seconds</td>
<td>MAXIMUM</td>
<td>ATP-CP, LA</td>
<td>90-80</td>
<td>10-20</td>
</tr>
<tr>
<td>3</td>
<td>1-6 minutes</td>
<td>SubMAX</td>
<td>LA, Aerobic</td>
<td>70-(40-30)</td>
<td>30-(60-70)</td>
</tr>
<tr>
<td>4</td>
<td>6-30 minutes</td>
<td>Medium</td>
<td>Aerobic</td>
<td>(40-30)-10</td>
<td>(60-70)-90</td>
</tr>
<tr>
<td>5</td>
<td>30 minutes</td>
<td>Low</td>
<td>Aerobic</td>
<td>5</td>
<td>95</td>
</tr>
</tbody>
</table>

*This chart represents the five zones and their specific energy system involvement*
# URBANCHEK’S COLOR ZONES (with ESTABLISHED PACES)

<table>
<thead>
<tr>
<th>Name</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
<th>500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone 1 (white)</td>
<td>56.84</td>
<td>1:54.91</td>
<td>2:53.44</td>
<td>3:52.28</td>
<td>4:51.34</td>
</tr>
<tr>
<td>Zone 2 (pink)</td>
<td>55.03</td>
<td>1:52.78</td>
<td>2:51.55</td>
<td>3:50.98</td>
<td>4:50.91</td>
</tr>
<tr>
<td>Zone 3 (red)</td>
<td>53.98</td>
<td>1:49.13</td>
<td>2:44.72</td>
<td>3:40.59</td>
<td>4:36.68</td>
</tr>
<tr>
<td>Zone 4 (blue)</td>
<td>52.41</td>
<td>1:47.07</td>
<td>2:42.58</td>
<td>3:38.64</td>
<td>4:35.11</td>
</tr>
<tr>
<td>Zone 5 (purple)</td>
<td>50.31</td>
<td>1:43.08</td>
<td>2:36.79</td>
<td>3:31.10</td>
<td>4:25.86</td>
</tr>
</tbody>
</table>

**How-To:** Enter your average 100 pace for your best 500 freestyle performance. Type in the set that you want + the “color zone” of the effort for each part of the set + approx. amt of rest. The “set parser” would then evaluate your set and give you intervals that matched the training capabilities.
## Classification of Training Exercises

### Aerobic Capacity

<table>
<thead>
<tr>
<th>Type of swimmer</th>
<th>S</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume*</td>
<td>Long</td>
<td>Very High</td>
</tr>
<tr>
<td>Interval</td>
<td>Short</td>
<td>Long (100-300m)</td>
</tr>
<tr>
<td>Intensity</td>
<td>Extensive alternated with intensive and short intervals in the same or next training session</td>
<td></td>
</tr>
<tr>
<td>Rest</td>
<td>Short (40-20s)</td>
<td>Short (20-10s)</td>
</tr>
</tbody>
</table>

### Anaerobic Capacity

<table>
<thead>
<tr>
<th>Type of swimmer</th>
<th>S</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume*</td>
<td>Moderate</td>
<td>Low**</td>
</tr>
<tr>
<td>Interval</td>
<td>Very Short (25-75m)</td>
<td></td>
</tr>
<tr>
<td>Intensity</td>
<td>Nearly all-out</td>
<td></td>
</tr>
<tr>
<td>Rest</td>
<td>Long (&gt;2x swim time) (35s-1:30min)</td>
<td></td>
</tr>
</tbody>
</table>

### Aerobic Power

<table>
<thead>
<tr>
<th>Type of swimmer</th>
<th>(S) M</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume*</td>
<td>110-90% Comp. distance</td>
<td></td>
</tr>
<tr>
<td>Interval</td>
<td>Short progresses to Long (50-100m) to (100-300m)</td>
<td></td>
</tr>
<tr>
<td>Intensity</td>
<td>Race Pace or somewhat faster</td>
<td></td>
</tr>
<tr>
<td>Rest</td>
<td>Short (10-20s)</td>
<td></td>
</tr>
</tbody>
</table>

### Anaerobic Power

<table>
<thead>
<tr>
<th>Type of swimmer</th>
<th>S</th>
<th>M (L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume*</td>
<td>110-90% Comp. distance</td>
<td></td>
</tr>
<tr>
<td>Interval</td>
<td>Short (25-100m)</td>
<td></td>
</tr>
<tr>
<td>Intensity</td>
<td>All-out</td>
<td></td>
</tr>
<tr>
<td>Rest</td>
<td>Short (10-20s)</td>
<td></td>
</tr>
</tbody>
</table>

### Additional Notes
- **Volume**: Long, Very High
- **Interval**: Short (100-300m), Long (300-800m)
- **Intensity**: Extensive alternated with intensive and short intervals in the same or next training session
- **Rest**: Short (40-20s), (20-10s)
- **Volume**: Moderate, Low
- **Interval**: Very Short (25-75m)
- **Intensity**: Nearly all-out
- **Rest**: Long (>2x swim time) (35s-1:30min)
- **Volume**: 110-90% Comp. distance
- **Interval**: Short progresses to Long (50-100m) to (100-300m)
- **Intensity**: Race Pace or somewhat faster
- **Rest**: Short (10-20s)

### Other Information
- **Adapted**: J. Olbrecht: Schwimmen, Lernen und Optimieren 1994
- **Note**: Sprint and technique are not in this classification
- **Note**: Has been changed vs previous publication, see text

### Formulas
- 8x100m R=20s 1, 3 fast
- 6x50m R=20s 1, 2 (50 fast/50 slow)
- 6x(3x50m) R=1:20min P=1/3
- 3x(2x25m, 1x50m) all-out after 25m R=30s after 50m R=60s
- 5x75m R=45s to 3x125m R=15s to 5x300m R=20s
- 12x100m R=30s to Brokens / Comp. Test 4x50m R=10s 25+50+25+50m R=5-10s
<table>
<thead>
<tr>
<th>ZONE</th>
<th>ZONE DESCRIPTION</th>
<th>TIME LIMITS</th>
<th>HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Va</td>
<td>This is your maximal, all-out effort. Thankfully it won’t last longer than 12 seconds!</td>
<td>8-12 sec</td>
<td>&lt;143</td>
</tr>
<tr>
<td>Vb</td>
<td>Same as above, with emphasis on how long you can keep your maximum effort without losing much speed.</td>
<td>12-40 sec</td>
<td>143 - 182</td>
</tr>
<tr>
<td>IVa</td>
<td>This zone is not for the faint of heart, and is used primarily during the competition phase of your season to improve both anaerobic and aerobic capacity. Allow plenty recovery time!!!</td>
<td>40-100 sec</td>
<td>182 - 192</td>
</tr>
<tr>
<td>IVb</td>
<td>Pretty much the same as above with emphasis on improving your ability to tolerate &quot;pain&quot; at suggested speed levels.</td>
<td>100-180sec</td>
<td>192 - 191</td>
</tr>
<tr>
<td>IIIa</td>
<td>This is the zone for classic interval workouts. Purely anaerobic. Expect possible muscle soreness and &quot;heavy legs (arms)&quot; after exercising in this zone.</td>
<td>3-7 min</td>
<td>191 - 188</td>
</tr>
<tr>
<td>IIIb</td>
<td>Same as the above with emphasis on improving your ability to repeat intervals without losing speed in each repetition.</td>
<td>7-15 min</td>
<td>188 - 181</td>
</tr>
<tr>
<td>II</td>
<td>This zone marks the transition between aerobic and anaerobic exercise. The lower number of your Heart Rate (in red at right) is a good indicator for your &quot;Anaerobic Threshold&quot; (LT).</td>
<td>15-30 min</td>
<td>181 - 169</td>
</tr>
<tr>
<td>IA</td>
<td>Aerobic Sub-zone. The upper level of suggested Heart Rate (at right) is the lower boundary of your &quot;Anaerobic Threshold&quot;.</td>
<td>30-60 min</td>
<td>169 - 151</td>
</tr>
<tr>
<td>Ib</td>
<td>Exercise in this zone is a pure aerobic effort and is the best place for exercise with the goal of losing excess weight.</td>
<td>&gt;1 hour</td>
<td>&lt;151</td>
</tr>
</tbody>
</table>

**Online Coach Program**
- Computerized periodization for volume, intensity, and density
- Individualized based on athlete’s performance level
- Flexible – allows for coach alteration
- Research-based
- Coaches’ user group via email

**EXAMPLE 3S ENERGY SYSTEMS**
<table>
<thead>
<tr>
<th>Age</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>45</th>
<th>50</th>
<th>55</th>
<th>65</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>200</td>
<td>195</td>
<td>190</td>
<td>185</td>
<td>180</td>
<td>175</td>
<td>170</td>
<td>165</td>
<td>155</td>
<td>150</td>
</tr>
<tr>
<td>90%</td>
<td>180</td>
<td>176</td>
<td>171</td>
<td>167</td>
<td>162</td>
<td>158</td>
<td>153</td>
<td>149</td>
<td>140</td>
<td>135</td>
</tr>
<tr>
<td>80%</td>
<td>160</td>
<td>156</td>
<td>152</td>
<td>148</td>
<td>144</td>
<td>140</td>
<td>136</td>
<td>132</td>
<td>124</td>
<td>120</td>
</tr>
<tr>
<td>70%</td>
<td>140</td>
<td>137</td>
<td>133</td>
<td>130</td>
<td>126</td>
<td>123</td>
<td>119</td>
<td>116</td>
<td>109</td>
<td>105</td>
</tr>
<tr>
<td>60%</td>
<td>120</td>
<td>117</td>
<td>114</td>
<td>111</td>
<td>108</td>
<td>105</td>
<td>102</td>
<td>99</td>
<td>93</td>
<td>90</td>
</tr>
<tr>
<td>50%</td>
<td>100</td>
<td>98</td>
<td>95</td>
<td>93</td>
<td>90</td>
<td>88</td>
<td>85</td>
<td>83</td>
<td>78</td>
<td>75</td>
</tr>
</tbody>
</table>

**VO2 Max (Maximum effort)**

**Anaerobic (Hardcore training)**

**Aerobic (Cardio training / Endurance)**

**Weight control (Fitness / Fat burn)**

**Moderate activity (Maintenance / Warm up)**
WHERE DO YOU FALL ON THIS SPECTRUM?

High-volume—low-to-mid intensity

Low-volume—High intensity
FACTORS IN CREATING YOUR APPROACH

Volume

Athlete’s experience level & mental capacity

Density (% or amt of time) spent on something

Intensity classification scale (NRG zones/hr/etc)

S&C / Dryland considerations

Priorities…
Technique-based?
Interval-based?
Specificity?

Mega Yardage
USRPT

Sprint vs Endurance

Aerobic
Anaerobic
**INTENSITY VS. VOLUME DEBATE**

Systematic manipulation of **INTENSITY**
- Intensity is the required speed for each segment of the workout (Training Zones)
- Aerobic markers
  - Best times - average pace
    - T15, T20, T25, T30, Mile time, 500 time
- Anaerobic markers
  - Front end & Back end - Best times / Goal times
    - 50, 100, 200
    - VO2 max, 2nd 50 of 100 pace
    - Top End Speed for 25, 15, 12 1/2

Systematic manipulation of **VOLUME**, with intensity

**Volume**
- What are the endurance capabilities of your athletes?
- Learn thru Testing – T30/20 or test sets
- What is a reasonable maximum per workout
- What does the buildup look like?
Often Overlooked, but Important!

- Critical thinking ability of athlete
- Biomechanics of athlete
- Motivation of athlete
- Resources of athlete
- Accountability of athlete

INDIVIDUAL CONSIDERATIONS
TRAINING TRENDS WILL COME AND GO (JUST LIKE FASHION TRENDS)

Best course is to review past history and compare to current trends, to see what others are doing

Decide how that applies to you & your athletes

SUCCESS comes from how the athlete is actually receiving the training program, not the program or even the coach giving the program. It’s all about the athlete – so understand what they need.

TO DEFINE YOUR OWN APPROACH: TAKE WHAT YOU LIKE AND LEAVE THE REST

Make your own season plans, use your own language, define yourself.

Share ideas/successes/failures with your peers to continue learning

In Summary…
“You know nothing, Jon Snow”
RECOMMENDED READING

- Complete Conditioning for Swimming
- SprintSalo by David C. Salo, Ph.D.
- 2012 World Swimming Audio Talks
- Developing Swimmers by Michael Brooks
- Ultra-Short Race-Pace Training
- The Science of Winning
- The Swim Coaching Bible
- ASCA Clinic Talk, 2011
THANK YOU: