



# Overview of the University of Michigan Training Program

BY JON URBANCHEK

## Middle Distance Training

- Middle of the swim continuum between 50 & 1500
- Most common among freestylers
- Good combo fast twitch fibers/anaerobic speed and slow twitch aerobic/endurance
- Wide range of training both speed & endurance - fun & variety

## 3 Main Groups

- 100 - 200- 400 / 500 Anaerobic angle (Ian Thorpe)
- 1500/1650 - 400/500 - 200 Aerobic angle (Grant Hackett)
- 200 - 400/500 Real MD VO2 max angle (Klete Keller)

## Middle Distance Characteristics

- Like to train
- Good sense of pace
- Ideal stroke rate
- 4 - 6 beat kick

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## MD @ Michigan / CW

	200 Yards	200 Meter
Keller	1:34.10	1:46.13
Vanderkaay	1:34.22	1:47.25
Borges	1:34.31	1:48.09
Ketchum	1:34.19	1:48.67
Hurd	1:35.5	1:48.89
Piersma	1:34.70	1:48.97
Malchow	1:36.10	1:49.22
	500 Yard	400 Meter
Keller	4:12.12	3:44.11
Vanderkaay	4:12.55	3:49.67
Dolan	4:08.75	3:48.99
Hurd	4:15.80	3:49.08
Piersma	4:14.55	3:49.72
Thompson	4:14.71	3:51.70
Malchow	4:17.48	3:52.60

### Jon's Threshold Program Use

- Select any of the threshold distances swum straight or interval average time or any single test distance of 500, 400, 200 time.
- To check the level of effort take heart rates at 0-10 sec; 30-40 sec; 1:00 - 1:10 after test.
- Sample (30 - 25 - 20 = 75 bpm)
- Select spreadsheet (write over it). Enter name, stroke, time (no colons). Hit enter and all new training paces appear.

### Endurance Training Categories

- Basic aerobic training EN-1
  - 5% below threshold
  - WHITE and PINK Color Codes
  - low intensity
  - short rest 10 - 20 sec rest
  - heart rate 130 - 150 bpm

### Anaerobic Threshold Training - EN-2

#### RED Color Code

- Optimal intensity for endurance improvement
- 10-20 sec rest
- 40 - 60 min durations
- Lactate 3 - 4 mM
- Heart rate 150 - 170

#### BLUE Color Code

- 15 to 30 sec rest
- 20 - 40 minutes duration
- Uncomfortable
- Slightly above threshold 4-5 mM
- Heart rate 160 - 180 duration

### Maximum VO2 Training EN-3

- 7% faster than (Red) Threshold pace
- :30 - 1:30 seconds rest
- PURPLE Color Code
  - Ideal for race pace training 400 - 1500
  - Intensity high
  - Lactate 5 - 8 mM, buffering & tolerance
  - Duration 1500 to 2000 (100's & 200's)
  - Heart rate 180 - 190

### Wed PM Main Set: VO2 max Middle Distance 400 meters

4 X 400 on 10:00 Broken swim  
 200 dive on 3:00 (Going out 400 pace 1:52) soft kick  
 100 push on 2:00 (55.0) supple kick  
 2 X 50 push on 1:00 (best you can come home :26 + :26) hard kick  
 Add up for 400 meters  
 3:39  
 Total distance = 1600  
 4 minutes active rest recovery

### Sat AM Main Set: VO2 max Middle Distance 200

4 X 200 on 8:00 Broken swim  
 50 dive on 1:30 (Going out 200 pace :22.0) soft legs  
 100 push on 2:30 (mid 100 of the 200 pace :48.0) supple legs  
 50 dive on 1:30 (best you can come home :22.0) hard legs  
 Add up for 200 meters 1:32  
 3 to 4 sec under goal time.  
 Active rest recovery 2:00  
 Total distance = 800

### Lactate Production SP-2

- Using GREEN Color Code - %
- Can be used for training and testing
  - Training for 100 6 X 50 at 8:00, 92% best time
  - Training for 200 6 X 100 at 8:00, 92% of best time
  - Training for 400 6 X 200 at 8:00, 94% -96% of best time
- Great correlations to goal times
- Use 3-4 active rest between swims
- Maximum lactate production / buffering
- Maximum heart rates

### 100 Yard/Meter Anaerobic Training Paces

GOAL TIME	94%	93%	92%	91%	90%	89%	88%	87%
:42.00	:44.68	:45.16	:45.65	:46.15	:46.67	:47.19	:47.73	:48.28
:43.00	:45.74	:46.24	:46.74	:47.25	:47.78	:48.31	:48.86	:49.43
:44.00	:46.81	:47.31	:47.83	:48.35	:48.89	:49.44	:50.00	:50.57
:45.00	:47.87	:48.39	:48.91	:49.45	:50.00	:50.56	:51.14	:51.72
:46.00	:48.94	:49.46	:50.00	:50.55	:51.11	:51.69	:52.27	:52.87
:47.00	:50.00	:50.54	:51.09	:51.65	:52.22	:52.81	:53.41	:54.02
:48.00	:51.06	:51.61	:52.17	:52.75	:53.33	:53.93	:54.55	:55.17
:49.00	:52.13	:52.69	:53.26	:53.85	:54.44	:55.06	:55.68	:56.32
:50.00	:53.19	:53.76	:54.35	:54.95	:55.56	:56.18	:56.82	:57.47
:51.00	:54.26	:54.84	:55.43	:56.04	:56.67	:57.30	:57.95	:58.62
:52.00	:55.32	:55.91	:56.52	:57.14	:57.78	:58.43	:59.09	:59.77
:53.00	:56.38	:56.99	:57.61	:58.24	:58.89	:59.55	:1:00.23	:1:00.92
:54.00	:57.45	:58.06	:58.70	:59.34	:1:00.00	:1:00.67	:1:01.36	:1:02.07
:55.00	:58.51	:59.14	:59.78	:1:00.44	:1:01.11	:1:01.80	:1:02.50	:1:03.22
:56.00	:59.57	:1:00.22	:1:00.87	:1:01.54	:1:02.22	:1:02.92	:1:03.64	:1:04.37
:57.00	:1:00.64	:1:01.29	:1:01.96	:1:02.64	:1:03.33	:1:04.04	:1:04.77	:1:05.52
:58.00	:1:01.70	:1:02.37	:1:03.04	:1:03.74	:1:04.44	:1:05.17	:1:05.91	:1:06.67
:59.00	:1:02.77	:1:03.44	:1:04.13	:1:04.84	:1:05.56	:1:06.29	:1:07.05	:1:07.82
:1:00.00	:1:03.83	:1:04.52	:1:05.22	:1:05.93	:1:06.67	:1:07.42	:1:08.18	:1:08.97

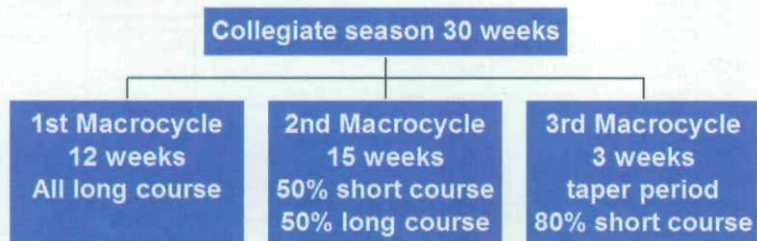
### 200 Meter/Yard Percentage Chart

GOAL TIME	96%	95%	94%	93%	92%	91%	90%	89%
1:30.00	1:33.75	1:34.74	1:35.74	1:36.77	1:37.83	1:38.90	1:40.00	1:41.12
1:31.00	1:34.79	1:35.79	1:36.81	1:37.85	1:38.91	1:40.00	1:41.11	1:42.25
1:32.00	1:35.83	1:36.84	1:37.87	1:38.92	1:40.00	1:41.10	1:42.22	1:43.37
1:33.00	1:36.88	1:37.89	1:38.94	1:40.00	1:41.09	1:42.20	1:43.33	1:44.49
1:34.00	1:37.92	1:38.95	1:40.00	1:41.08	1:42.17	1:43.30	1:44.44	1:45.62
1:35.00	1:38.96	1:40.00	1:41.06	1:42.15	1:43.26	1:44.40	1:45.56	1:46.74
1:36.00	1:40.00	1:41.05	1:42.13	1:43.23	1:44.35	1:45.49	1:46.67	1:47.87
1:37.00	1:41.04	1:42.11	1:43.19	1:44.30	1:45.43	1:46.59	1:47.78	1:48.99
1:38.00	1:42.08	1:43.16	1:44.26	1:45.38	1:46.52	1:47.69	1:48.89	1:50.11
1:39.00	1:43.13	1:44.21	1:45.32	1:46.45	1:47.61	1:48.79	1:50.00	1:51.24
1:40.00	1:44.17	1:45.26	1:46.38	1:47.53	1:48.70	1:49.89	1:51.11	1:52.36
1:41.00	1:45.21	1:46.32	1:47.45	1:48.60	1:49.78	1:50.99	1:52.22	1:53.48
1:42.00	1:46.25	1:47.37	1:48.51	1:49.68	1:50.87	1:52.09	1:53.33	1:54.61
1:43.00	1:47.29	1:48.42	1:49.57	1:50.75	1:51.96	1:53.19	1:54.44	1:55.73
1:44.00	1:48.33	1:49.47	1:50.64	1:51.83	1:53.04	1:54.29	1:55.56	1:56.85
1:45.00	1:49.38	1:50.53	1:51.70	1:52.90	1:54.13	1:55.38	1:56.67	1:57.98
1:46.00	1:50.42	1:51.58	1:52.77	1:53.98	1:55.22	1:56.48	1:57.78	1:59.10
1:47.00	1:51.46	1:52.63	1:53.83	1:55.05	1:56.30	1:57.58	1:58.89	2:00.22
1:48.00	1:52.50	1:53.68	1:54.89	1:56.13	1:57.39	1:58.68	2:00.00	2:01.35
1:49.00	1:53.54	1:54.74	1:55.96	1:57.20	1:58.48	1:59.78	2:01.11	2:02.47
1:50.00	1:54.58	1:55.79	1:57.02	1:58.28	1:59.57	2:00.88	2:02.22	2:03.60
1:51.00	1:55.63	1:56.84	1:58.09	1:59.35	2:00.65	2:01.98	2:03.33	2:04.72
1:52.00	1:56.67	1:57.89	1:59.15	2:00.43	2:01.74	2:03.08	2:04.44	2:05.84
1:53.00	1:57.71	1:58.95	2:00.21	2:01.51	2:02.83	2:04.18	2:05.56	2:06.97

## Alactic / Speed Training SP-3

- Short, fast, explosive sprints, 10 - 25 meters
- 5.0 - 10.0 sec
- 6 - 10 repetitions
- 1:00 - 2:00 rest
- Lactate build up is minimal
- Heart rate below maximum
- Ideal for 50 - 100 - 200 swimmers at any time of the season

## Annual Training Plan at the University of Michigan



## Collegiate Season

- 1st Macrocycle (12 weeks)
  - 6 weeks aerobic training/skill development/ heart rate < 150
  - 6 weeks aerobic - anaerobic threshold - VO2MAX - lactate
  - Major competition (one week taper)
- 2nd Macrocycle (15 weeks)
  - 3 weeks aerobic endurance training
  - 10 weeks all training zones and energy systems - more emphasis VO2max and lactate production - This period includes 3-4 dual meets per month (short course)
- 3rd Macrocycle
  - 3 week taper period
  - 80% short course
  - Strength reduced to maintenance and dropped
  - Training resistance gradually reduced from 70,000 per week to 30,000-20,000 meters/yards per week

## Summer Season

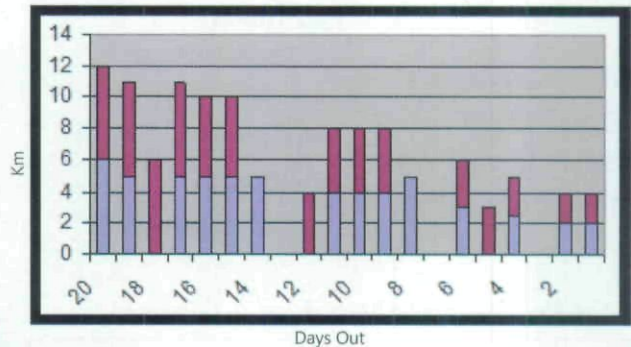


## Summer Season

- 2nd Macro
  - 15 weeks
  - All training zones and energy systems especially VO-2MAX and Lactate work
  - This period included competition every 3rd weekend
  - Long course

- 3rd Macro
  - 3 weeks gradual taper
  - US Nationals or International Competition

## Middle Distance - 3 Week Taper



## Day 1 Micro Cycle - Mid Season

<p><b>Monday AM</b></p> <p>Aerobic Technique</p> <p>Pull Set/Free 2000 - 3000</p> <p>Kick/Endurance- 800-1200</p> <p>Hypoxic swim free</p> <p>Fin swim/ IM</p> <p><b>7000 meters</b></p>	<p><b>Monday PM</b></p> <p>Dryland - Stretching</p> <p>1 hour general work</p> <p><b>Main set:</b></p> <p>Threshold work 2000 - 3000 meters</p> <p>Energy system EN2</p> <p><b>7000 meters</b></p>
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## Day 2 Micro Cycle - Mid Season

<p><b>Tues AM</b></p> <p>Aerobic/Recovery</p> <p>Skill / drill work</p> <p>Kick / speed power</p> <p>Swim specific power</p> <p>Parachutes</p> <p>Stretch cords / tethered swim; negative work &amp; positive speed assistance</p> <p>Sprints 7000 meters</p>	<p><b>Tuesday PM</b></p> <p>Strength Train - Stretching</p> <p>1 hr general work</p> <p><b>Main set:</b></p> <p>Active rest work</p> <p>Continuous easy- race pace 2000-3000</p> <p>Alternating Energy systems : EN-1 &amp; EN 3</p> <p><b>7000 meters</b></p>
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## Tues PM Main Set: Active Rest

- 3 X (300 free + 100 casual on 1:30)  
Descend 300's 1 thru 3
- 3 X (200 free + 100 casual on 1:30)  
Descend 200's 1 thru 3
- 3 X (100 free + 100 casual on 1:30)  
Descend 100's 1 thru 3
- 3 X (4 X (50 casual + 50 free pace)  
1st round + 1.0 sec per 50 :27's  
2nd round at pace :26's  
3rd round at -1.0 sec per 50 :25's  
Total distance = 3900

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### Day 3 Micro Cycle - Mid Season

<p><b>Wednesday AM</b></p> <p><b>OFF</b></p> <p><b>Wednesday PM</b></p> <p><b>Dryland / Stretching</b></p> <p><b>1 Hr General Work</b></p>	<p><b>Main set:</b></p> <p><b>VO2MAX work or Rainbow set (white to green intensities) or Lactate work or Broken swims or Test sets</b></p> <p><b>6000 meters</b></p>
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400/400 red (EN-2) 4:18-4:18  
 HR 25-28/10 sec  
 Total Main Set: 4200

### Distance Micro Cycle

	Mon	Tues	Wed
<b>AM</b>	Aerobic Tech Pull / Free 3.0 - 4.0 Kick quality Drills EN1-2 7000	Aerobic drills / Fins Kick (2.0) Pull / Power Parachutes Fins Rec / EN1-2 7000	Off Or Make ups
<b>PM</b>	Threshold work 60 min +/- 10 min EN2 - 3 8000	Active rest slow / fast (subjective) EN1-2 8000	VO2max ((M) Lactate rainbow set Red, blue, purple, green EN2-3 SP 8000

Weights: T, TH, SAT  
 Dryland: M, W, F (Medicine ball, VASA, Swimbench, Breast-Bench, Jumps) Weekly total =76.0

### Middle Distance Week at a Glance

<b>Monday</b>	<b>Thursday</b>	<b>Distance Free with D'men</b>
<b>Tuesday</b>	<b>Friday</b>	<b>Middle Distance Free - active rest</b>
<b>Wed PM</b>	<b>Sat AM</b>	<b>Freestyle -VO2 max, Lactate peak, or test set</b>
	<b>Sunday</b>	<b>Off</b>

### Distance Micro Cycle

	Thurs	Fri	Sat
<b>AM</b>	Aerobic Tech Drills Pull / Free Hypoxic 2.0 Kick Kick Fins Swim Rec / EN1-2 7000	Aerobic Stroke Work Kick Power Parachutes, Cords Technique Rec / EN1-2 7000	Rainbow set, or VO2 Max, or Test set  EN2-3 - SP 8000
<b>PM</b>	Threshold work 50 min +/- 10 min EN2 - 3 SP 8000	Active rest slow / fast (subjective) EN1-2 8000	Off

Weights: T, TH, SAT  
 Dryland: M, W, F (Med ball, VASA, Swimbench, Breast-Bench, Jumps) Weekly total =80.0

### Distance @ Michigan / CW

	1650 yards	1500 meters
Thompson	14:26.62	14:56.81
Vendt	14:29.0	14:59.0
Hurd	15:04.23	15:09.44
Vanderkaay	14:36.54	15:14.78
Siciliano	14:41.84	15:14.94
Dolan	14:29.31	15:18.18

### IM @ Michigan / CW

	400 Yard	400 Meter
Dolan	3:38.18	4:11.76
Namesnik	3:44.14	4:13.67
Wouda	3:44.32	4:15.53
von Richter	3:44.81	4:19.62
Sayao	3:46.50	4:19.66
Barrowman	3:45.00	4:19.75

### Distance Free - White to VO2 Max

(Main series only) EN1 - EN3  
 Threshold pace 1:04.0  
 3 x 400 at 4:50 White pace 4:24.0  
 3 x 400 at 3:40 Pink pace 3:15.0  
 3 x 200 at 2:30 Red pace 2:04.0  
 8 x 100 at 1:40 Blue pace 59.0  
 8 x 100 at 2:00 Purple pace 58.0  
 Total main set 4,300

### Monday PM Main Set: Threshold

- A. 6 X 200 on 2:30 (3 white EN-1 2:14; 3 red EN-2 2:08)  
 HR 23-25/10sec  
 30 sec extra rest
- B. 3 X 800 on 9:30 (Descend 1 thru 3)  
 400/400 white (EN-1) 4:32-4:32  
 400/400 pink (EN-1) 4:29-4:29

### Wed PM Main Set: VO2 max Middle Distance 500 yards

- 4 X 500 on 12:00 Broken swim
- 200 dive on 3:00 (Going out 500 pace 1:42-1:45)
- 150 push on 2:30 (VO2 max pace 1:17 - 1:19)
- 100 dive on 2:00 (VO2 max pace :50-:51)
- 50 push on 1:00 (best you can come home :23-:24)

Add up for 500 yards 4 to 6 sec under goal time.

4:12 to 4:19

Total distance = 2000

## Test Sets: VO2 Max EN3

For 1650 yards, Thompson 2001

30 x 100 Free at 1:30

Average pace 51.5

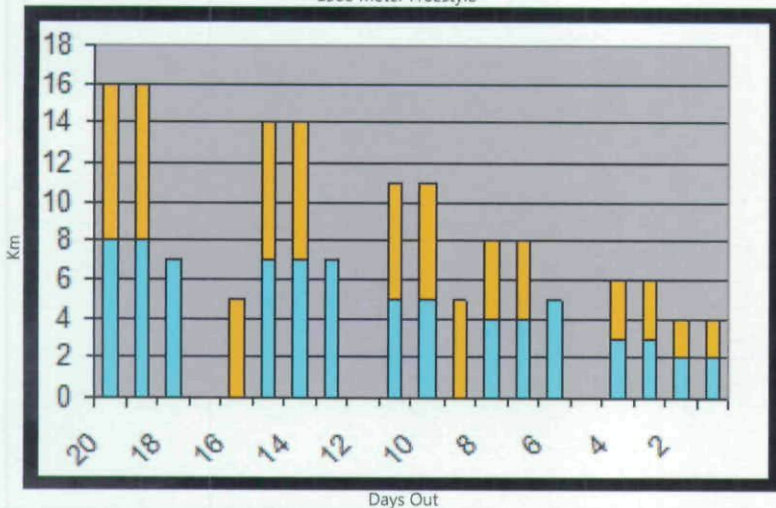
Prediction = 52.5/100 for 1650

Prediction = 14:26.25

Actual time = 14:26.25

## Chris Thompson 3 Week Taper

1500 Meter Freestyle



## Lactate Production for Distance Swimmers SP-2

- Using GREEN Color Code - %
- Can be used for training and testing  
Training for 400 6 X 200 at 8:00,  
94% -96% of best time
- Great correlations to goal times
- Use 3-4 active rest between swims
- Maximum lactate production / buffering
- Maximum heart rates

## 200 time correlations to distance

### World Class Distance Swimmers

GH, IT, MP, KK, CT, EV, LJ

Hold 91.72% of 200 time for 1500 m

Hold 95.51% of 200 time for 400 m

Hold 95.95% of 400 time for 1500 m

## 400 IM Characteristics

- Distance based training  
(Dolan, Namesnik, Wouda, Vendt, Phelps)
- Breaststroke is a must
- Cannot hide weakness in long course
- Good sense of pace
- Importance of stroke transitions

## 200 Meter / Yard Percentage Chart

GOAL TIME	96%	95%	94%	93%	92%	91%	90%	89%
1:30.00	1:33.75	1:34.74	1:35.74	1:36.77	1:37.83	1:38.90	1:40.00	1:41.12
1:31.00	1:34.79	1:35.79	1:36.81	1:37.85	1:38.91	1:40.00	1:41.11	1:42.25
1:32.00	1:35.83	1:36.84	1:37.87	1:38.92	1:40.00	1:41.10	1:42.22	1:43.37
1:33.00	1:36.88	1:37.88	1:38.94	1:40.00	1:41.09	1:42.20	1:43.33	1:44.49
1:34.00	1:37.92	1:38.95	1:40.00	1:41.09	1:42.17	1:43.30	1:44.44	1:45.62
1:35.00	1:38.96	1:40.00	1:41.06	1:42.15	1:43.26	1:44.40	1:45.56	1:46.74
1:36.00	1:40.00	1:41.05	1:42.13	1:43.23	1:44.35	1:45.49	1:46.67	1:47.87
1:37.00	1:41.04	1:42.11	1:43.19	1:44.30	1:45.43	1:46.59	1:47.78	1:48.99
1:38.00	1:42.08	1:43.16	1:44.26	1:45.38	1:46.52	1:47.69	1:48.89	1:50.11
1:39.00	1:43.13	1:44.21	1:45.32	1:46.45	1:47.61	1:48.79	1:50.00	1:51.24
1:40.00	1:44.17	1:45.26	1:46.38	1:47.53	1:48.70	1:49.89	1:51.11	1:52.36
1:41.00	1:45.21	1:46.32	1:47.45	1:48.60	1:49.78	1:50.99	1:52.22	1:53.48
1:42.00	1:46.25	1:47.37	1:48.51	1:49.68	1:50.87	1:52.09	1:53.33	1:54.61
1:43.00	1:47.29	1:48.42	1:49.57	1:50.75	1:51.96	1:53.19	1:54.44	1:55.73
1:44.00	1:48.33	1:49.47	1:50.64	1:51.83	1:53.04	1:54.29	1:55.56	1:56.85
1:45.00	1:49.38	1:50.53	1:51.70	1:52.90	1:54.13	1:55.38	1:56.67	1:57.98
1:46.00	1:50.42	1:51.58	1:52.77	1:53.98	1:55.22	1:56.48	1:57.78	1:59.10
1:47.00	1:51.46	1:52.63	1:53.83	1:55.05	1:56.30	1:57.58	1:58.89	2:00.22
1:48.00	1:52.50	1:53.68	1:54.89	1:56.13	1:57.39	1:58.68	2:00.00	2:01.35
1:49.00	1:53.54	1:54.74	1:55.96	1:57.20	1:58.48	1:59.78	2:01.11	2:02.47
1:50.00	1:54.58	1:55.79	1:57.02	1:58.26	1:59.57	2:00.90	2:02.22	2:03.50
1:51.00	1:55.63	1:56.84	1:58.09	1:59.35	2:00.65	2:01.96	2:03.33	2:04.72
1:52.00	1:56.67	1:57.89	1:59.15	2:00.43	2:01.74	2:03.08	2:04.44	2:05.84
1:53.00	1:57.71	1:58.95	2:00.21	2:01.51	2:02.83	2:04.18	2:05.56	2:06.97

## 400 IM

	Mon	Tues	Wed
<b>AM</b>	Aerobic Tech Pull / Free 3.0 - 4.0 Kick Drills EN1-2 7000	Aerobic drills / Fins Kick (2.0) Pull / Stroke Parachutes / Power/ - buckets, Cords +/- Rec / EN1-2 7000	Off Or Make ups
<b>PM</b>	Threshold work 60 min +/- 10 min EN2 - 3 8000	Active rest slow / fast (subjective) BREAST / IM EN1-2 8000	VO2max (IM) Lactate rainbow set Red, blue, purple, green EN2-3 SP 7000

Weights: T, TH, SAT

Dryland: M, W, F (Medicine ball, VASA, Swimbench, Breast-Bench, Jumps

	Thurs	Fri	Sat
<b>AM</b>	Aerobic Tech Drills Pull / Free Hypoxic Kick Breast Kick Breast Fins Swim Rec / EN1-2 7000	Aerobic Pull Kick Kick Breast Parachutes / Power/ - buckets, Cords +/- Technique Rec / EN1-2 7000	Lactate VO2 Max    EN2-3 - SP 8000
<b>PM</b>	Threshold work 50 min +/- 10 min EN2 - 3 SP 8000	Active rest slow / fast (subjective) BACK / IM EN1-2 8000	Off

Weights: T, TH, SAT

Weekly total =76.0

Dryland: M, W, F (Med ball, VASA, Swimbench, Breast-Bench, Jumps

## IM Threshold Workout / Meters

(Main series only) EN2

2-4 Cycles

4 x 100 IM at 1:30 Dec 1-4

1 x 400 IM at 5:30 90%

4 x 100 Free at 1:20 EN1 (White/Pink pace)

1 x 400 Free at 4:40 EN2 (Red/Threshold)

:30 sec extra between cycles

Pulse check, 25-28 for 10 sec

Total main set 3,200 - 6,400

continued on page 10

## IM Active Rest Workout

(Main series only) EN1 - EN3

6 x [100 Back + 100 EZ Breast]

Desc. 1-3 to 400 Im pace

6 x [100 Breast + 100 EZ]

Desc 1-3 to 400 IM pace

Transition Work:

6 x [100 Back/Breast/50 + 100 EZ Free] Desc 1-3

6 x [100 Back/Free/50 + 100 EZ Free] Desc 1-3

Total main set 4,800

200 Back 2:04.5

200 Breast 2:31.5

3 x 200 Free 1:57.0

Average velocity 2:05.66

Prediction + 2 x avg = 4:11.32

## IM - VO2 MAX Workout

(Main series only) EN3

3 cycles at or near race pace

1 x 100 Fly 2:00 dive

2 x 100 Back 2:00 push

3 x 100 Breast 2:00 push

4 x 100 Free 2:00 push

300 EZ recovery between cycles

Total main set 3,000

## Test Sets: Anaerobic/Lactate

### Production 400 IM Meters - Dolan

6 x 200 IM at 8:00 min - Dive

200 Fly 2:07.0

## Weights

- Upper body
- Lower body
- Core

## Dryland

- Stretching
- Swimbench
- VASA trainer
- Plyometrics
- Medicine ball
- Stretch cords

## Recommended Reading

"The Swim Coaching Bible"

Edited by Hannula & Thornton

Human Kinetics Publisher ■

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