



[PHOTO COURTESY: PETER H. BICK]

Connor Jaeger

DISTANCE SETS: **PRACTICE THE PAIN**

by Michael J. Stott

One thing distance swimmers do with frightening regularity is “practice the pain.” Repeated sets in heavy training either fortify the soul and strengthen the will or lead to shorter distances and, sometimes, shorter careers for the less motivated.

The University of Michigan has always produced top distance freestylers. Among some of the swimmers who have contributed to the school’s storied history:

- *Jim Christy, who won Olympic bronze in the 1500 meter freestyle in 1932*
- *Chris Thompson, who secured the same in 2000*
- *Connor Jaeger, who captured silver in 2016*
- *Peter Vanderkaay, who grabbed bronze in the 400 free in 2012*

On native soil, Wolverine distance and mid-distance swimmers have won enough national and NCAA titles to fill the Big House on any given Saturday!

That Michigan distance tradition, so carefully cultivated by legendary coach Matt Mann and nurtured by the likes of Gus Stager and Jon Urbanek, continues today. At the 2017 men’s NCAA meet, freshman Felix Auboeck finished third in the 500 yard freestyle while he and junior PJ Ransford grabbed second and sixth in the 1650.

Part of the distance regimen within any program is not minding Doc Counsilman’s mantra, “hurt, pain, agony.” Michigan swimmers get a daily dose of misery as their aerobic and anaerobic systems become annealed during the training process. “For our distance athletes—and our aerobically-based mid-distance athletes—we work on aerobic development with anaerobic maintenance throughout the fall,” says associate head coach Josh White.

“September consists more of moderate aerobic base work and volume building. In October, we try to reach our standard levels of threshold work and volume. Then throughout November, we push threshold and volume up above our standard for one training cycle.

“As an example, for distance, our standard level of threshold work (red) in a workout would be around 3,000 yards short course or 2,750 meters long course. We will push up to 4,000 red short course for a very short period of time. The intervals throughout the fall for all aerobic work are shorter than in the spring (for red around 10 seconds rest per 100),” he says, referencing the color heart rate charts made popular by Urbanek.

“One of the big things that we focus on during our aerobic build is both continuing to maintain anaerobic and then help the aerobic and anaerobic systems to work effectively together. Maintaining anaerobic work requires a delicate balance, doing some of it but not too much. We believe

that you can develop the aerobic system better if you aren't pushing the anaerobic forward at the same time," White says.

"One year with Jaeger, we went too far in the aerobic direction and didn't maintain anaerobic. On a Friday, he went faster on 300s on 2:50 than he did on Thursday for 300s on 3:20 because his aerobic level stayed activated, and there was basically no anaerobic contribution—so we increased his anaerobic a bit to correct."

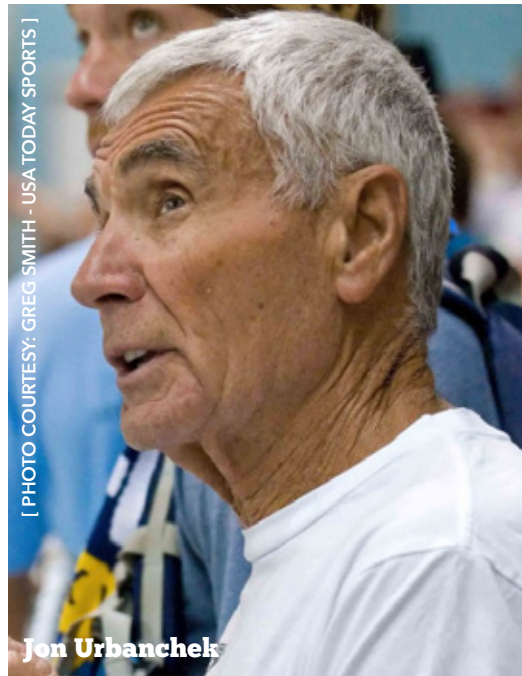
The 10 x 200 and 10 x 100 sets beginning at the bottom of this column illustrate how the anaerobic and aerobic systems work effectively together.

"Depending on how you train, you can cause the aerobic system to activate well or poorly at the onset of the race," says White. "We have all seen distance swimmers who go out a little too hard and then slow down below the pace that they could hold for even, say, a 3,000 for time in practice. So throughout the fall, we work on building our anaerobic work off of the aerobic system. We have swimmers do active rest sets where they both manipulate the amount of work and the interval to emphasize the aerobic contribution."

White, who has a Ph.D. in human performance from Indiana and studied at the Counsilman Center for the Science of Swimming, notes that the two-fold concept is a bit independent of pacing: "First, you can train the aerobic system to run at a high rate in the presence of anaerobic byproducts. Second, when an athlete dives in and begins swimming, the body can produce the energy either anaerobically or aerobically. You can train that as well. So, if you are a distance athlete, you want to train your body to go aerobic first, as any excess anaerobic output will actually factor in for the entire rest of the race."

Following is a favorite long course set that White has his athletes do:

- *10 x 200 on 2:30/2:35/2:40/2:45/2:50/2:55/3:00/3:05/3:10/3:15 —100 fast (blue or VO2 Max)/100 cruise (but not so easy so you miss the interval)*
- *10 x 100 on 1:20/1:25/...2:05—50 fast (progresses through energy systems)/50 (that moves to easy by the end)*



"The interval increases with each of the 10 reps. For the 200s, the first one is on 2:30, then the second on 2:35, etc., up to 3:15 for the last. These would be the intervals for freestyle, but you can do it other strokes, just starting and ending at different points. You are going to start very aerobically and end anaerobically, which trains the body to approach races in that way," says White.

A short course example:

- *10 x 100 on :55/1:00/1:05/1:10/1:15/1:20....1:40 blue freestyle*

"The gradually increasing intervals are not crucial, but they are helpful," says White. "The idea is that it's a

little like a race. At the beginning, there is going to be a larger amount of anaerobic work than the average. The swimmer is starting from rest, and the competitive juices are flowing. The short intervals at the beginning force him to work through this anaerobic work with aerobic work. The times naturally get a bit slower, as the work has less anaerobic contribution. Then at the end as there is more rest, the anaerobic system can start to kick in again, and the swimmer can go faster again."

SAMPLE SETS

On the next two pages are sample distance sets for Michigan's men's team—one for November Race Pace and the other for Active Rest. Says White, "Without a doubt, the color system that we use is both based on—and heavily influenced by—Jon Urbanek's color charts. However, Jon would probably take issue with the colors brown, orange and yellow, as he never really used them. (Coach) Mike (Bottom) and I ended up adding them in during our time at Michigan to accomplish some specific items—i.e., instance differentiating between 200 and 500 pace, etc." ◀

About the Author:

Michael J. Stott, a longtime staff writer for *Swimming World* and *Swimming Technique*, is an ASCA Level 5 coach whose Collegiate School (Richmond, Va.) teams won nine state high school championships. He has been named a 2017 recipient of NISCA's Outstanding Service Award.

November Race Pace Example

1. Warm Up

- 1 X 400 Yellow Choice
- 1 X 300 Yellow Social Kick
- 1 X 300 Orange IM Kick/Drill/Swim by 25
- 4 X 100 1:20 Descend 1-4 Orange-Red
- 6 X 50 0:50 2 X 1,2,3 Cycles Platinum Specialty off Wall Rest Orange Free
- 1 X 100 2:00 Yellow Backstroke
- 4 X 75 1:10 IM Order 25 Orange Drill/50 Swim Descend 1-4 Orange-Red
- 1 X 100 Yellow Backstroke

2. Mid Distance & Distance - Hot Up

- 2 X
- 1 X 100 1:45 Orange Specialty Drill
- 1 X 100 1:30 White 50 Specialty/50 Free
- 1 X 100 1:20 Pink Free
- 1 X 75 1:10 Red Specialty
- 1 X 50 0:50 Blue Specialty
- 1 X 25 0:30 Brown Specialty

- 1 X 100 Yellow Choice

Color	10s HR	Word Description
Platinum	NA	All out, very short duration, speed
Gold	NA	All out, very short duration, power
Green	NA	All out, short duration
Purple	>32	All out, unpaced, short to mod duration
Brown	>32	All out, paced, moderate duration
Blue	30-32	Paced but very hard, longer duration
Red	27-30	Hard paced effort, any duration
Pink	25-27	Moderate/Hard
White	23-25	Moderate
Orange	20-23	Easy/Moderate
Yellow	<20	Easy

3. Mid Distance & Distance - Race Pace

For All Rounds Fly & Bk +:05, Breast +:10, NO IM Option

- 8 X 50 :30/:30/:35/:35/:40/:40/:45/:45 Blue Specialty
Tween
- 8 X 50 :35/:35/:40/:40/:45/:45/:50/:50 Blue-Brown Specialty
Tween
- 8 X 50 :40/:40/:45/:45/:50/:50/:55/:55 Brown-Purple Specialty

Tween

- 1 X 100 Yellow Choice
- 3 X 50 0:45 Backstroke Des 1-3 Orange-Pink
- 4 X 25 0:30 Orange UW Dolphin Kick
- 3 X 50 0:40 Free Asc 1-3 Pink-Orange
- 4 X 50 0:55 25 Orange Specialty Drill/25 Specialty Swim Des 1-4 Orange-Red
- 1 X 100 Yellow Choice

4. Warm Down

At Least 5 Minutes of Easy Swimming, Drill, & Play

Mid Distance & Distance - Active Rest (Men) (LCM)

1. Warm Up

- 1 X 400 Yellow Choice
- 1 X 300 Yellow Kick
- 4 X 100 1:20 Free Descend 1-4 Orange, White, Pink, Red
- 6 X 50 0:50 3 X 1,2,3 Cycles Platinum Specialty rest Orange Free
- 4 X 100 1:25/1:20/1:15/1:10 Free Descend Effort with Interval
- 1 X 100 2:00 Yellow Backstroke
- 4 X 75 1:10 Specialty 25 Orange Drill/50 Des 1-4 Orange-Red
- 1 X 100 2:00 Yellow Backstroke
- 6 X 50 0:55 Specialty Des 1-6 Orange-Brown
- 1 X 100 Yellow Backstroke

2. Mid Distance & Distance - Active Rest

- 8 X 200 2:30/2:35/2:40...3:20/3:25 100 Blue Specialty/100 Orange Free
Free Start 2:30, End 3:05
Back, Fly or IM Start 2:40, End 3:15
Breast Start 2:50, End 3:25
- 1 X 200 Yellow Choice
- 8 X 100 1:20/1:25...2:00/2:05 Start 50 Blue Specialty/50 Orange Free Move Towards 50 Green Specialty/50 Yellow
Free Start 1:20, End 1:55
Back or Fly Start 1:25, End 2:00
Breast Start 1:30, End 2:05

3. Team Warm Down

- 10 X 50 0:45 Orange-Yellow Choice

Color	10s HR	Word Description
Platinum	NA	All out, very short duration, speed
Gold	NA	All out, very short duration, power
Green	NA	All out, short duration
Purple	>32	All out, unpaced, short to mod duration
Brown	>32	All out, paced, moderate duration
Blue	30-32	Paced but very hard, longer duration
Red	27-30	Hard paced effort, any duration
Pink	25-27	Moderate/Hard
White	23-25	Moderate
Orange	20-23	Easy/Moderate
Yellow	<20	Easy



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