Run Training Utilizing the Daniels’ Method: Planning Effective Workouts and Incorporating Track Workouts

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Quick Poll

• How many days a week do you run?

• Do you attend GCTri track workouts? Why/why not?

• Do you think its more important to get your mileage in or is it about quality workouts?

• What technique do you use currently to guide pace?
Why we train...

<table>
<thead>
<tr>
<th>Adaptations to Endurance Training</th>
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<tbody>
<tr>
<td><strong>Respiratory</strong></td>
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<tr>
<td>Enhanced O2 exchange in lungs</td>
<td></td>
</tr>
<tr>
<td>Improved blood flow through lungs</td>
<td></td>
</tr>
<tr>
<td>Decreased submaximal respiratory rate</td>
<td></td>
</tr>
<tr>
<td>Decreased submaximal pulmonary ventilation</td>
<td></td>
</tr>
<tr>
<td><strong>Cardiovascular</strong></td>
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<tr>
<td>Increased cardiac output</td>
<td></td>
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<tr>
<td>Increased blood volume, red blood cell count and hemoglobin concentration</td>
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</tr>
<tr>
<td>Enhanced blood flow to skeletal muscle</td>
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</tr>
<tr>
<td>Reduced submaximal heart rate</td>
<td></td>
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<tr>
<td>Improved thermoregulation</td>
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<tr>
<td><strong>Musculoskeletal</strong></td>
<td></td>
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<tr>
<td>Increased mitochondrial size and density</td>
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<td>Increased oxidative enzyme concentrations</td>
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<td>Increased myoglobin concentrations</td>
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<td>Increased capillarization in muscle bed</td>
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<tr>
<td>Increased O2 difference between arterial and venous blood</td>
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</tr>
</tbody>
</table>

From Essentials of Strength Training & Conditioning (2000)

Training will improve Anaerobic threshold and VO2max

![Performance Zones](image)
Paradigm Shift in Triathlon Training

Measures of Intensity (Running)

- **RPE**
  - Purely by “feel”
- **Heart Rate (Zones)**
  - Remember- HR’s lag or may stay elevated (difficult for interval or track work)
- **Pace (ie – 7:30/mile)**
  - Time based
Daniels’ vs. HR Zones

These are your paces for each training zone. Note: Pace is time per distance.

<table>
<thead>
<tr>
<th>Training Zone</th>
<th>Pace</th>
</tr>
</thead>
</table>
| E Easy Pace   | km: 9:27  
HR: 65-79%  
Qtr: less than 20 min/week or 150 min/week |
|               | mile: 10:23 |
| M Marathon Pace | mile: 8:57 |
| T Threshold   | 400m: 02:05  
HR: 88-92%  
Qtr: less than 90 min/week or 60 min/week  
Why the 0.90 mile distance? See NOTES below. |
|               | 800m: 04:10  
66 min: 05:12  
mile: 05:41 |
| I Interval Pace | 66 min: 09:22 |
|               | mile: 09:22 |
| R Repetition Pace | 200m: 53 |
|               | 400m: 1:48 |

They are similar in nature, however Daniels’ method is less conservative.

The Basics

- Good training intensity (pace) is performed just at the edge of anaerobic threshold –
- **STAY AEROBIC**
- If you work beyond anaerobic threshold
  - You won’t be able to hold that pace for too long (body physiologically can’t keep up)
  - Signs that you’ve done this:
    - Uncontrolled breathing
    - “Stitch” in your right side (Liver unable to buffer lactic acid)
    - Heavy legs (lactic acid)
Daniels’ Method vs. HR Zone Method

- Requires a watch (GPS watch preferred)
- Uses recent run performance times to help guide running intensity (velocity)
- Never have to worry about HR lag or HR staying elevated
- Requires a GPS watch with HR monitor
- Uses feedback from body (heart rate) to help guide running intensity (velocity)
- Useful for helping the overachiever to ease up if the body is tired and not responding during training and motivating the underachiever

Keep your HR monitors!!!

- Runs without HR won’t give you rTSS or IF in TrainingPeaks (both important measures to be sure you aren’t OVERTRAINING).
- rTSS – Training Stress Score
- IF – Intensity Factor
Jack Daniels’ Method

- V-Dot Calculator (IOS & Android apps) - FREE

Why Use Daniels’ Method?

Physiologic changes are probably the easiest to make through training. ALL will improve performance, but you get big bang for your buck here.
V-dot

• V-dot = critical velocity
  – Maximal velocity an individual can produce in a certain running event
  – Takes into account **RECENT** race performances

• VO2max = aerobic capacity
  – Maximal volume of O2 the body can consume and use
  – Takes into account the body’s physiologic limit to perform

**Performance** = physiological + psychological + biomechanical

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### VO2max Records

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<th>Score</th>
<th>Name</th>
<th>Sport</th>
<th>Additional Information</th>
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<tbody>
<tr>
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<td>Thor Hushovd</td>
<td>cycling</td>
<td>listed in an article on <a href="http://www.fasterskier.com">www.fasterskier.com</a></td>
</tr>
<tr>
<td>86.0</td>
<td>Ole Einar Bjørndalen</td>
<td>biathlon</td>
<td>listed in an article on <a href="http://www.fasterskier.com">www.fasterskier.com</a></td>
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<tr>
<td>85.0</td>
<td>Dave Bedford</td>
<td>runner</td>
<td>10k world record holder</td>
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<tr>
<td>85.0</td>
<td>John Ngugi</td>
<td>distance runner</td>
<td>World XC Champion</td>
</tr>
<tr>
<td>84.4</td>
<td>Steve Prefontaine</td>
<td>runner</td>
<td>from the US</td>
</tr>
<tr>
<td>84.0</td>
<td>Lance Armstrong</td>
<td>cycling</td>
<td>professional cyclist</td>
</tr>
<tr>
<td>83.5</td>
<td>Mark Walters</td>
<td>cycling</td>
<td>a pro-cyclist, former Navigators team member, won Philadelphia. This score was from the peak of his career. (personal communication, heard first hand from Mark himself)</td>
</tr>
<tr>
<td>83.0</td>
<td>Jens Arne Svartedal</td>
<td>cross country skier</td>
<td>achieved 2005, listed in an article on <a href="http://www.fasterskier.com">www.fasterskier.com</a></td>
</tr>
<tr>
<td>82.7</td>
<td>Gary Tuttle</td>
<td>US runner</td>
<td></td>
</tr>
<tr>
<td>82.0</td>
<td>Kip Keino</td>
<td>runner</td>
<td>Olympic 1500 champion</td>
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<tr>
<td>81.1</td>
<td>Craig Virgin</td>
<td>distance runner</td>
<td>twice World cross country champ</td>
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<tr>
<td>81.0</td>
<td>Jim Ryun</td>
<td>runner</td>
<td>US miler WR holder</td>
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<tr>
<td>80.9</td>
<td>Øyvind Leonhardsen</td>
<td>Norwegian professional soccer player</td>
<td>listed in an article on <a href="http://www.fasterskier.com">www.fasterskier.com</a></td>
</tr>
<tr>
<td>80.1</td>
<td>Steve Scott</td>
<td>runner</td>
<td>US miler 3:47</td>
</tr>
</tbody>
</table>
Why V-dot?

- Why doesn’t the guy with the biggest VO2max always win the race???

- Runners routinely perform past their anaerobic threshold

- “I’m going to work so that it’s a pure guts race at the end, and if it is, I am the only one who can win it.”
  - Steve Prefontaine

- VO2max = 84ml/kg/min

VDOT Calculator

- VDOT is a measure of your current running ability

- Developed by legendary track coach Jack Daniels

- An excellent resource is the book:
  - Daniels’ Running Formula
V-dot in Practice

January 6th
5K race
V-dot 45

March 1st
Half Marathon
V-dot 47

Mid April 10K race
V-dot 48

You should be making progress every 4-6 weeks. If no race on calendar you will have to simulate a 5k race or something. At that time – adjust to the new training paces. If you aren’t seeing your V-dot improving – you’re doing it wrong

GCTri Track workouts

• GCTri Track Pacing
  – 10K pace
  – 5 K pace
  – Mile pace
  – Sprint

• Daniels’ Pacing
  – Easy Pace
  – Marathon Pace
  – Threshold Pace
  – Interval Pace
  – Repetition Pace

  – Remember you get customized numbers based on the distances so it’s pretty easy
Track Basics

• ¼ lap = 100m
• ½ lap = 200m
• 1 lap = 400m = ¼ mile
• 2 lap = 800m = ½ mile
• 4 lap = 1600m = 1 mile

Example

• You just ran a 5k in 24:45 for a pace of 7:57
• If track workout told you to run 400m @ 5k pace
• You would aim for 2:00 for a lap
Example

- Workout says 4 x Mile repeats
- You will aim for 7:44 for each of the miles (or ~1:55 sec each lap)

Example

- WARNING
  - Do not type in the time that you WANT to achieve or your v-dot will be too high and your projected training times will put you in an anaerobic zone which is not beneficial
Cool Extras

- Notice we switched to “Equivalent” tab
- I love having a really good idea on how I should perform in a race (remember v-dot takes into account if you are the overachiever or underachiever)
- All based on logistic regression (geeky math). Notice how the 10K time isn’t just double the 5k time

Daniels’ Method & RJ’s Philosophy

- If you look at Daniels Marathon & Half Marathon training plans you will likely train 5-6 days per week
- HOWEVER – he points out that the Q1 and Q2 (Q = quality) workouts are most important
- The Q workouts are performed at high intensity (get bang for your buck – shift your anaerobic threshold further to the right)
- We are busy trying to train on the bike & swim and balance work and families
- 3 Workouts/week is perfect – Q1 (GCTri Track!!), Q2 (Tempo on your own), Long Run (with or without friends)
Run with PURPOSE!!!

• Don’t just run to run, know WHY you are doing it.

• Q1 & Q2:
  – Work at threshold pace to improve aerobic fitness (training adaptations)
  – Get body used to going faster

• Long Runs:
  – Put the miles on the legs so they are used to that amount of stress

Differences between Q1 & Q2

• Q1 – Think *intervals at threshold*
  – GCTri Track workouts are perfect for this. Coach Mike does a great job of mixing up distances and recoveries which keeps it from getting monotonous

• Q2 – Think *tempo run*
  – Run close to planned race pace but throw in some pick ups that are regularly planned (remember challenge your body)
Run Pacing Table for Track Workouts

| Mile | 160m | 260m | 360m | 460m | 560m | 660m | 760m | 860m | 960m | 1060m | 1160m | 1260m | 1360m | 1460m | 1560m | 1660m | 1760m | 1860m | 1960m | 2060m | 2160m | 2260m | 2360m | 2460m | 2560m | 2660m | 2760m | 2860m | 2960m | 3060m | 3160m | 3260m | 3360m | 3460m | 3560m | 3660m | 3760m | 3860m | 3960m |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 4.90 | 00:14.3 | 00:25.8 | 00:44.7 | 00:55.7 | 01:14.5 | 01:25.3 | 01:35.9 | 01:53.8 | 02:21.2 | 02:39.2 | 03:10.2 | 03:38.6 | 04:58.6 | 05:57.7 | 07:27.4 | 07:57.2 | 08:27.0 | 08:57.1 | 09:27.2 | 09:57.3 | 10:27.5 | 10:57.6 | 11:27.8 | 11:57.9 | 12:28.0 | 12:58.1 | 13:28.2 | 13:58.3 | 14:28.4 | 14:58.5 | 15:28.6 | 15:58.7 | 16:28.8 | 16:58.9 | 17:29.0 |
| 4.10 | 00:16.5 | 00:28.6 | 00:48.1 | 00:59.3 | 01:18.1 | 01:30.9 | 01:40.7 | 01:58.6 | 02:26.2 | 02:44.3 | 03:15.2 | 03:43.6 | 05:03.6 | 06:02.7 | 07:32.4 | 08:02.5 | 08:32.6 | 09:02.7 | 09:32.8 | 10:02.9 | 10:33.0 | 11:03.1 | 11:33.2 | 12:03.3 | 12:33.4 | 13:03.5 | 13:33.6 | 14:03.7 | 14:33.8 | 15:03.9 | 15:34.0 | 16:04.1 | 16:34.2 | 17:04.3 |
| 4.20 | 00:18.3 | 00:31.3 | 00:50.8 | 01:02.1 | 01:21.9 | 01:34.7 | 01:44.5 | 02:02.4 | 02:30.0 | 02:48.0 | 03:19.0 | 03:47.4 | 05:07.4 | 06:06.5 | 07:36.2 | 08:06.3 | 08:36.4 | 09:06.5 | 09:36.6 | 10:06.7 | 10:36.8 | 11:06.9 | 11:37.0 | 12:07.1 | 12:37.2 | 13:07.3 | 13:37.4 | 14:07.5 | 14:37.6 | 15:07.7 | 15:37.8 | 16:07.9 | 16:38.0 | 17:08.1 |
| 4.30 | 00:21.6 | 00:34.5 | 00:54.0 | 01:06.0 | 01:25.8 | 01:38.6 | 01:48.4 | 02:06.3 | 02:34.0 | 02:52.0 | 03:23.0 | 03:51.4 | 05:11.4 | 06:10.5 | 07:40.2 | 08:10.3 | 08:40.4 | 09:10.5 | 09:40.6 | 10:10.7 | 10:40.8 | 11:10.9 | 11:41.0 | 12:11.1 | 12:41.2 | 13:11.3 | 13:41.4 | 14:11.5 | 14:41.6 | 15:11.7 | 15:41.8 | 16:11.9 | 16:42.0 | 17:12.1 |

This is on GCTri website http://www.gctri.org/wp-content/uploads/2014/06/run-pacing-chart-track.pdf

In Conclusion

- You NEED to bring a watch to track workouts & let v-dot guide your pace!!!
- Always run with people who are your pace
- Track workouts will improve your cardiovascular fitness - > you will get faster
- You should also be including at least a long run at (E) pace each week in addition to the track workout.
### The Treadmill Cheat Sheet

#### Speed Conversions, Pace Times and Target Distances

<table>
<thead>
<tr>
<th>MPH</th>
<th>Feet/Min</th>
<th>Yards/Min</th>
<th>3 m</th>
<th>5 km</th>
<th>10 km</th>
<th>15 km</th>
<th>20 km</th>
<th>25 km</th>
<th>30 km</th>
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<td>3.5</td>
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<td>0.590</td>
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<td>0.640</td>
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<td>0.575</td>
<td>0.600</td>
<td>0.625</td>
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<td>0.675</td>
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<td>9.4</td>
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<td>0.695</td>
<td>0.720</td>
<td>0.745</td>
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<td>0.920</td>
<td>0.945</td>
<td>0.970</td>
<td>0.990</td>
<td>3.26</td>
</tr>
</tbody>
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### Questions

- Email me: rboerger@Hotmail.com

- Online Resources:
  - [https://runsmartproject.com/calculator/](https://runsmartproject.com/calculator/)

- The Book