Determining the Correct Training Intensities for Optimal Results

NOTE: To be read in conjunction with "AFF Runners Handbook"

As we start the summer track season it is important to ensure that the training intensity is based on the optimal level to produce the desired improvements without undue stress on the body.

The following table indicates what a runner's training intensity should be based on their current performance.

How to use the Training Pace Table

1. This table has been developed by the world class running coach Jack Daniels and is widely used in determining appropriate training intensities based on recent race performances.

Over years of research he developed as formula which correlates a runner's VO2max from these race times, and then translates this into suggested vVO2max training paces.

The various levels are assigned a VDOT value (see far left column on table)

The equivalent race times at each VDOT level are based on a runner doing the appropriate training for any given distance. So a runner who has run 19:17 for 5k (VDOT value 52) may not necessarily run 1:28:31 for a half marathon unless he or she has done the appropriate endurance training etc.

These paces are based on the optimal training required to provide the desired benefits within the different training zones.

2.   How do you estimate VO2 max from race results?

The formula used in the calculation is taken from Daniels & Gilbert :

$$VO2\ Max = (-4.60 + 0.182258 * velocity + 0.000104 * velocity^2)/(0.8 + 0.1894393 * e^{(-0.012778 * time)} + 0.2989558 * e^{(-0.1932605 * time)})$$

Note that velocity is in metres per minute; and time is in minutes.

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3.   The race performance times are based on a flat course in ideal weather conditions so if a runner has run say 20:18 for 5K on a windy day & hilly course (VDOT value 49) the training intensities should be based on the next level VDOT 50.

The best VDOT value should be taken. For example a runner may have a recent 10k best of 40:39 (VDOT value 51) yet a half marathon time of 1:28:31 (VDOT value 52), so the training intensities should be those against the VDOT 52 level.

Obviously race times will fall in between the times on the tables and the higher VDOT value should always be taken.

4.   It is recommended to train at the appropriate level for 3-4 weeks before moving up a level, or doing a race or time trial to assess the current VO2max level.

5.   Also included on the right hand side of the table   are 1mile/3k & 5k rave paces (per 400m) for the corresponding race performances.

So for example if the session called for 800m at 3k pace – A runner would look at the best race performance say 45:16 for 10K. This would correlate, based on the equivalent VO2max for 3K time of 12:40 and therefore give a 3k race pace at 1:41 per 400m.

6.   This table can also be used to experience targeted race pace in order to get the body accustomed to running at a pace a runner is trying to achieve in the future.

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