

Presentation purpose...

How you can use stress to design and periodize the key training sessions for your athletes' A-priority races.

What defines periodization?

- A system of planning to prepare an athlete for competition
- The division of the year into periods, each with a singular purpose
- Cyclical training based on the athlete's anticipated rate of progress with an emphasis on recovery
- A methodical system for gradual physical adaptation while avoiding exhaustion
- The alternation and progression of high and low work loads
- The blending of duration, intensity and frequency into a plan of training for competition
- A cyclical system for the practical application of the principles of training (individuality, specificity, progressive overload, reversibility)
- Training involving 3 phases: preparation, competition, transition
- A cyclical training program based on microcycles, mesocycles, macrocycles and megacycles.

The most basic tenet of periodization...

Frequent and regular key training sessions must progressively simulate the athlete's unique and expected stress of the race as training approaches race day.

Two types of stress (Selye, 1957)...

Distress ("bad stress")

- Negative consequences
- Usually unhealthy
- Potential for loss (overtraining, etc)

Eustress ("good stress")

- Positive consequences
- Usually healthy
- Potential for gain (fitness, etc)

Training distress is avoided by gradually increasing stress to allow time for adaptation.

Training stress is the product of...

- Duration = how long
- Intensity = how hard
- Frequency = how often

(Volume = Duration x Frequency).

Training session stress can be measured in many ways (duration + intensity)...

• Training Impulse (TRIMP)

Time in HR zone x zone value
30m Z1 (30)+15m Z2 (30)+10m Z3 (30)+5m Z4 (20)=110 TRIMP

• Session RPE (sRPE)

How hard was workout on 1-10 scale ('score')
Determined 30 min after workout
Multiply sRPE score by minutes in workout.

• KiloJoules, Kilocalories

Total kJoules or kCal from device (expended energy)

• Training Stress Score (TSS)

From power meter or pacing device & WKO+ software.

How TSS is determined...

Two pieces of session data are needed: duration & intensity

Duration: session time in seconds

Intensity: based on...

Functional Threshold Power (FTP) = anaerobic threshold
Normalized Power (NP) = enhanced average power
Intensity Factor (IF) = NP ÷ FTP

TSS formula...

(seconds x NP x IF) ÷ (FTP x 3600) x 100 = TSS

Example: 2 hour ride at 75% of FTP (250w)...

(7200 x 188 x 0.75) ÷ (250 x 3600) x 100 = 112.8 TSS.

Using TSS to prepare to race...

Step 1: Estimate the goal TSS of the A race

- ◊ Previous TSS for same race
- ◊ Previous TSS for similar race
- ◊ 'Guesstimate' based on experience

Step 2: Design similar-TSS training sessions

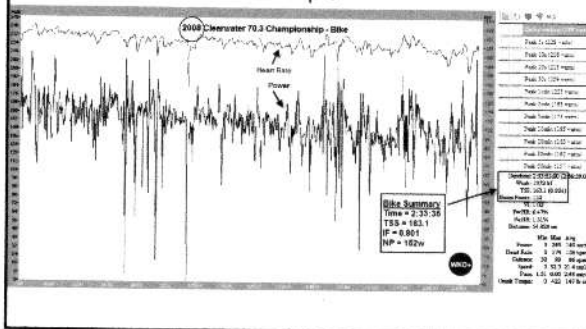
- ◊ Duration emphasis
- ◊ Transition duration to intensity
- ◊ Intensity emphasis

Step 3: Periodize training

- ◊ Base – duration emphasis
- ◊ Build – intensity emphasis
- ◊ Peak – maintain intensity.

Step 1: Estimate the TSS of the A race...

Example



Step 1: Estimate the TSS of the A race...

Bike goal for 2009 race:

- Race goal: Same time (2:33)
 - ◊ Same FTP - 190w
 - ◊ Same IF - 0.801 (NP = 152w)

- Race goal: 6 minutes (4%) faster (2:27) - opt 1
 - ◊ Same FTP - 190w
 - ◊ Higher IF - 0.832 (NP = 158w)

- Race goal: 6 minutes (4%) faster (2:27) - opt 2
 - ◊ Higher FTP - 198w
 - ◊ Same IF - 0.801 (NP = 158w)

Step 2: Design TSS sessions...

Objective: 170 TSS sessions

- Duration emphasis

- ◊ Session #1
 - 4hrs @ 124w [0.65 IF] = 170 TSS
- ◊ Session #2
 - 3.5hrs @ 133w [0.70 IF] = 170 TSS
- ◊ Session #3
 - 3hrs @ 142w [0.75 IF] = 170 TSS

Step 2: Design TSS workouts (con't)...

Objective: 170 TSS sessions

- Transitional sessions

- ◊ Session #4 (3:00)

- 20' warm-up
 - 30' @ 142w [IF 0.75]
 - 3x20' @158w [IF 0.832] (10' recoveries)
 - 30' @ 142w [IF 0.75]
 - 10' cool down

- ◊ Session #5 (2:55)

- 10' warm-up
 - 40' @ 142w [IF 0.75]
 - 4x20' @158w [IF 0.832] (10' recoveries)
 - 5' cool down

Step 2: Design TSS workouts (con't)...

Objective: 170 TSS sessions

- Intensity emphasis

- ◊ Session #6 (3:00)

- 30' warm-up
 - 5x20' @158w [IF 0.832] (10' recoveries)
 - 10' cool down

- ◊ Session #7 (2:45)

- 10' warm-up
 - 6x20' @158w [IF 0.832] (5' recoveries)
 - 10' cool down

- ◊ Session #8 (2:41)

- 15' WU
 - 3x5' @180w [IF 0.95] (2' recoveries)
 - 5x20' @158w [IF 0.832] (5' recoveries)
 - 5' cool down

Step 3: Periodize training...

- Base 1: Session 1
- Base 2: Sessions 2, 3
- Base 3: Sessions 4, 5
- Build 1: Sessions 5, 6
- Build 2: Sessions 7, 8



Follow-Up

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