Marathon Training

How to optimize your training program
to reach your potential

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Presented in conjunction with the Illinois Marathon

What we will cover

- Principles for designing your marathon training
- Monitoring training intensity using heart rate
- Benefits of 7 types of runs
- Periodization= changing emphasis
- Tapering your training

Principles for Marathon Training

- Understanding the requirements of the marathon allows you to make your training specific and effective
- Improvement comes from adaptations to training
- Adaptations occur from making the training stressful and specific to the requirements of the marathon
- Evaluate the benefits of more hard training versus the increased risk of injury, illness and over-training

Designing your training program

- Switch to marathon-specific training about 12-18 weeks before your marathon
- 12-18 weeks provides enough time to improve without being so prolonged that you lose focus
- We will discuss 7 types of runs and how to select when and how often to do each
- Rushing or trying to improve in several ways at the same time almost never works!

7 Types of Runs

Benefits, intensity, sample workouts for:

- Long Runs and ‘Medium Long’ Runs
- Tempo runs
- Marathon Pace Runs
- VO_2 Max Intervals
- Speed Training
- General Aerobic Runs
- Recovery (runs & cross-training)

Photo: Stacey Cramp

Monitoring intensity using heart rate

- Heart rate = a measure of how hard you are working
- Useful to stay within target range for specific workouts (e.g. tempo runs, recovery runs)
- Heart rate monitor – wherever you are, download later
- Can use % of your maximum Heart Rate or more complex Heart Rate "reserve"
- Do not be a slave to Heart Rate-it is just a guide

Monitoring intensity using heart rate

	Max Heart Rate (%)	Heart Rate Reserve (%)
VO_2max (5K pace)	93–98	91–96
Tempo runs	**82–91**	**77–88**
Marathon pace	79-88	73-84
Long Runs	74–84	65–78
General aerobic	70-81	61-75
Recovery	<76	<70

Less fit = lower end of range, elite = higher end

Monitoring intensity using heart rate

- Examples:
  - Maximum HR = 185 bpm
  - Tempo Runs @ 82-88% = 152-163 bpm
  - Recovery runs @ less than 76% = keep below 138 bpm

Monitoring intensity using heart rate

- Maximum heart rate varies so formulas are not accurate
- Find your own max HR = 3 x 600 meters hard uphill
- Heart rate drift = HR increases during a workout and more so on a hot day

Long runs & Medium long runs

- Long runs (16+ miles)
- Medium long runs (11-15 miles) reinforce long runs and build confidence
- Lead to many adaptations in your muscles which improve endurance; including increased glycogen storage, fat utilization and capillarization
- Psychological benefits of “handling” the distance

Long runs & Medium long runs

- For most marathoners, build long runs to 21-22 miles (34-35 km)
- Most long runs should be 10-20% slower than goal marathon race pace
- Start comfortably and build into it
- Sometimes just get in the distance (e.g. day after a tune-up race)
- *Occasionally* run at marathon race pace

Long run paces

Marathon pace	**20% slower**	**10% slower**
5:00 mile	6:00	5:30
5:30 mile	6:36	6:03
6:00 mile	7:12	6:36
6:30 mile	7:48	7:09
7:00 mile	**8:24 mile**	**7:42 mile**
7:30 mile	9:00	8:15
8:00 mile	9:36	8:48

Increasing mileage sensibly

- Increase gradually to avoid injury: (e.g. max 10% per week) Jack Daniels = increase max 1 mile for each run per week
- Avoid speedwork while upping your mileage
- Slightly reduce training intensity when increasing mileage
- Do some training off road/sidewalks

Tempo runs

- Improve lactate threshold: ability to produce energy at a fast rate aerobically without high levels of lactate in muscles
- Pace you could race for about 1 hour (15K race pace)
- Excellent predictor of marathon race pace (sub 4 hour marathoners race 15-30 seconds per mile slower than lactate threshold pace)

Tempo runs

- Maintain lactate threshold pace for 20-40 minutes
- Also Cruise intervals or LT intervals (break up tempo run into several segments with short recovery)
- Approx 82-91% max HR or 77-88% HRreserve

- Sample workouts:
  - 20 min warm-up, 25 min tempo run, 15 min cooldown
  - 20 min warm-up, 15 min LT interval, (3 min jog), 10 min LT interval, 15 min cooldown

Marathon Pace runs

- Most specific type of training
- On road simulating marathon course
- Approx 79-88% Max HR or 73-84% HRreserve
- Practice race pace and maintaining technique
- Start comfortably and build up to race pace
- Include sparingly (2-3 times over 12 weeks)
- Sample workout:
  - 18 miles with 14 miles at marathon race pace

VO_2 Max Training

- Ability: 1) to transport large amounts of oxygen to muscles and 2) of your muscles to use oxygen
- Left ventricle of heart gets bigger and stronger so can pump more blood
- Stimulate improvement by training at intensity of 95-100% of current VO_2 max (3K-5K race pace)
- Marathon focus = less intense, about 5K race pace

VO_2 Max Training

- Workout target = accumulate time at 5K race pace using intervals of 800 to 1600m
- Typically 6-8Km (3 ½ to 5 miles) of effort
- Recovery approx 50-90% of effort time (70% max HR)
- Sample workouts: (20 min warm-up, 15 min cooldown)
  - 2 x 1600m, 2 x 1200m, 2 x 1000m. Total = 7,600m
  - 5 x 1200m. Total = 6K
  - Recovery from 1200m @ 4.30 = jog 2.15 to 4 minutes

Increasing speed

- Short repetitions (80-120m) run fast but relaxed
- Also 10-15 second uphill reps to build power
- Generous recovery
- Increased stride length and stride rate
- Prevents the marathon shuffle
- May improve running economy (ability to use oxygen economically) by eliminating unnecessary movement

Increasing speed

Sample workouts: (20 min warm-up, 15 min cooldown)

- 2 sets of 4 laps of stride straights & jog bends (jog 5 min btw sets)
- 2 sets of 4 x 15 sec uphill (jog 5 min btw sets)
- 6 x 15 sec uphill, jog 5 min, 4 laps of stride straights & jog bends

General aerobic runs

- Increase overall training volume and endurance
- Approx 15-25% slower than marathon pace
- Approx 70-81% Max HR or 61-75% HRreserve
- Less important training
- Can be replaced by cross-training if injury prone or bad weather

Photo: Stacey Cramp

Recovery

- Recovery is vital to improvement
- If you recovery more quickly, you adapt and progress more quickly
- Easy running and cross-training can improve recovery
- Lifestyle factors (sleep, diet, hydration, stress) affect recovery
- Kenyan secret = no distractions aids recovery
- Recovery training is counterproductive if done too hard

Recovery

- Slowest runs of the week!
- Keep recovery runs less than 76% of max HR or <70% HRreserve
- Sample workouts:
  - 30-40 min easy run
  - 45 min “spin” on windtrainer
- Recovery weeks (decrease mileage and intensity) about every 4 weeks

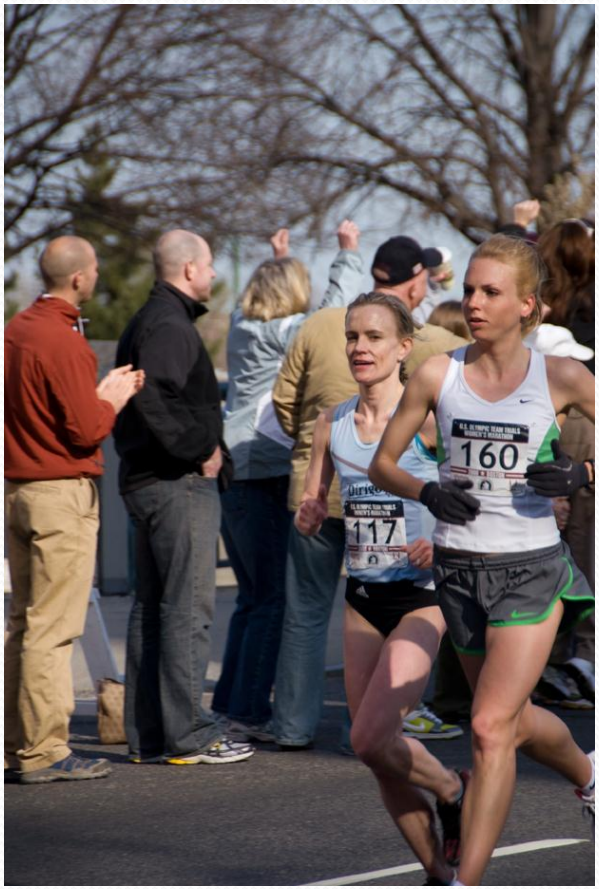


Photo: Stacey Cramp

Periodization

- Change the emphasis of training as your marathon approaches to target specific areas for improvement
- It takes at least 3 weeks to clearly improve any of the physiological variables. After about 6 weeks there is a tendency towards diminishing returns
- Typically change the emphasis of training every 3-6 weeks
- Each 3-6 week unit = a training block or mesocycle
- Variety is stimulating!

Periodization

- Each 3-6 week training block has a primary emphasis and a secondary emphasis
- In each 2 weeks do about 3 primary emphasis workouts and 2 secondary emphasis workouts

Periodization

During the first training block, the emphasis is almost always on increasing long runs and overall mileage

Block	Primary emphasis	Second emphasis
1	Long runs & mileage	Tempo runs
2	Tempo runs	Long runs
3	Race preparation	Long runs
4	Taper & marathon	

Q: How to avoid cramping up at 35 km?

- Long runs as preparation-handle 21-22 miles in training
- A couple of long marathon pace runs = simulation
- Taper training so fully recovered at start and no injuries
- Carbo-load and be well-hydrated at start of race
- Avoid dehydration by drinking during race (carbs and electrolytes)
- Avoid hot and humid races
- Maintain a realistic pace you can handle

Tapering your training

- During the final training block, taper your training so you are optimally recovered for the marathon
- Effective tapering maintains peak fitness while re-building your energy reserves
- Tapering corrects the wear and tear of training
- Begin taper 3 weeks before your marathon

Effective Tapering

- Maintain training intensity
- Reduce mileage
- Make recovery days very easy or take days off
- Optimize lifestyle recovery strategies (sleep, diet, hydration, stress)
- Continue stretching, massage, etc

How much to reduce mileage

Third week pre-marathon: 20 to 25%

Second week pre-marathon: 40%

Marathon week (6 days pre-race): 60%

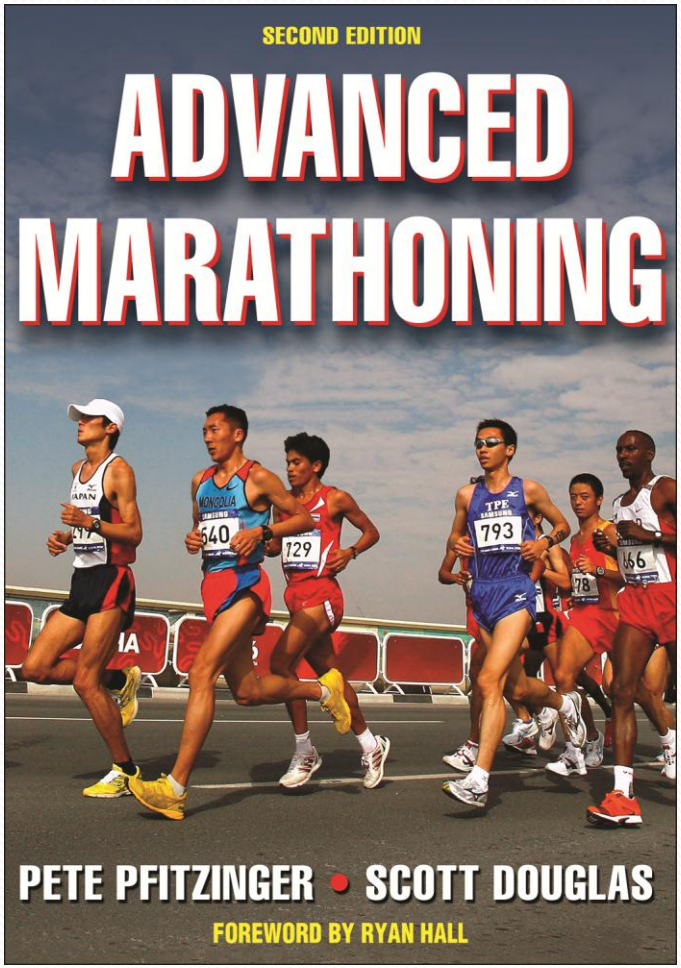
Photo: Stacey Cramp

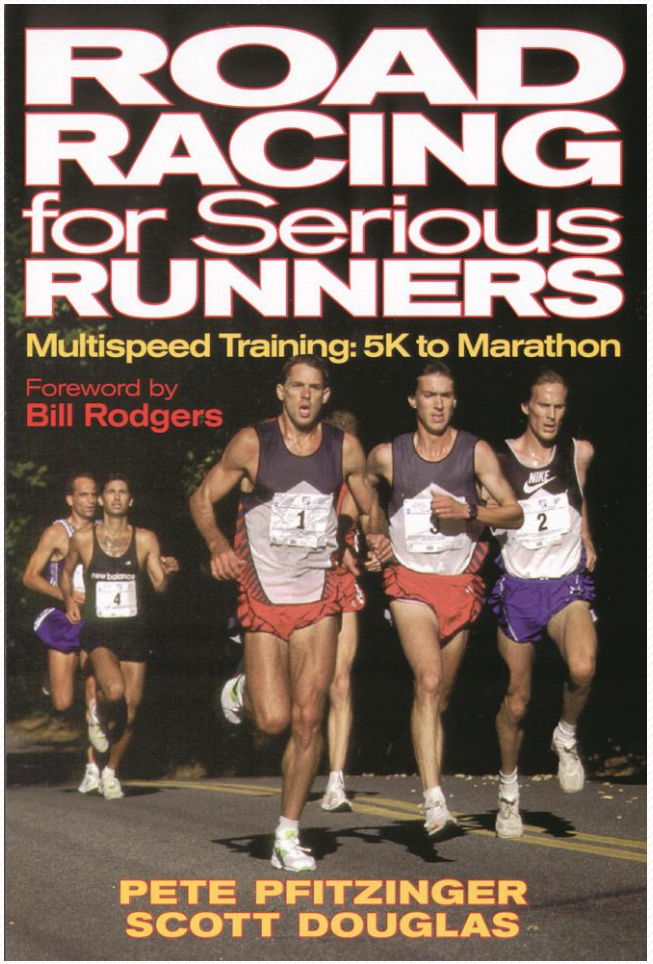
Wrap-up

- Principles for designing your marathon training
- Monitoring training intensity using heart rate
- Benefits of 7 types of runs
- Periodizing your training
- Tapering your training leading up to race day
- Final point: Listen to your body and use your experience

Questions?

Photo: Stacey Cramp





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