# How to Prepare and Run a Marathon

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# Introduction

- Marathon = 26.2 M = 42 Km
- Motivation (health, socialization, challenge, learning, fun, etc.)
- Most people can do it
- Must be *prepared*: planning, organization, training
- Set a *realistic goal*
- **Training – Race day**

# Riccardo Bianchi Marathon Record

- 1993: New York City, 3:03:44
- 1994: New York City, 3:08:26
- 1996: New York City, 2:50:57
- 1997: New York City, 2:50:32
- 1998: New York City, 2:55:20
- 1999: New York City, 2:55:45


# How Do We Get There?

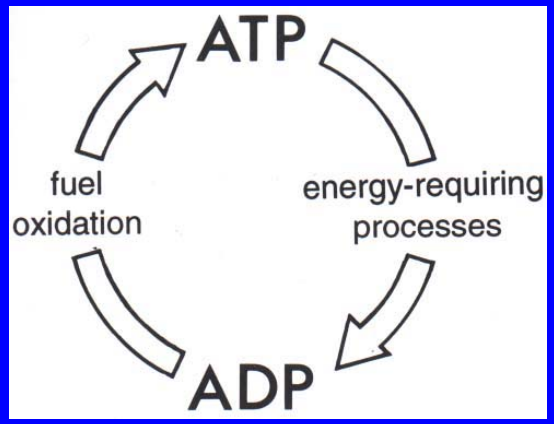
- Amateur
- NYC Marathon (field; weather; course)
- Running it in around 3 h (6:30-7:30 min/M)

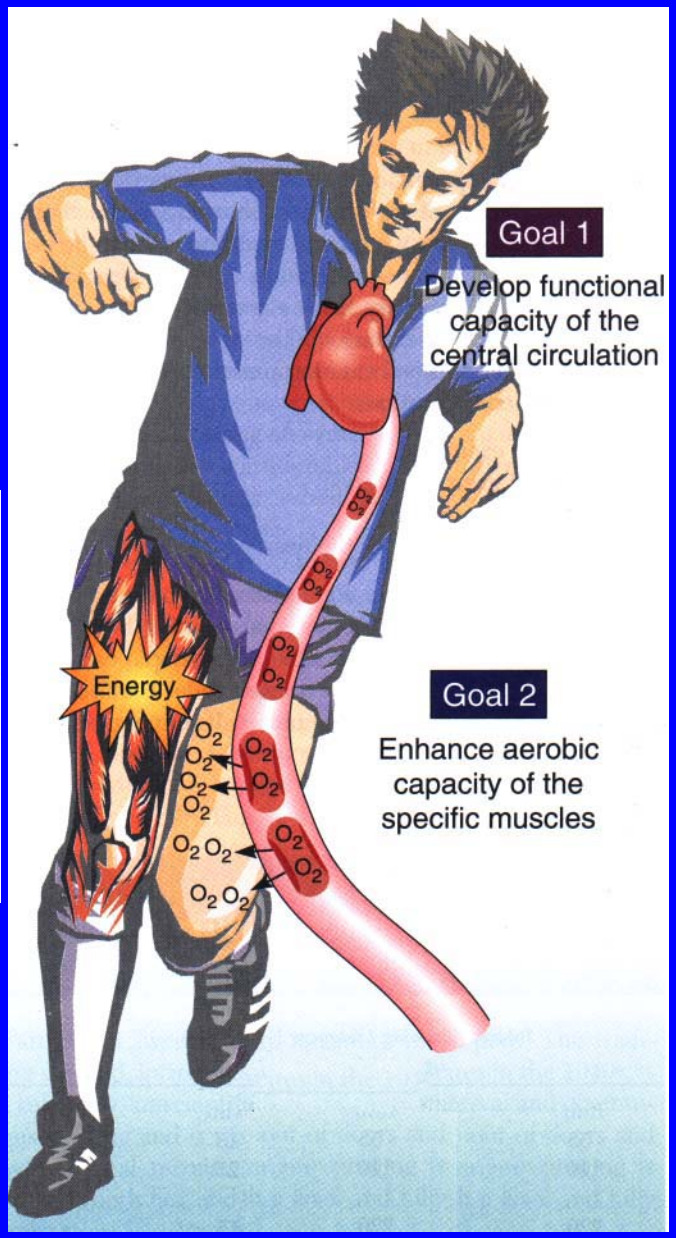
# Planning

*Register on time!*

- Months of training
- Limited number of entries
- Requirements (e.g. qualifying time)
- Travel/Stay reservations
- Motivation

# Physiology of Running



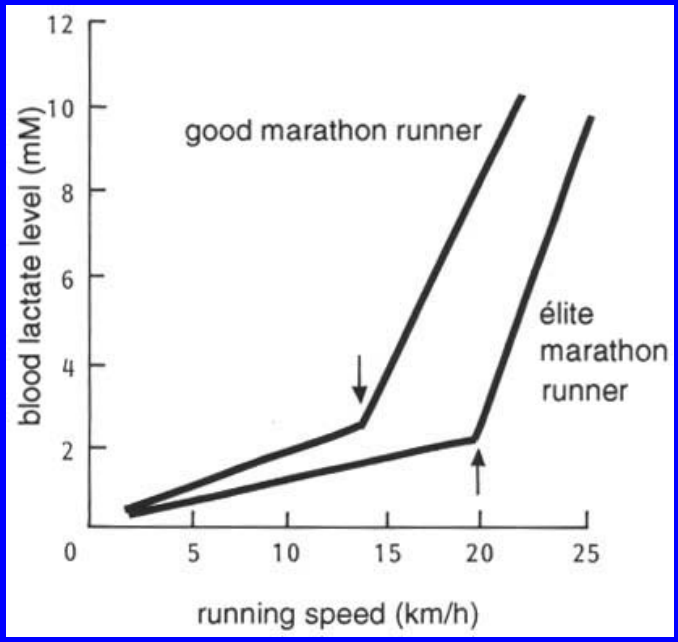

- Contraction of leg muscles
- ATP-dependent process
- Prolonged work (endurance) is aerobic ($O_2$-dependent)
- Aerobic training affects muscle-skeletal, cardiovascular, respiratory, neural, renal and endocrine systems

# Physiological Effects of Aerobic Training

- Skeletal-Muscle:
  - Increased strength of muscles and bones, joint flexibility, muscle microcirculation
- Cardiovascular:
  - Increased CO (**increased SV** > decreased HR)
  - Lower BP
  - Improved distribution of CO to working muscles
- Respiratory:
  - Increasing tidal volume is more effective than increasing breathing rate to increase alveolar minute ventilation
  - Increased efficiency of inspiratory muscles at submaximal ventilation
- Acid-base regulation:
  - Increased tolerance to high levels of blood lactate (anaerobic training)

# Training Increases:

- Aerobic Capacity (max $VO_2$)
  - Ability to consume, transport, and utilize oxygen
- Anaerobic Threshold
  - Borderline between aerobic and anaerobic running
- Anaerobic Capacity:
  - Ability to withstand oxygen debt (lactic acid accumulation)
- Strength
  - Postural (weight training) and leg (hill/strength runs)
- Speed
  - Ability to generate quick leg movement (fast twitch fibers)
- Endurance
  - Also mental




# Some Guidelines for Marathon Training

- Start training 4-5 mo before marathon
  (> 2yrs of running and 20 M/wk)
- Keep a log-book
- Build-up consistent mileage (40-50 M/wk)
- Divide training into phases
- Vary types of training
- Include at least 4 “long” runs (15-20 M each)
- NEVER run the marathon distance before the race
- Include races (5K to 20M)
- Get sufficient sleep and follow appropriate diet
- Experiment with eating/drinking, clothing, etc.
- Join a Running Club (BRRC)

# Categories of Competitive Runners

- Novice — Hasn't raced; 15-30 M/wk; 4-6 d/wk
- Basic — Races 5-21K; 25-60 M/wk; 5-7 d/wk
- Advanced — Top 10-25%; 40-60 M/wk; 6-7 d/wk
- Champion — Top 10-20%; 60-80 M/wk; 7 d/wk
- Elite — Professionals

**CHART C ADVANCED COMPETITOR—RACE-TIME RANGES FOR MEN**

| DISTANCE | (OPEN) | (40–49) | (50–59) | (60–69) |
|---|---|---|---|---|
| 5K | 16:30–19:30 | 17:30–20:30 | 18:30–21:30 | 20:30–22:30 |
| 10K | 34:00–40:00 | 36:00–42:00 | 38:00–44:00 | 42:00–46:00 |
| 15K | 53:00–63:00 | 56:00–66:00 | 59:00–69:00 | 66:00–72:00 |
| 10 miles | 56:40–66:40 | 60:00–70:00 | 63:20–73:20 | 70:00–76:40 |
| 20K | **1:12–1:25** | **1:16–1:29** | **1:21–1:34** | **1:29–1:38** |
| Half marathon | **1:15–1:30** | **1:20–1:35** | **1:25–1:40** | **1:35–1:45** |
| 25K | **1:31–1:46** | **1:37–1:53** | **1:42–1:59** | **1:53–2:05** |
| 30K | **1:51–2:12** | **1:58–2:18** | **2:04–2:25** | **2:18–2:32** |
| Marathon | **2:40–3:10** | **2:50–3:20** | **3:00–3:30** | **3:20–3:40** |

# Race-Time Ranges for 5K and Marathon

Man

| DISTANCE | (OPEN) | (40–49) | (50–59) | (60–69) |
|---|---|---|---|---|
| 5K | 23:30+ | 25:30+ | 27:30+ | 29:30+ |
| Marathon | **3:50+** | **4:10+** | **4:30+** | **4:50+** |

Woman

| DISTANCE | (OPEN) | (40–49) | (50–59) | (60–69) |
|---|---|---|---|---|
| 5K | 25:30+ | 27:30+ | 29:30+ | 31:30+ |
| Marathon | **4:10+** | **4:30+** | **4:50+** | **5:10+** |

Novice

Man

| DISTANCE | (OPEN) | (40–49) | (50–59) | (60–69) |
|---|---|---|---|---|
| 5K | 16:30–19:30 | 17:30–20:30 | 18:30–21:30 | 20:30–22:30 |
| Marathon | **2:40–3:10** | **2:50–3:20** | **3:00–3:30** | **3:20–3:40** |

Woman

| DISTANCE | (OPEN) | (40–49) | (50–59) | (60–69) |
|---|---|---|---|---|
| 5K | 18:30–21:30 | 20:30–22:30 | 22:30–24:30 | 24:30–26:30 |
| Marathon | **3:00–3:30** | **3:20–3:40** | **3:40–4:00** | **4:00–4:20** |

Advanced

Man

| DISTANCE | (OPEN) | (40–49) | (50–59) | (60–69) |
|---|---|---|---|---|
| 5K | 14:30 | 15:30 | 17:00 | 19:00 |
| Marathon | **2:20** | **2:30** | **2:45** | **3:05** |

Woman

| DISTANCE | (OPEN) | (40–49) | (50–59) | (60–69) |
|---|---|---|---|---|
| 5K | 17:00 | 19:00 | 20:30 | 23:00 |
| Marathon | **2:45** | **3:05** | **3:20** | **3:45** |

Elite

# THE BASIC COMPETITOR'S 18-WEEK MARATHON BUILDUP SCHEDULE

| PHASE/ WEEK | | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY | SATURDAY | SUNDAY | TOTAL MILEAGE |
|---|---|---|---|---|---|---|---|---|---|
| ENDURANCE | 1 | Off July 1 — 12.5 | Medium endurance 6 Ø | Medium endurance 6 8.5 | Medium endurance 7 Ø | Medium endurance 5 10 | Medium endurance 6 Ø | Medium endurance 10 Ø | 40 31 |
| | 2 | Off July 8 — | Medium endurance 5 8.2 | Medium endurance 5 4.5 | Medium endurance 6 7.7 | Medium endurance 5 Ø | Short endurance 4 Ø | Long endurance 15 7.7 | 40 28.1 |
| | 3 | Off July 15 — | Medium endurance 6 8.2 | Medium endurance 8 8 | Medium endurance 5 8.2 | Medium endurance 5 7.7 | Medium endurance 8 Ø | Medium endurance 10 11 | 42 43.1 |
| | 4 | Off July 22 — | Medium endurance 8 4.6 | Medium endurance 6 8 | Strength Modified *fartlek* 6 8.2 4 | Medium endurance 5 8.2 | Short endurance 5 4 | Long endurance 18 11.4 | 45 45.4 |
| | 5 | Off July 29 — | Strength Modified *fartlek* 8 8.0 4 | Medium endurance 10 8 | Medium endurance 8 11.2 | Medium endurance 5 4.6 | Short endurance 4 11.2 | Race 10K DIVE 10 Ø | 45 43 |
| | 6 | Off Aug 5 — | Short endurance 4 Ø | Medium endurance 8 8 | Strength Hill *fartlek* 8 4.6 4 | Medium endurance 6 Ø | Short endurance 4 15.4 | Long endurance DIVE 20 Ø | 50 28 |
| | 7 | Off Aug 12 — | Medium endurance 10 6 | Medium endurance 8 11.1 | 10K pace intervals 6 × 880 6 8.2 | Medium endurance 8 7.8 | Medium endurance 8 5 | Medium endurance 10 14.4 | 50 52.5 |
| | 8 | Off Aug 19 — | Medium endurance 6 6.3 | Medium endurance 6 7 | Strength Hill *fartlek* 8 3' fast 7 times 8 5 | Medium endurance 6 5 | Short endurance 4 2 | Long endurance 20 Ø | 50 47.3 |
| STRENGTHENING | 9 | Off Aug 26 — | Medium endurance 7 9.3 | 10K pace intervals 8 6 × 880 8.2 | Medium endurance 8 4.4 | Medium endurance 8 Ø | Medium endurance 5 12 | Race Half marathon 14 Ø | 50 33.9 |
| | 10 | Off Sept 2 — 6.4 | Medium endurance 5 Ø | Medium endurance 8 9 | Medium endurance 8 7.5 | Strength Fast continuous run 8 Ø 6 | Medium endurance 6 21.5 | Long endurance 15 Ø | 50 44.4 |
| | 11 | Off Sept 9 — Ø | 10K pace intervals 5 × Long hills 5 Ø | Medium endurance 6 7 | Medium endurance 8 Ø | Medium endurance 6 Ø | Short endurance 4 6 | Long endurance 20 Ø | 50 13 |
| | 12 | Off Sept 16 — 4 | Medium endurance 8 Ø | 10K pace intervals 6 3.5 × 1 mile | Medium endurance 10 Ø | Medium endurance 6 Ø | Short endurance 4 Ø | Race 10 miles Lipari 12 6 | 46 13.5 |
| | 13 | Off Sept 23 — Ø | Medium endurance 5 Lipari 10 | Medium endurance 6 Ø | Strength Hill *fartlek* 8 5 | Medium endurance 7 5 | Short endurance 4 12 | Long endurance 20 Ø | 50 42 |
| | 14 | Off Sept 30 — 8 | Medium endurance 8 Lithuania 20 | 10K pace intervals 8 Ø 8 × Short hills | Medium endurance 8 Ø | Medium endurance 6 12.2 | Medium endurance 5 Ø | Race 10K 10 Ø | 45 40.2 |
| SHARPENING | 15 | Off Oct. 7 — Ø | Medium endurance 6 5 | Medium endurance 8 8 | 5K pace intervals 6 6 × 880 Ø | Short endurance 6 11 | Short endurance 4 21 | Long endurance 20 Ø | 50 45 |
| | 16 | Off Oct. 14 — Ø | Medium endurance 6 8.2 | Medium endurance 6 8.3 | 10K pace intervals 6 5 6 × Long hills | Medium endurance 6 5.2 | Medium endurance 6 Ø | Long endurance 15 15.5 | 45 42.2 |
| TAPERING | 17 | Off Oct 21 — Ø | Medium endurance 6 10 | Medium endurance 5 4.5 | 10K pace intervals 8 5.7 × 1 mile | Medium endurance 5 5.5 | Short endurance 4 5.5 | Medium endurance 10 5 race +3.3 | 38 40 |
| | 18 | Off Oct. 28 — Ø | Strength Modified *fartlek* 5 4 3 | Short endurance 4 5.3 | Short endurance 4 | Off — | Short endurance 3 | Race Marathon 26.2 | 16 + race |

# The Four Phases of Training

- Endurance:
  - Aerobic; long runs; intro to easy speed
- Strengthening:
  - Maintain mileage; long; hills; fast; race
- Sharpening:
  - Fast; speed for race; quality races
- Tapering:
  - Lower mileage; rest; final speed; mental

# Types of Training Runs

- Medium endurance:
  - 3-10 M; 30-90 min; flat or moderately hill
  - Average daily run to “pack-in the miles”
- Short endurance:
  - 2-6 M; 20-45 min; grass or dirt and few hills
  - Easy for recovery (or cycling/swimming)
- Long endurance:
  - 10-20 M; 1.5-3.5 h; flat
  - Easy pace; *it’s hard*
- Strength-runs to progressively increase of intensity-speed- and resistance-hills:

Fartlek (1-3 min bursts during continuous run)

Speed work (e.g. 10K pace interval 6 x 880)

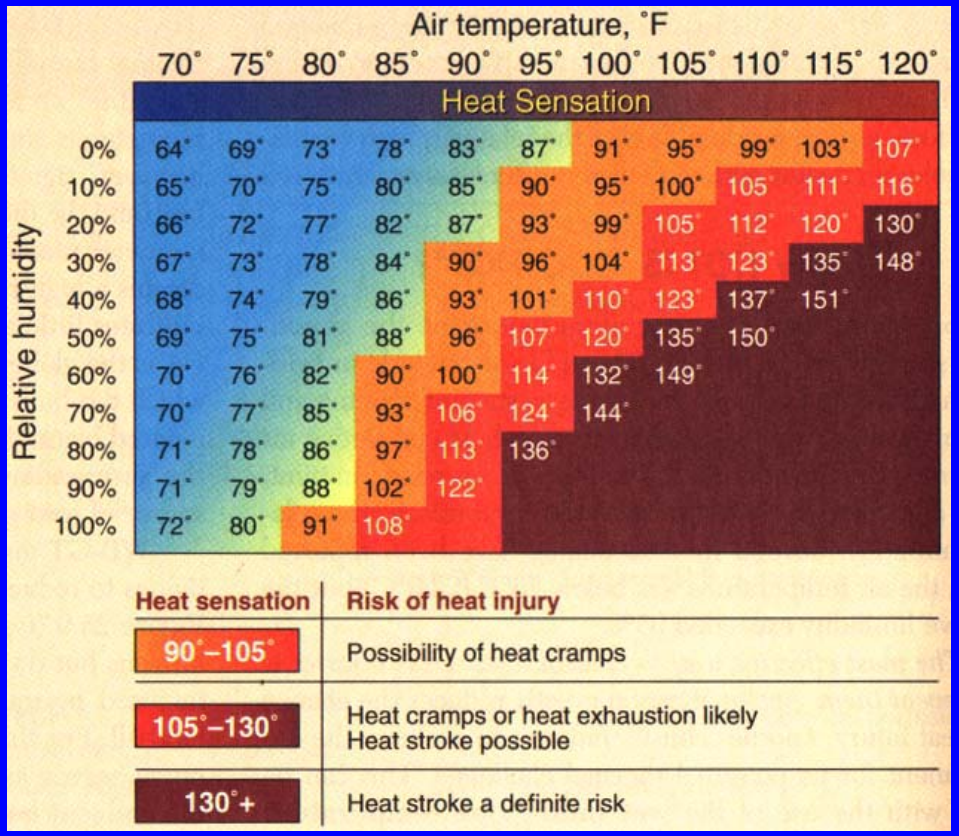
# DO NOT OVERTRAIN!

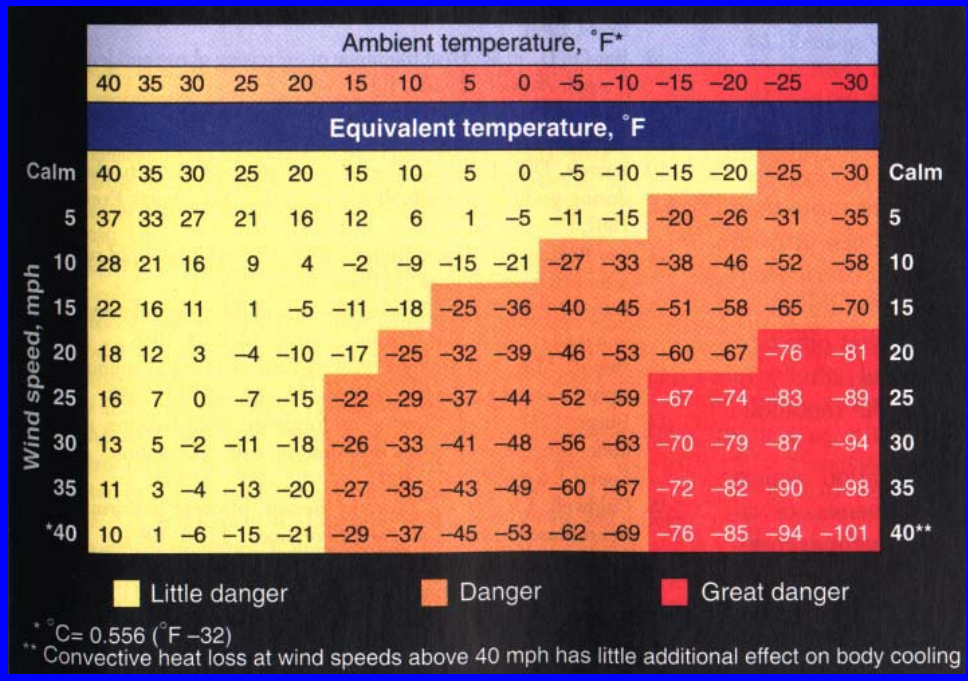
- Unexplained, poor performances
- General fatigue, depression, irritability
- Elevated resting pulse, painful muscles, GI disturbances, upper respiratory infections
- Insomnia
- Weight loss
- Overuse injuries

# PREVENT INJURIES!

- Most are muscle-skeletal
- Causes: over(under)training; hard running surfaces; “wrong” shoes
- Use shoes that best fit your feet
- Run on grass/dirt/track
- Warm-up/cool-down exercises
- Rest and diet; general healthy life-style
- Alternative training (swimming/cycling)

# Environmental Conditions: Thermal Stress




Heat + Humidity

Cold + Wind chill

# Marathon Day

- Pre-race:
  - Pasta, water, and rest; #; clothing; Vaseline; off-your-feet; relax
- Race:
  - Know the course; even pace (split 51-49); adjust pace; good running form; drink; friends and spectators
- Post-race:
  - keep on walking; stretch and massages; hot bath; lick your wounds
- Recovery: at least 1 month
- *You don't have to run a marathon*: ENJOY IT!

# John Shostrom Marathon Record

- 1993: San Diego, 3:19
- 1994: San Diego, 3:12; New York City, 3:36
- 1995: Boston, 3:14
- 1996: Boston, 3:16
- 1997: Pittsburgh, 3:14; Hartford, 3:07*
- 1998: Pittsburgh, 3:05; Hartford, 3:03
- 1999: San Diego, 3:01; Hartford, 2:58
- 2000: S.D. Rock ‘n’ Roll, 2:59; Hartford, 2:53; New York City, 3:00
- 2001: S.D. Rock ‘n’ Roll, 2:53; Chicago, 2:49; New York City, 2:58
- 2002: Boston, 2:58
- 2003: New York City, 2:57; Dallas, 3:01
- 2004: New York City, 2:57
- 2005: Hartford, 3:03; New York City, 3:06
- 2006: New Jersey, 3:02

*Joined BRRC in mid-1997, started training with better runners, immediately started improving

# Club Team Championship
# August 2004

# NYC Marathon 2004

# Racing Strategy

- Warm up only if you're an advanced runner; use the early miles as a warm-up
- Stay calm: the race will supply the excitement
- Don't go out too fast: you won't blow your race by being cautious
- Run your own race
- But look for company if that helps you
- Divide the race up: 10K, 1/2 marathon, 20 miles, last 10K
- Walk if you feel you need to, but keep moving briskly
- If your plan is for more than 4 hours, consider pre-planned walking
- You can get a "second wind"
- Have multiple goals

# Mental/Physical Interactions

- Training involves the mind as well as the body

  --Concentration: mental focus leads to physical improvement

  --Confidence: physical training leads to a mental edge
- Calmness and patience, both in practice & during the race
- Know yourself: the 4 types of runners

  --Internal/Associative

  --Internal/Dissociative

  --External/Associative

  --External/Dissociative
- Exploring your limits: an endless process
- Learn something from each race – no marathon is a wasted effort

# Aging

- Running age not same as chronological age
- Improvement is inevitable at the beginning (7-year Hirsch theory)
- Decline is inevitable at some point
- Speed usually declines before stamina
- Longer learning curve with the marathon – again, patience is important
- Listen to your body: injuries usually increase with age
- You do learn as you age, and knowledge helps performance