10000m to Marathon

‘From 10K to the Marathon. Training requirements, alternative approaches to periodisation and the need to take a long term view’

🌟 What you need to run each event
🌟 How you achieve the respective qualities
🌟 How you plan a long term perspective
Running performance

Aerobic Power/Capacity
Cardiac output/O2 carrying capacity

Fractional usage of O2
Lactate turnpoint/lactate threshold

Economy of motion
Mechanical efficiency - Promotion of energy return, development of eccentric strength and SSC reduction in energy leakage

Lifestyle
Recovery, nutrition, environment, work/training balance

Mental strength
Adherence, acceptance of work load, fortitude under duress

Robustness
Conditioning for tissue and system strength
Running performance

Aerobic Power/Capacity
Cardiac output/O2 carrying capacity

Fractional usage of O2
Lactate turnpoint/lactate threshold

Economy of motion
Mechanical efficiency - Promotion of energy return, development of eccentric strength and SSC reduction in energy leakage

Lifestyle
Recovery, nutrition, environment, work/training balance

Mental strength
Adherence, acceptance of work load, fortitude under duress

Robustness
Conditioning for tissue and system strength
Running performance

Aerobic Power/Capacity
Cardiac output/O2 carrying capacity

Fractional usage of O2
Lactate turnpoint/lactate threshold

Economy of motion
Mechanical efficiency - Promotion of energy return, development of eccentric strength and SSC reduction in energy leakage

Performance

Lifestyle
Recovery, nutrition, environment, work/training balance

Mental strength
Adherence, acceptance of work load, fortitude under duress

Robustness
Conditioning for tissue and system strength
Robustness

1. Get a screen

2. Get the basics in place (hopefully when young) – ‘stuff’

   Static    Partially functional   Functional   Speed

3. Follow quality learning with general conditioning

   Conditioning

4. Progress general conditioning to general strength and power.
Running performance

Aerobic Power/Capacity
Cardiac output/O2 carrying capacity

Fractional usage of O2
Lactate turnpoint/lactate threshold

Economy of motion
Mechanical efficiency - Promotion of energy return, development of eccentric strength and SSC reduction in energy leakage

Lifestyle
Recovery, nutrition, environment, work/training balance

Mental strength
Adherence, acceptance of work load, fortitude under duress

Robustness
Conditioning for tissue and system strength
Running performance

Aerobic Power/Capacity
Cardiac output/O2 carrying capacity

Lactate turnpoint/lactate threshold
Economy of motion
Mechanical efficiency - Promotion of energy return, development of eccentric strength and SSC reduction in energy leakage

Performance

Fractional usage of O2

Mental strength
Adherence, acceptance of work load, fortitude under duress

Lifestyle
Recovery, nutrition, environment, work/training balance

Robustness
Conditioning for tissue and system strength
What do we need to run a 10k

- 10k race run around 93% of vVO2
- Big VO2
- High vVO2
- High fractional utilisation of VO2
- Excellent economy

-Speed for a sprint finish

Andy Jones, Exeter University
So what makes a good endurance runner/marathon runner

- **Easy (Ext Aerobic)**
  - 40mins: An ability to run a long way at a high aerobic speed not producing much lactate aerobic capacity
  - 60 to 90min runs: An efficient fat burning machine

- **Steady (Int Aerobic)**
  - 6x60m: Good turn over and leg power
  - 6x3m(3m): A great engine – big VO2 max

- **Threshold (Tempo)**
  - 40mins: An ability to run a long way at a high aerobic speed not producing much lactate aerobic capacity
  - 60 to 90min runs: An efficient fat burning machine

- **Alactic (Speed)**
  - Long runs: An ability to withstand repetitive foot strikes and use O2 economically
10k running

-In practical terms

- Build a good progressive volume year on year, 70 to 120mls/wk
- Build the engine (Radcliffe VO2constant but vVO2 up and economy up)
- Build an ability to generate pace, last 400m <54s/60s, through muscular power and co-ordination
- Build an ability to take on more training through conditioning
- Don’t be conservative but do your background work

- Structuring a year
  - Foundation – aerobic emphasis, rebuild all capacities lost in competition
    Oct to Nov
  - Base – Increase aerobic engine – Capacity (and Power)
    Dec to March
  - Pre-comp – Introduce race specific sessions, Power
    April to May (Qualifying)
  - Comp – Balance recovery and race capacities
    June to Aug (Peaking)
10k running

Foundation Oct to Nov

1. Develop aerobic base
2. Build volume aim to be around 75% of highest volume at end of this period
3. Develop strength and mobility

- Runs of 40mins to 2hrs – aim to build length of runs and total volume
- 2x Hilly fartleks 8 to 10k length (30mins work unstructured running)
- 1x Short hill sprints or Canova fartlek
- 2 to 3 Conditioning circuits and foot work

- Introduce 1x LTP development towards end of phase
  - 20mins broken builds to 40mins broken i.e. 4x10mins(2mins)
  - 15mins continuous to 30mins continuous under to over

- Race cross country at low level if desire
10k running

Development Dec to March

1. Build aerobic engine, emphasis on capacity (some power)
2. Build volume
3. Develop strength and mobility
4. Peak volume at end of this phase

- Runs of 45mins to 2hrs looking for increase in pace of these

- 2 x 5 to 16k rep sessions
  - as longer 1k to 4k run at LTP and above
  - and shorter 300’s to 400’s at 3k to 10k pace

- Examples
  12x1k(400m float) over/under LTP
  4k/3k/2k/1k(400m float) LTP to 10k
  12x400(1m) to 30x400(45s) at 5k to 10k pace
  1k/400m/1k (4mins jog)x4 at 10k/5k pace

- Also continuous LTP sessions
- Structured hill work outs, short to long 12mins builds to 20mins total
- 2x Conditioning and strength workouts including short sprint work
- 2x Recovery sessions
- Race cross country, road distances up to 1/2M
10k running

Pre-comp April to May

1. Progress aerobic power and maintain capacity
2. Emphasis on development of vVO2 (1500 to 3k to 5k pace)
3. Develop anaerobic endurance (capacity)
4. Develop some race specific capacity

- Runs of 45mins to 90mins looking to maintain pace of these

- Progression of sessions
  vVO2 sessions 6x800(2mins), 6x1k(3mins) @5k pace
  16x400(60s), 6x600(90s), 5x800(2mins), 3x1k(2mins)@3k pace
  Anaerobic endurance 1500/1k/800/600/400 (1:1 recovery)
  2k/1600/1200/800/400 (4/3/2/1 recovery)
  Shorter distance races 1500 to 3k
  10x300(100jog) 1500m pace

Regular LTP sessions to maintain at or just above LTP (20mins volume)
Kicks 10 to 20 x 200(200 jog) at finish pace, accelerations/flat out 150’s

- 2x Light conditioning and short sprint work or short hill sprints
- 2x Recovery sessions
- Race under distance
10k running

Comp June to Aug

1. Balance
2. Maintain as much but be recovered

- Runs of 40mins to 60mins as feel
- Occasional 2 hr run
- Fit in LTP run when ever can but every 10 days
- Race specific 8x1k(3mins) to 10x1k(90s) to 8x1200(2mins) to 6x1500m(2mins) to 3x2k(2mins)4x1k(2mins) all at 10k pace
- Race support 8x800 (200 float) @103% 10k pace or 10x1k(200 float)@97%
- Mixed race specific and anaerobic sessions
  - 4k@10k race pace(2mins)12x400(60s) 3k pace descending paces for last 2
  - 4 to 6 x 600m(4mins)@1500 to 3k pace, then 20mins work into threshold
- Short sprints
- 2xlight conditioning
- Over and under distance races and races!
OR

Season start
2 weeks off, 2 weeks easy running
14 to 16 weeks of preparation x2 in a year
5 sessions in a 2 week block
Emphasis on a specific element
Keep in speed

17 sessions of 200’s in 21 weeks eg 12x200(200 jog) in 26.5
10 sessions of tempo
10 sessions of 5k pace, 5k volume
5 sessions of longer volume reps
What do we need to run a 10k

- 10k race run around 93% of vVO2
- Big VO2
- High vVO2
- High fractional utilisation of VO2
- Excellent economy

- Speed for a sprint finish

What do we need to run 42K

- 42k race run around 85% of vVO2
- Big VO2 arguably not so important
- High vVO2 arguably not so important
- High fractional utilisation of VO2 **YES**
- Excellent economy **YES**

- Speed for a sprint finish?
So what makes a good endurance runner/marathon runner

- Easy (Ext Aerobic)
- Steady (Int Aerobic)
- Threshold (Tempo)
- VO2/Power/(Reps)
- Alactic (Speed)

SUGARS
- ATP in muscle
- Glucose in muscle/blood/liver

FATS
- Glucose in muscle/blood/liver
- Glucose and Fat
- Fat and glucose

MRP
So what makes a good marathon runner

Marathon and 50km walk race: physiology, diet and training by Enrico Arcelli [NSA] ©by IAAF 11:4:51-58.1996
<table>
<thead>
<tr>
<th>Month Range</th>
<th>Plan Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept</td>
<td>Berlin Marathon</td>
</tr>
<tr>
<td></td>
<td>2 weeks off/enjoy, 2 weeks run</td>
</tr>
<tr>
<td>Oct to end Nov</td>
<td>Foundation 1. 8 weeks</td>
</tr>
<tr>
<td></td>
<td>Rebuilding system</td>
</tr>
<tr>
<td></td>
<td>Lots of ‘stuff’</td>
</tr>
<tr>
<td></td>
<td>Build miles, hills, sessions</td>
</tr>
<tr>
<td>Dec to Jan</td>
<td>Foundation 2. 8 weeks</td>
</tr>
<tr>
<td></td>
<td>Increase volume of all runs</td>
</tr>
<tr>
<td></td>
<td>Increase volume globally</td>
</tr>
<tr>
<td></td>
<td>Increase Power (hills)</td>
</tr>
<tr>
<td></td>
<td>Increase capacity (reps)</td>
</tr>
<tr>
<td>Feb to Mid Mar</td>
<td>Specific 1. 6 weeks</td>
</tr>
<tr>
<td></td>
<td>Extend capacity</td>
</tr>
<tr>
<td></td>
<td>Extend pace of runs</td>
</tr>
<tr>
<td></td>
<td>Maintain power</td>
</tr>
<tr>
<td></td>
<td>10k (1/2M) pb in this period</td>
</tr>
<tr>
<td>Mid Mar to April</td>
<td>Specific 2. 6 weeks</td>
</tr>
<tr>
<td></td>
<td>Extend volume of pace runs</td>
</tr>
<tr>
<td></td>
<td>Extend MRP</td>
</tr>
<tr>
<td></td>
<td>Maintain capacity/thresh/power</td>
</tr>
</tbody>
</table>
Marathon = 2 x 1/2M plus 4 to 10 minutes

Diesel and petrol engines (BMW’s or Ferraris)

So for a 3hr marathon you should be able to run 85mins for the half at the end of Specific 1.

2hr 45 marathon 77’30 to 80’30
2hr 30 marathon 70’ to 73’

2hr 20 65’ to 68’
2hr 10 60’ to 63’

If you can do the above you have no excuses!!
If you cant do the above then you can definitely hit the times provided you train well and have a bit (or develop a bit) of a diesel mentality and physiology.
What pace is correct pace?

- Long runs
  - controlled pace and time on feet
  - 80 to 85% of MRP

- Medium pace runs
  - steady runs
  - 85 to 95% of MRP

- Marathon pace runs

- Threshold runs
  - 105% of MRP

- Repetitions and intervals
  - 105 to 115% of MRP

<table>
<thead>
<tr>
<th>Pace</th>
<th>3hr</th>
<th>2hr 45mins</th>
<th>2hrs 30mins</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRP 100%</td>
<td>06:52</td>
<td>06:18</td>
<td>05:43</td>
</tr>
<tr>
<td>Long run 80%</td>
<td>08:14</td>
<td>07:34</td>
<td>06:52</td>
</tr>
<tr>
<td>85%</td>
<td>07:54</td>
<td>07:15</td>
<td>06:34</td>
</tr>
<tr>
<td>Steady 90%</td>
<td>07:33</td>
<td>06:56</td>
<td>06:17</td>
</tr>
<tr>
<td>MRP 100%</td>
<td>06:52</td>
<td>06:18</td>
<td>05:43</td>
</tr>
<tr>
<td>Threshold 105%</td>
<td>06:31</td>
<td>05:59</td>
<td>05:26</td>
</tr>
<tr>
<td>Reps 110%</td>
<td>06:11</td>
<td>05:40</td>
<td>05:09</td>
</tr>
<tr>
<td>Intervals 115%</td>
<td>05:50</td>
<td>05:21</td>
<td>04:52</td>
</tr>
</tbody>
</table>
Specifics

Aim is to increase the density of sessions i.e. extension of endurance. By working from below pace ensure you go from fats to sugars

Threshold progressions for marathon
4x6mins done as 6bpm below/3bpm/@/@
4x8mins as above
5x8mins as above
3x15mins (2m) done as 5mins 5bpm below/5mins@/5mins 5bpm above
3x5k (2m) done as 1k@98%/1k@102%
Aim is to always start below so you work the system from more fats to less fats from more aerobic to less aerobic. You are trying to develop the aerobic capacity

MRP progressions
20k done as 20x(400 Easy Thresh/400 Easy steady) or 103%MRP/93%MRP
20k done as 10x(1k Easy Thresh/1k Easy steady) or 103%MRP/93%MRP
21k done as 7x (2k MRP/1k steady) or MRP/95%MRP
24k done as 6x (3k MRP/1k steady) or MRP/95%MRP
Build to
28k done as 3x (8k MRP/1k steady)
Specifics

‘Fat burning sessions’
20/20/20 building to 30/30/30 End run below or at MRP
90mins to 2hrs progressive continuous 20 to 30s/ml slower than MRP
Aim is to promote ability to utilise fats at maximum rate.
Over time push this pace closer to threshold i.e. higher pace but less consumption of carbohydrates. (Measure this through lactate production)

Long runs
How long is long. Time on feet, higher average pace, replicate race scenario.
2hrs regular.
Up to 2hrs 45mins
Cost v benefits
Can you manipulate session to reduce time on feet but get same effects
- block training on day
- burn out carbs on day
- double days
- no fuelling
<table>
<thead>
<tr>
<th>Weeks to go</th>
<th>Date</th>
<th>Long</th>
<th>Intensive aerobic</th>
<th>MRP/Thres hold</th>
<th>VVO2 (Reps)</th>
<th>Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>17-Feb-08</td>
<td>2hrs 20mins</td>
<td>20k Int</td>
<td>8x2k(1k)</td>
<td>10x100</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>24-Feb-08</td>
<td>5k Ext plus 25k Int</td>
<td>6x3k(1k)</td>
<td>6k</td>
<td>8x60</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>02-Mar-08</td>
<td>1/2 wk Rec</td>
<td>2hrs 30mins</td>
<td>400/300/200x 6</td>
<td>8x80</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>09-Mar-08</td>
<td></td>
<td>30k progressive</td>
<td>4x5k(1k)</td>
<td>20x300(30s)</td>
<td>6x100</td>
</tr>
<tr>
<td>6</td>
<td>16-Mar-08</td>
<td>Rec</td>
<td>80mins</td>
<td>2x1k plus 6x300</td>
<td>8x60</td>
<td>Race 1/2M</td>
</tr>
<tr>
<td>5</td>
<td>23-Mar-08</td>
<td>2hrs 30mins</td>
<td>3x7k(1k)</td>
<td>6k or test</td>
<td>8x60</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>30-Mar-08</td>
<td>Rec</td>
<td>30k intensive</td>
<td>10k or 10x1k</td>
<td>6x50</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>06-Apr-08</td>
<td>2hrs plus 20mins MRP</td>
<td>2x10k(1k)</td>
<td>6k</td>
<td>8x60</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>13-Apr-08</td>
<td>80mins</td>
<td>12k and 20m</td>
<td>6k</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>20-Apr-08</td>
<td></td>
<td>Marathon</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Marathon specifics

-Race day
  - Carbohydrate loading works
  - Getting your race day drinks sorted
  - Practice taking in training but don’t use often
  - Negative splits

-Consistency
  - Conditioning
  - Leg strength and stride economy
  - Injury management
    - Massage, ice, food
  - Training environment
  - Recovery
  - Patience, Rome wasn’t built in a day
Making the transition

To run a really good marathon close to best potential you have to train specifically for it.

- Consistent high volume
- Big fast aerobic engine
- Robustness
- Keep it simple but keep it going
- Develop through 10k work and then prepare for marathon
- Keep experimenting

- Can you mix the two?
“However beautiful the strategy, you should occasionally look at the results.” (and the view) Winston Churchill