



# **“MARATHON TRAINING AND PREPARATION”**

*-The complete Guide*

**“MARATHON TRAINING AND PREPARATION”**  
**All you need to know to withstand the toughest of marathons**

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## Marathon Diary

Running Events 2007 Diary

<b>Name</b>	<b>Date</b>	<b>Distance</b>
<b>Nationwide Bath Half Marathon</b>	25 <sup>th</sup> March 2007	13.1 miles
<b>Asics Reading Half Marathon</b>	25 <sup>th</sup> March 2007	13.1 miles
<b>The Paris Marathon</b>	15 <sup>th</sup> April 2007	26.2 miles
<b>Fortis Rotterdam Marathon</b>	15 <sup>th</sup> April 2007	26.2 miles
<b>Boston Marathon</b>	16 <sup>th</sup> April 2007	26.2 miles
<b>Flora London Marathon</b>	22 <sup>nd</sup> April 2007	26.2 miles
<b>Great Manchester Run</b>	20 <sup>th</sup> May 2007	10k
<b>Edinburgh Marathon</b>	27 <sup>th</sup> May 2007	26.2 miles
<b>Stockholm Marathon</b>	9 <sup>th</sup> June 2007	26.2 miles
<b>Bristol Half Marathon</b>	8th September 2007	13 miles
<b>Hydro Active Women's Challenge:</b> London & Birmingham & Liverpool	16 <sup>th</sup> September 2007	
<b>Great North Run:</b> Newcastle	30 <sup>th</sup> September 2007	13.1 miles
<b>Berlin Marathon</b>	30 <sup>th</sup> September 2007	26.2 miles
<b>Amsterdam Marathon</b>	October 2007	26.2 miles
<b>Chicago Marathon</b>	7 <sup>th</sup> October 2007	26.2 miles
<b>Dublin Marathon</b>	29th October 2007	26.2 miles
<b>Great South Run:</b> Portsmouth	28 <sup>th</sup> October 2007	10 miles
<b>ING New York Marathon</b>	4 <sup>th</sup> November 2007	26.2 miles
<b>Honolulu Marathon</b>	9 <sup>th</sup> December 2007	26.2 miles

## The World's top 10 Marathons

1. [London Marathon, April](#)
2. [Berlin Marathon, September](#)
3. [New York City Marathon, November](#)
4. [Chicago Marathon, October](#)
5. [Boston Marathon, April](#)
6. [Stockholm Marathon, June](#)
7. [Rotterdam Marathon, April](#)
8. [Paris Marathon, April](#)
9. [Honolulu Marathon, December](#)
10. [Amsterdam Marathon, October](#)

### Clinics at:

Point West, 116 Cromwell Road  
Kensington, London.

The Lodge, Parkside Hospital  
53 Parkside, Wimbledon, London.

## The Flora London Marathon

You can enter the London Marathon one of these main ways:

- The Ballot
- By Running for a Charity
- As an elite runner
- By getting a club place through your running club

**The Ballot:** At the beginning of August the Flora London Marathon distributes a free magazine called Marathon News that contains the entry form for the London Marathon. Entries open in August and close by mid October. By the 1<sup>st</sup> week in December applicants are notified of their ballot result. If an applicant is not successful and agrees to donate their entry to charity then an applicant can be entered into a second ballot for a reserved 1000 places.

**Charity:** Another way to run in the London Marathon is to raise money for a chosen charity. For each place in the London Marathon each charity has to pay £250. Therefore to run for a charity you will be expected to raise between £1000 and £1500 to gain a place.

**Elite Runners:** Automatic entry can be applied for any men who can run a marathon in under 2:45 or women who can run a marathon in under 3:15. There is also a sliding entry scale for those who are considered to be good runners for their age bracket.

**Club Places:** Each UK Athletics-affiliated club is guaranteed a number of places dependant upon the number of club members and certain other criteria. These criteria may vary from club to club.

### General Pointers:

- Ensure that you have done appropriate training with sufficient mileage.
- Aim to get plenty of rest in the few days before the race. At this late stage no endurance or speed can be gained or lost. Don't be on your feet all day the day before the race sight seeing or shopping.
- Ensure your clothes and trainers have been worn in and are comfortable.
- Pack a kit bag prior to the race – this can include old clothes or a bin liner that you don't mind depositing.
- Don't run if you are feeling unwell or recently been ill. The Marathon organisers will hold your entry for a year if this applies to you.
- Don't be tempted to start the race quickly or waste energy weaving through the slower runners. Keep to a slower pace at the start of the marathon and use this first mile as a warm up.
- Arrange a suitable place to meet your friends and family at the end of the race as the finishing area is chaos.

## Marathon Training Schedule:

Ideally give yourself 6 months (26 weeks) to prepare for the marathon. This schedule aimed at an intermediate runner. It has been developed to include options for an inexperienced runner. If you have never run before or have not exercised for a while you need to build up a base of running before you start. In the schedule each week includes:

- non-impact training
- short runs at the pace you hope to run the marathon
- longer runs at a comfortable pace
- some interval running
- strength training
- rest days
- light week every four weeks (when the longer runs have started increasing)
- The distance you are running does not increase more than 10% each week

At Pure Sports Medicine we have found a great deal of running injuries are related to over training. This is why our training schedule includes less running than most and incorporates strength and non-impact sessions. This gives you time to adjust to the increase in mileage. The schedule does not include any hill running because we have found this to be a source of injuries and it is not necessary if your marathon course is not hilly. Fartlek or interval training can be used to add variety to training and improve your fitness (see below for more information). This schedule includes mid week intervals from week 12. But if you are an experienced runner you can include Fartlek or your own intervals to the midweek runs earlier on.

### Optional running base (4 weeks before start of programme)

Go out twice a week for 30 minutes always on alternate days. Start with a walk of about 5 minutes to warm up. Then continue jogging at a slow pace for as long as you feel comfortable. Break up the running with periods of walking as you need. Gradually build up how much you are jogging on each session. By the end of the 4 weeks try to jog the full 30 minutes. If you have not managed this, don't worry, just continue the walk/ jog for another 2 weeks into the main running programme. If you have completed this running base then follow the mileage on the right side in italics where there are two options.

### Week 1

Day 1:	run 2 miles light pace	<i>3 miles</i>
Day 2:	strength and balance (see details at the bottom of the schedule)	
Day 3:	run 2 miles light pace (low impact – treadmill/grass)	<i>3 miles</i>
Day 4:	strength and balance	
Day 5:	non-impact (bike, cross-trainer, step machine) 20 minutes at a higher pace	
Day 6:	run 2 miles slightly increased pace	<i>3 miles</i>
Day 7:	rest day	

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## Week 2

Day 1:	run 3 miles and slightly increase the pace	
Day 2:	strength and balance 30 minutes	
Day 3:	run 3 miles (low impact – treadmill/grass)	
Day 4:	strength and balance 30 minutes	
Day 5:	30 minutes cross training	
Day 6:	run 3 miles	4 miles
Day 7:	rest day	

## Week 3:

Day 1:	run 4 miles
Day 2:	strength and balance 30 minutes
Day 3:	run 4 miles (low impact – treadmill/grass)
Day 4:	strength and balance 30 minutes
Day 5:	40 minutes cross training minutes
Day 6:	run 4 miles
Day 7:	rest day

## Week 4

Day 1:	run 5 miles	
Day 2:	strength and balance 30 minutes	
Day 3:	run 5 miles (low impact – treadmill/grass)	4 miles
Day 4:	strength and balance 30 minutes	
Day 5:	40 minutes cross training	
Day 6:	run 6 miles	5 miles
Day 7:	rest day	

## Week 5:

Day 1:	run 5 miles (low impact – treadmill/grass)	
Day 2:	strength and balance 30 minutes	
Day 3:	run 6 miles	5 miles
Day 4:	strength and balance 30 minutes	
Day 5:	40 minutes cross training	
Day 6:	run 7 miles	6 miles
Day 7:	rest day	

## Week 6:

Day 1:	run 5 miles (low impact – treadmill/grass)	
Day 2:	strength and balance 30 minutes	
Day 3:	run 7 miles	5 miles
Day 4:	strength and balance 30 minutes	
Day 5:	40 minutes cross training	
Day 6:	run 8 miles	7 miles
Day 7:	rest day	

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**Week 7:**

Day 1:	run 5 miles (low impact – treadmill/grass)	
Day 2:	strength and balance 30 minutes	
Day 3:	run 8 miles	<i>5 miles</i>
Day 4:	strength and balance 30 minutes	
Day 5:	40 minutes cross training	
Day 6:	run 9 miles	<i>8 miles</i>
Day 7:	rest day	

**Week 8:**

Day 1:	run 5 miles (low impact – treadmill/grass)	
Day 2:	strength and balance 30 minutes	
Day 3:	run 9 miles	<i>5 miles</i>
Day 4:	strength and balance 30 minutes	
Day 5:	40 minutes cross training	
Day 6:	run 10 miles	<i>8 miles</i>
Day 7:	rest day	

**Week 9:**

Day 1:	run 5 miles (low impact – treadmill/grass)	
Day 2:	strength and balance 30 minutes	
Day 3:	run 10 miles	<i>5 miles</i>
Day 4:	strength and balance 30 minutes	
Day 5:	40 minutes cross training	
Day 6:	run 11 miles	<i>9 miles</i>
Day 7:	rest day	

**Week 10:**

Day 1:	run 5 miles (low impact – treadmill/grass)	
Day 2:	strength and balance 30 minutes	
Day 3:	run 10 miles	<i>5 miles</i>
Day 4:	strength and balance 30 minutes	
Day 5:	40 minutes cross training	
Day 6:	run 12 miles	<i>10 miles</i>
Day 7:	rest day	

**Week 11:**

Day 1:	run 5 miles (low impact – treadmill/grass)	
Day 2:	strength and balance 30 minutes	
Day 3:	run 10 miles	<i>5 miles</i>
Day 4:	strength and balance 30 minutes	
Day 5:	40 minutes cross training	
Day 6:	run 5 miles timed	<i>11 miles</i>
Day 7:	rest day	

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**Week 12:**

- Day 1: run 5 miles (low impact – treadmill/grass)
- Day 2: strength and balance 30 minutes
- Day 3: run 3 miles warm up, then 2 mins fast, 1 min slow jog recovery.  
Repeat 10 times (this can be swapped with day 1 to go on treadmill if preferred)
- Day 4: strength and balance 30 minutes
- Day 5: 40 minutes cross training
- Day 6: run 13 miles
- Day 7: rest day

**Week 13:**

- Day 1: run 5 miles (low impact – treadmill/grass)
- Day 2: strength and balance 30 minutes
- Day 3: run 3 miles warm up, then 1 min fast, 30 secs slow jog recovery. Repeat 15 times
- Day 4: strength and balance 30 minutes
- Day 5: 40 minutes cross training
- Day 6: run 14 miles
- Day 7: rest day

**Week 14:**

- Day 1: run 5 miles (low impact – treadmill/grass)
- Day 2: strength and balance 30 minutes
- Day 3: run 3 miles warm up, then 2 mins fast, 1 min slow jog recovery. Repeat 10 times
- Day 4: strength and balance 30 minutes
- Day 5: 40 minutes cross training
- Day 6: run 15 miles
- Day 7: rest day

**Week 15:**

- Day 1: run 5 miles (low impact – treadmill/grass)
- Day 2: strength and balance 30 minutes
- Day 3: run 3 miles warm up, then 1 mins fast, 30 secs slow jog recovery. Repeat 15 times
- Day 4: strength and balance 30 minutes
- Day 5: 40 minutes cross training
- Day 6: run 10 miles timed
- Day 7: rest day

**Week 16:**

- Day 1: run 5 miles (low impact – treadmill/grass)
- Day 2: strength and balance 30 minutes
- Day 3: run 3 miles warm up, then 2 mins fast, 1 min slow jog recovery. Repeat 10 times
- Day 4: strength and balance 30 minutes
- Day 5: 40 minutes cross training
- Day 6: run 16 miles
- Day 7: rest day

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**Week 17:**

- Day 1: run 5 miles (low impact – treadmill/grass)
- Day 2: strength and balance 30 minutes
- Day 3: run 3 miles warm up, then 1 mins fast, 30 secs slow jog recovery. Repeat 15 times
- Day 4: strength and balance 30 minutes
- Day5: 40 minutes cross training light pace
- Day 6: run 17 miles
- Day 7: rest day

**Week 18:**

- Day 1: run 5 miles (low impact – treadmill/grass) *4 miles*
- Day 2: strength and balance 30 minutes
- Day 3: run 3 miles warm up, then 2 mins fast, 1 min slow jog recovery. Repeat 10 times
- Day 4: strength and balance 30 minutes
- Day5: 40 minutes cross training light pace
- Day 6: run 18 miles
- Day 7: rest day

**Week 19:**

- Day 1: run 5 miles (low impact – treadmill/grass)
- Day 2: strength and balance 30 minutes
- Day 3: run 3 miles warm up, then 1 mins fast, 30 secs slow jog recovery. Repeat 15 times
- Day 4: strength and balance 30 minutes
- Day5: 40 minutes cross training light pace
- Day 6: run 5 miles timed
- Day 7: rest day

**Week 20:**

- Day 1: run 5 miles (low impact – treadmill/grass) *4 miles*
- Day 2: strength and balance 30 minutes
- Day 3: run 3 miles warm up, then 2 mins fast, 1 min slow jog recovery. Repeat 10 times
- Day 4: strength and balance 30 minutes
- Day5: 40 minutes cross training light pace
- Day 6: run 19 miles *18 miles*
- Day 7: rest day

**Week 21:**

- Day 1: run 5 miles (low impact – treadmill/grass) *4 miles*
- Day 2: strength and balance 30 minutes
- Day 3: run 3 miles warm up, then 1 mins fast, 30 secs slow jog recovery. Repeat 15 times
- Day 4: strength and balance 30 minutes
- Day5: 40 minutes cross training light pace
- Day 6: run 20 miles *17 miles*
- Day 7: rest day

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**Week 22:**

Day 1: run 5 miles (low impact – treadmill/grass) *4 miles*  
 Day 2: strength and balance 30 minutes  
 Day 3: run 3 miles warm up, then 2 mins fast, 1 min slow jog recovery. Repeat 10 times  
 Day 4: strength and balance 30 minutes  
 Day 5: 40 minutes cross training light pace  
 Day 6: run 18 miles *16 miles*  
 Day 7: rest day

**Week 23:**

Day 1: run 5 miles (low impact – treadmill/grass)  
 Day 2: strength and balance 30 minutes  
 Day 3: run 3 miles warm up, then 1 mins fast, 30 secs slow jog recovery. Repeat 15 times  
 Day 4: strength and balance 30 minutes  
 Day 5: 40 minutes cross training light pace  
 Day 6: run 10 miles timed  
 Day 7: rest day

**Week 24:**

Day 1: run 5 miles (low impact – treadmill/grass)  
 Day 2: strength and balance 30 minutes  
 Day 3: run 3 miles warm up, then 2 mins fast, 1 min slow jog recovery. Repeat 10 times  
 Day 4: strength and balance 30 minutes  
 Day 5: 40 minutes cross training light pace  
 Day 6: run 10 miles  
 Day 7: rest day

**Week 25:**

Day 1: run 5 miles (low impact – treadmill/grass)  
 Day 2: strength and balance 30 minutes  
 Day 3: run 3 miles warm up, then 1 mins fast, 30 secs slow jog recovery. Repeat 15 times  
 Day 4: strength and balance 30 minutes  
 Day 5: 40 minutes cross training light pace  
 Day 6: run 10 miles  
 Day 7: rest day

**Week 26:**

Day 1: run 30 minutes moderate pace  
 Day 2: strength and balance 30 minutes  
 Day 3: run 25 minutes light pace (low impact – treadmill/grass)  
 Day 4: strength and balance 30 minutes  
 Day 5: 20 minutes cross training light pace  
 Day 6: rest day and eat easily digestible food high in carbohydrates and sleep well!  
 Day 7: race day – eat about 2-3 hours before the race and prehydrate. Do not experiment with any energy drinks or bars during the race unless you have tried them in your training.

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## **Interval Running and Farley training**

Both interval running and farther training involve bursts of faster running and periods of recovery. This type of running uses both your aerobic and anaerobic systems. Training anaerobically can ultimately improve your body's ability to deliver oxygen to your muscles. This can be a useful part of training, but should only be used when you have some running experience.

Interval training is very structured and can be specifically aimed at an individual athlete, depending on their current level of conditioning. The appropriate intensity and duration of the intervals can be determined by the results of anaerobic threshold testing (AT). Farley training is determined by how the athlete is feeling while they are training. So the intense interval continues for as long as the athlete feels they can continue, rather than being predetermined. It can be extremely useful particularly if the athlete has the ability to push themselves.

For interval training, the bursts of faster running when training for a marathon may be at a low intensity say for about 1-2 miles and allow 2 minutes to recover (or when breathing returns to normal/pulse returns to about 120 bpm). Or the intervals can be at a higher intensity for bursts of 400m-800m. Farley training would involve running at the increased intensity for as long as the athlete was able followed by a recovery period and then repeated.

The things to consider when developing an interval training session are:

- Intensity (speed) of work interval
- Duration (distance or time) of work interval
- Duration of rest or recovery interval
- Number of repetitions of each interval

The benefits of farther training are that you will be less likely to over train which can be a problem with predetermined intervals and you have the opportunity to push yourself further if you are feeling strong. It is a personal choice whether to use interval or farther training.

## **The Use of Telemetry [Heart Rate Monitors] for marathon training**

The beat of the heart increases linearly as the mode of exercise increases in intensity. This relationship continues until a max or near max heart rate is reached or the subject decreases the intensity. Because a marathon is an aerobic event [over 99% aerobic energy production], marathon training should be aerobic in nature. Whilst doing any aerobic training it is essential to monitor your heart rate, the use of a watch and monitor is the easiest and most accurate method of doing this.

Two factors must be established before HR telemetry can be used accurately as a training tool:

1. Maximum heart rate [MHR]
2. Anaerobic threshold [AT]

MHR is the absolute or maximum number of beats your heart can beat in a minute. Never use a formula such as 220 beats minus age as this is very inaccurate and neglects the principle of individuality. When doing shorter intervals as part of training, HR must be elevated at or near to max to achieve a training effect depending on the length of the interval. The knowledge of AT is critical as it is just below this level that the majority of your training should be completed and ultimately the majority of the marathon be run. In other words, at this AT level the body incurs an aerobic debt but this debt is paid back immediately, therefore this is pace at which the individual can run at his or her maximum potential.

## **Medical screening for Marathon Runners**

“Be prepared for the marathon”. Apart from all the conditioning that goes into training for a marathon, are you optimally prepared for the 26 mile onslaught?

Medical screening is a method of assessing your vulnerability or identifying the risk factors that may contribute to a loss of performance whilst preparing and competing in an endurance event such as a marathon. Running is an extremely repetitive action, therefore whilst running a marathon or 26 miles, even the smallest abnormality can be exposed and lead to problems that can hinder your progress. It is for this reason that we use medical screening to help prepare runners for a Marathon. As part of this screening process your posture, muscle balance, muscle control, proprioception and biomechanics would be assessed which can highlight any risk factors you have which could make you vulnerable to certain overuse injuries. We would advise you on appropriate nutrition, hydration and fuelling for training and racing as well as advice on rest regimes to aid recovery. We would assess baseline cardiac and respiratory function and optimize any medical conditions you have that may affect your performance such as exercise-induced asthma.

We offer a team approach to our screening and your assessment would include time with a Sports Physician who can advise on overtraining syndrome and arrange blood tests to exclude anaemia, low ferritin and any of the other conditions that can impair performance. Our Podiatrist will video your running gait and provide guidance on footwear, whilst our Conditioning Coaches provide advice and monitor your training programme so as to reduce the risks of overuse injuries. For an in-depth biomechanical analysis you would be directed to one of our sports physiotherapists. You would then be given advice based on our findings and potentially directed to spend more time with one of our clinicians if it was deemed necessary.

Preparing for the marathon is not just about getting the miles in – it's also about optimizing your body to cope with the extra load.

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## Injury Prevention and Care

These injuries are common amongst long distance runners and are classified as 'overuse injuries'. This means they have not come about as a result of trauma but instead from continued stress. Overuse injuries are treated very differently to traumatic injuries. A number of factors around biomechanics, muscle imbalance or training may be involved in their onset and will need to be addressed as part of the treatment. Simply resting is rarely sufficient to allow a return to running. The treatment is multifactorial and is aimed locally at the site of injury but also at the causative factors.

**Iliotibial band friction syndrome (ITBFS):** The iliotibial band (ITB) is a thick band of connective tissue that stretches from the outside of the pelvis down past the knee joint to the lateral tibial condyle (lower leg bone). ITBFS is an overuse injury which is common in distance runners. During the running gait, as the knee extends (straightens), the ITB moves forwards over the underlying lateral epicondyle of the femur. Past 30 degrees of flexion (bending) the ITB moves back over the epicondyle. Friction or impingement can occur with this repetitive action and an inflammatory reaction is set up causing pain and dysfunction.

Athletes will get an ache on the outside of the knee which is aggravated by running. Downhill or cambered running is worse than running uphill or on flat ground. The pain normally gets worse as the run continues but in the early stages may 'warm up' and only recur after the run. The pain is often better with faster rather than slower runs.

The management includes:

- Activity modification – avoid all pain-provoking activities and address any training errors
- Local treatment – ice, anti-inflammatory gel
- Manual therapy – soft tissue release to ITB and associated muscles around the hip and knee
- Strengthening around the gluteal muscles

**Patella tendinopathy & Achilles tendinopathy:** These two tendons at the knee and ankle can be overloaded during running which leads to microtrauma to the tendon. Unfortunately it appears that the tendons do not respond to the tissue trauma by healing in the usual way and the tendon is left mechanically inferior and painful and continued load, such as running, exacerbates the problem.

These patients will present with pain directly over the tendon and often report early morning stiffness. The symptoms are normally worse at the very beginning of the run, but will then 'warm up', they may however reoccur after the run.

The management includes:

- Activity modification – altering training to eliminate post-training pain and do not exercise with pain
- Manual therapy – specific soft tissue mobilisations to the tendon and soft tissue release to the calf or quadriceps if restricted in length
- Eccentric training regime

**Stress Fractures (metatarsals, tibia and hips):** Whilst most runners are aware of the potential of damage to the muscles, ligaments and tendons, fewer recognise the impact of overtraining on the bones. Bone is a living tissue which is constantly being broken down and reformed, and this process is influenced by the amount of load placed on the bone. In general, bone responds favourably to loading by becoming stronger. However, if it is not given sufficient time to adapt and remodel, then it becomes weaker and damaged. This is what happens in the case of a stress fracture. Excessive loading can either be the result of high mileage or it may be secondary to biomechanical reasons, which results in stresses not being evenly distributed throughout the bone.

If the inside of a bone is likened to the inside of honey comb, then it is easier to distinguish between a traumatic fracture (similar to what would happen in a rugby match) and a stress fracture (long distance running). In the traumatic fracture, the whole piece of honey comb is broken into 2 bits, whereas in the stress fracture only a few of the bridges separating the cells are broken. The severity of the injury depends on how many of those bridges are broken.

In long distance runners, the most commonly affected bones are the metatarsals (the long bones of the foot), the tibia (the shin bone) and the femoral neck (hip bone). Pain associated with a stress fracture is usually very well localised and can be found by pushing on a specific spot on the bone. In the early stages the pain is not severe at the commencement of running but gradually worsens the longer you run. As the bone gets more damaged, less and less activity can be done without pain. With more severe injuries, the pain may also be felt at night.

If these symptoms are felt, then a runner should seek medical advice from a sports physician or sports physiotherapist. The diagnosis can be made clinically but a scan may be used to back up and further clarify the level of damage. All bone injuries need to be rested to allow the bridges to re-build. This does not mean doing NO activity, but rather the avoidance of impact activity. An alternative training programme will be prescribed for the injured runner. The runner will also be advised how to modify their training schedule to prevent recurrence of the injury.

**Shin splints:** Shin pain is one of the most common complaints among runners. The term shin "splints" is used by runners, but this is not a good medical diagnosis. Shin pain can be the result of one or more of 3 different problems.

- The first involves damage to the actual bone itself, and this has been discussed earlier.
- The second is an inflammatory problem. The areas at which the muscles of the lower leg attach on to the bone can become strained due to overuse, and the tissues then get inflamed. The pain is not usually as well localised to one point as in bone damage, but is felt over a larger area. The pain is usually felt at the beginning of running, but tends to decrease as the runner warms up. The shins then feel sore again the day after a run.
- The third condition is called compartment syndrome. In the lower leg, different muscle groups are bound together by thick, sturdy fascia (a strong tissue, which is like gristle). If during exercise, the muscle swells up, but can't expand because this fascia is too tight, then pain may develop. The pain feels like a tight, heavy ache and increases rapidly with increased activity. The pain settles quickly once the athlete stops running. The runner may also feel weakness, numbness, pins and needles or tingling, even as low down as the foot. This is a result of excessive pressure on the nerves.

All 3 of these conditions may co-exist, since they are all related to altered biomechanics, and overuse. A therapist or doctor will identify the underlying causative factors and implement a management programme aimed at addressing these factors, and getting the runner back training as soon as possible.

### **Injury treatment**

Effective injury treatment begins with a detailed assessment and establishing an accurate diagnosis. The clinician will take a thorough history from the patient, assess the particular injury site, and do both a static and dynamic biomechanical assessment. This will involve assessing the non painful joints and muscles and may include video analysis of the runner's style.

This allows the clinician to structure a treatment and management programme specific to the individuals needs. Treatment may consist of "hands on" therapy which can include joint mobilisation, muscle stretching, taping or strapping, or soft tissue massage. In order to maintain the gains made by this treatment, the runner will be prescribed a home programme which will probably include stretching and strengthening exercises. The runner will either be advised to rest completely from running for a specific time period, to allow the injured tissues to recover, or their training programme may be modified. They will be issued with an alternative exercise programme designed to maintain cardiovascular fitness.

Since many overuse injuries are secondary to adverse biomechanics, many of the exercises are designed to help the runner "change the way they move". Therefore the exercises target both muscle strength, and the brain – because it tells the different muscles when to work. Since both of these processes do not happen overnight, the runner needs to have both patience and discipline with the prescribed programme.

In some cases the runner will be prescribed orthotics for their shoes, to help them overcome certain adverse biomechanics. In summary, treatment is aimed at ensuring the injured tissue recovers, and that it is not re-injured on return to running.

### **Common Training mistakes**

Working in the area of sports medicine means we listen to the events leading up to patients' injuries which reveal some very common patterns. An important part of sports medicine is injury prevention and one aspect of this relates to training. This is a list of common errors that we see regularly in practice:

- Sudden increase in training: The ideal training schedule for a new runner wanting to run the marathon is 6 months and for someone who has a running base it is 4 months
- Insufficient recovery: Rest days are important. At least one rest day should be put in each week and training should be much lighter after longer runs.
- Absence of strength training: It is important to build and maintain lower body strength and balance. So strength sessions should be built into your training week.
- Cross training: Athletes are often required to use alternative cardiovascular training methods, other than running, whilst recovering from an injury. But cross training is a very useful way of continuing to work on your cardiovascular potential without having the impact and can consequently reduce the risk of injury.

## **Post marathon recovery**

Immediately after the marathon it is important to restore lost fluids and therefore drink a lot of water. If you have never run a marathon before then you will feel very stiff and find going up and down stairs as well as walking difficult for a few days. It is a good idea to keep moving and using heat will help reduce the feeling of stiffness in the muscles.

After the marathon your rate of recovery will depend on how much running you are used to but should include a complete break from running. This may range from two weeks for the seasoned runner to a month for the new runner. It is often useful to get a sports massage, which will be aimed at the lymphatic system, to speed up your recovery a few days after the marathon.

## **The importance of stretching**

Stretching can be useful for 2 different reasons. Firstly, it can be used to address specific muscle restrictions, identified as being contributory to a specific injury. Shortened or tight muscles are commonly associated with overuse injuries. The shortening may be at the same site as the injury, or in distal or proximal muscles. Muscle tightness may be secondary to neural restriction, trigger points or muscle imbalances, this needs to be corrected first if stretching is to be effective. For example, a runner who has weakness of the buttock muscles is likely to have particularly tight hamstrings. Any amount of hamstring stretching will not resolve this issue, and gluteal strengthening exercises would need to precede the stretching programme. Rehabilitative stretching needs to be done on a regular basis, as instructed by the treating clinician.

Secondly, stretching is very important as part of an injury prevention programme. Running is a very one dimensional, repetitive activity. This means that the joints and muscles are only working in very small, specific ranges of motion. This predisposes them to becoming short and tight. In general, it is suggested that the runner does a series of dynamic stretches at the beginning of a training session. This should follow a short warm up, which may be light jogging. Dynamic exercises include running with high knees, kicking heels to bottom, stride lunges, and high kicks. They should all be performed in a comfortable range of motion. This is particularly important to do before a track, interval or speed session. During a long slow run, it is beneficial to break up the run by intermittently doing high knees or bottom kicks, or side ways gallops to change the muscle use.

At the end of a training session a cool down is important, and this includes stretching of the calf, hamstring, thigh, hip and back muscles. The runner should also do some stretching of the arm and neck muscles which tend to get forgotten about. Technique is key when it comes to stretching, and runners would be advised to seek advice on the best way of stretching these muscles.

Remember that stretching can also lead to injury, if not done by the right person (hypermobile people may need to avoid certain stretches), in the right way, at the right time.

## Strength and stretches

### Hamstrings

Lie on your back and clasp your hands under your thigh. Keep your knee pointing to the ceiling and stretch your leg until you feel a stretch (your knee doesn't have to be straight). Hold for 20 seconds and repeat 5 times



### Quadriceps:

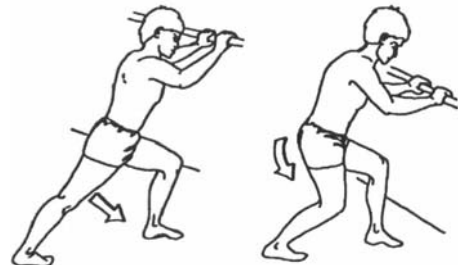
Stand and hold onto a support. Keep your back flat and draw up your bent knee. Keep both thighs level to each other and feel the stretch in the front of the thigh. Make sure you do not allow your back to arch as this will reduce the stretch. Hold for 20 seconds and repeat 5 times



### Calves

**Straight leg:** Stand with your affected foot behind you and keep your heel on the floor as you lean forwards until you feel a stretch on your calf. Make sure your feet are both pointing straight ahead. Hold this for 20 seconds and repeat the exercise 5 times

**Bent leg:** Bring the back foot in a bit and bend the knee until you feel a stretch lower down in the Achilles tendon. You can balance out your weight on both legs as you stretch. Hold this for 20 seconds and repeat the exercise 5 times



### Lunges:

Step forward into a lunge so that both legs make an angle of about 90. Lunge down until your back knee is a few cms from the floor and then raise up. Make sure your hips are square as you go down and that your knees are in line with your feet. Repeat 3 x 15

*Progression: use hand weights*



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### Single leg squats:

Stand preferably in front of a mirror and perform a single leg squat. Make sure your belt line stays level and that your knee bends over your second toe. Repeat 3 x 15.

*Progression: use hand weights*

Note: If your calves are tight you may find you cannot bend very far in which case you can place a folded towel under your heel. This also means you need to work hard on your calf stretches!



**Calf raises:** Stand supported and rise up on both legs, then transfer your weight over to one leg and slowly lower down. Replace the other foot so both feet are again on the floor and repeat the exercise. 3 x 15

*Progression: wear a backpack with weight in it*



**Balance work:** Stand on a wobble board and try to balance so that the base remains flat. If you are able to do this comfortably for 60 seconds then try with just one leg. If this becomes easy then try performing mini squats and then single leg squats. Do not compromise your control – it is important to maintain the correct alignment as you perform these exercises.

If you do not have a wobble board then try balancing on one foot for 60 seconds and progress to doing this with your eyes closed or while throwing and catching a ball.



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## **Benefits of Sports & Therapeutic Massage**

- It helps to decrease the recovery time between training sessions especially after longer runs.
- Helps to identify areas of tightness by compensations when training.
- It decreases the likelihood of injuries due to the repetitive nature of running.
- Helps to maintain flexibility and pliability of muscles allowing them to function effectively.
- Maintains the condition of the actual muscle tissue as it encourages the re-organization of muscle architecture by returning the muscle to its normal length.
- Decreases the amount of stiffness experienced after an increase in mileage.
- Think of it as a reward for your legs!

## **When Should You Have Massage?**

Most people find scheduling appointments on the lighter training days (usually Thurs or Fri) more beneficial. This is mainly because it enables the therapist to treat any specific muscular tightness allowing a couple of day's recovery before the long training run on Sundays.

Alternatively some runners enjoy having the massage following their longer run to allow them to maximize their training performances throughout the week.

It is suggested that whilst people are training for a half or full marathon they receive weekly massages. It is especially important to have massage towards the build up to the longer training weeks, usually placed about 4 weeks prior to the marathon.

## **Post Marathon Massage**

It is seen to be more valuable to receive massage as soon as possible following the event. As this helps to improve the recovery rate and reduces the intensity of delayed muscle soreness (DOMS) experienced 1-3 days post marathon.

The style of massage is different from those received before the event or in other treatment sessions as it is geared at aiding the lymphatic system in its attempt at waste removal and recovery. Therefore, the massage techniques are applied more gently and fluently. As micro damage to the muscle tissue occurs during longer runs and the marathon the massage will be lighter also.

## **Marathon Nutrition**

### **Diet Preparation**

- A balanced diet that is high in carbohydrate and low in fat, and provides foods from all essential food groups ensures that you have an adequate supply of all nutrients.
- Make sure that you eat breakfast and if running early in morning and can't stomach a meal, try a fruit smoothie drink to make sure that you are not training on empty.
- Make sure you eat a carbohydrate rich snack containing some protein within 30 minutes following training to help the body refuel, and help muscle repair and regeneration. If you do not refuel adequately on a regular basis, this will cause reduction in your carbohydrate stores, making training more difficult.

### **Marathon Preparation**

- Hydrate well the week before the marathon, water is ideal. This is especially important during the carbohydrate loading period as research has shown that carbohydrates convert to glycogen more effectively when accompanied with the consumption of water.
- If travelling by plane carry bottled water with you as flying at high altitudes causes dehydration.
- Start carbohydrate loading three days prior to the marathon. So, continue with your high carbohydrate training diet (contain 5-6g carbohydrate per kg of body weight). Then increase carbohydrate intake slightly to 8-10g/kg body weight in the 3 days before the race.

### **The Night before the Marathon**

- Don't overeat late the night before as this will make it harder to fall asleep.
- Eat carbohydrate products that you have tried and tested during your training period.
- Pasta sauces should be kept simple and avoid eating lots of salad items and vegetables (roughage) as these may prove to be troublesome on race day, possibly causing digestive problems.
- Stick to water during the evening meal. Coffee and tea contain caffeine and may possibly disrupt your sleep patterns. Caffeine and alcoholic beverages are also diuretics, which contribute to dehydration.

### **Pre-race meal**

- On the morning of the marathon enjoy a light meal allowing three to four hours for it to digest.
- You may find it difficult to eat because of nerves; in which case try using a liquid meal such as fruit smoothie, or fruit yogurt drink.
- As an ideal the pre-marathon meal should contain about 200-300g of carbohydrate and should be low in fibre, so that it does not cause a stomach upset. It is important to practice the pre-marathon breakfast during training to find out what works best for you.
- Take a snack, or drink in the hour before the marathon for an extra boost of energy to help delay fatigue; try dried fruit, low fat fruit yogurt, cereal or energy bar or a sports drink.
- Drinking 400-600mls of fluid, two hours before the race, this enables you to hydrate and also find time for a visit to the lavatory. Then top up with 200-250mls of fluid 15-20 minutes before the race starts.

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## During the Marathon

- During the race start topping up carbohydrate levels to ensure you don't run out. Start after about 30 minutes into the race, aim for about 30-60g carbohydrate per hour and continue at regular intervals. Try energy bars, gels, bananas, dried fruit-bars or an isotonic sports drink. But do not take anything on board in the race you haven't already tried in training.
- Start to replace fluids early into exercise, don't wait to become thirsty. Drink small amounts frequently to avoid gastric disturbance. Start replacing fluids within the first 30 minutes of exercise, aim for 150-350 mls of fluid every 15-20 minutes during exercise.
- An isotonic sports drink is an ideal way to refuel and rehydrate. Start practicing drinking during training to help reduce stomach upsets during the race.

## Ideas for carbohydrate during the race

Sports drink  
1 x energy gel  
2 x cereal bars  
2 x pieces of fruit  
2 x handfuls dried fruit

## Post Marathon

- Remember to eat within the hour to make sure that your body has the fuel to start to recover.
- Eat a carbohydrate snack with some protein i.e. fruit yogurt and sandwich, banana and yogurt drink, sandwich.
- Start replacing lost fluids by drinking until urine appears pale in colour. Eat a high carbohydrate meal following the marathon and continue to eat carbohydrate rich meals for the next week to replenish stores.

## Checklist

- Ensure that your training diet is high in carbohydrate
- Eat a high carbohydrate snack with some protein within first 30 minutes after training
- Practice drinking and eating during long runs and practice your pre-race breakfast
- Eat carbohydrate rich meals 3 days prior to the race
- Eat pre-race breakfast 2-3 hours before the marathon
- Take pre-race snack within 1 hour before the marathon
- Replace fluids early in the marathon, 150-350mls every 15 to 20 minutes (use a sports drink)
- Take 30-60g carbohydrate every hour, start 30 minutes into race
- Recovery strategy – remember to eat and drink straight after race, make sure you have prepared for this

### London Running Clubs include:

- **Serpentine**  
www.serpentine.org.uk
- **Mornington Chasers**  
www.morningtonchasers.org
- **Dulwich Park Runners**  
www.dulwichparkrunners.com
- **Herne Hill Harriers**  
www.hernehillharriers.co.uk
- **Wimbledon Windmilers**  
www.windmilers.org.uk

### Training Routes:

It is advisable to try and pick routes that take you through the park on a soft track as opposed to just sticking to concrete pavements. If running on a road remain aware of road safety and try to vary the side of the road on which you run taking into consideration the camber of the road.

Try the following links to help you plan your running route:

- <http://www.walkjogrun.co.uk/>
- <http://www.realbuzz.com/flmroutes/>

### Equipment:

#### What to buy?

For training and on the day - suggested equipment is:

- Trainers
- Running Bottle or running belt for water bottle.
- Trousers
- Sports Bra
- Sports Watch
- Heart Rate Monitors
- Cap
- Sunscreen
- Plasters
- Blister Plasters
- Vaseline

#### Where to buy?

The London Marathon Store - [www.londonmarathonstore.com](http://www.londonmarathonstore.com)

Runners Need- [www.runnersneed.co.uk](http://www.runnersneed.co.uk)

Complete Runner - [www.completerunner.co.uk](http://www.completerunner.co.uk)

Pro feet - [www.profeet.co.uk](http://www.profeet.co.uk)

Run and Become – [www.runandbecome.com](http://www.runandbecome.com)

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## Running Shoes

The choice of an appropriate running shoe is an essential element in the successful completion of a training programme. Choosing this shoe is not brand dependent but rather on the varying individual characteristics of the runner. These include:

- Foot shape: High arch, normal arch or low arch profile
- Foot type: Supinator, pronator or neutral
- Weight: Which cushioning system is most appropriate?

These questions are best answered by a specialist running shoe store, where they can analyse your basic biomechanics and advise you appropriately.

There are various considerations before contemplating purchasing a running shoe:

- Buy the shoes at the end of the day when the foot is swollen.
- Always buy the shoe with approximately ½ a thumbnails width from the longest toe.
- Buy the shoes wearing the socks you run in.
- Replace the running shoes based on the midsole wear (approx 400 miles) as opposed to the wear on the rubber outsole.
- Do not run the actual marathon in a new pair of shoes but rather allow 80 – 100 miles wear in.
- Consider purchasing two pairs of shoes once you are happy with a model as this prolongs the life of the shoes.
- Never machine wash your shoes or dry them on a radiator.

## Testimonials

I first came to Pure Sports on the recommendation of a friend who had been successfully treated for a serious sports injury. I was immediately aware of the commitment and dedication from the medical professionals who took an integrated approach to recovery by assessing not just my physiology but also my goals and motives. My initial assessment by Dr Mike Bundy was incredibly thorough. Not only was he able to accurately diagnose my injury but he spent enough time talking to me to make an assessment of what motivated me, how important my goals were and how I would deal psychologically with the injury. He referred me to Rebecca Christenson for physiotherapy and together they were able to devise an individual programme of rehabilitation aimed at helping me adapt mentally as well as physically.

My sessions with Rebecca became an integral part of my training. Not only was she my physiotherapist but she was also able to give me invaluable advice and support on training, nutrition and injury prevention as well as how to maintain a healthy mindset – something I have learned is crucial for any competitive sport. Under her guidance I began to start training again as she painstakingly drew up a week by week plan based on the physical limitations associated with my injury. Rebecca carefully managed my expectations and kept a close eye on my development whilst encouraging me towards my goal.

As a keen runner who had just completed their first marathon I came to Pure Sports for medical treatment. In less than a year, I was competing at an elite level, having set and more importantly, achieved some ambitious goals. I have no doubt that I would not have got there without the treatment, support and endless advice from Mike and Rebecca. Not only have they helped me achieve my goals but they have inspired me to set them”

## Catherine Wilding

John

Well - I did it! I finished my first ever marathon in 4 hours 21 minutes. To be honest, when I started, I really didn't think I'd get to the finish, though. I'd tried to run quite a lot over the previous weekend (2x 10 miles) and felt very sore across the top of both buttocks and at the bottom of my spine. My fear was that somehow I'd re-injured myself. Even wandering around NY shopping was painful. Anyway, after a couple of visits from an NY masseur and any number of ice baths, I went for it. Much to my surprise I found that after the first couple of miles I felt loose and full of energy. So I accelerated a bit, did the first half in 1hour 52 minutes and felt good for a sub 4 hour finish. Good that was until the Queensboro Bridge (@ c. 16 miles) which was a long hard climb. This slowed me down and I never really recovered pace. Then by the time I'd got to 21-22 miles, I was running on empty. The last 4 - 5 miles home were purgatory. With hindsight it's not surprising that not having done more than 1 hour 20 minutes exercise in one go since the back of August, my stamina was not what I hoped but the important thing was that I didn't injure myself and all of the good work over the last few weeks hung together. Strangely almost, I had no pain at all afterwards beyond feeling a bit stiff. So thank you so much for your time, attention and encouragement over the last few weeks. It was a fantastic experience about which I feel enormously proud and which I couldn't have done it without you.

## Nicholas Hill Nov 05

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“For me running the marathon was the ultimate challenge, it represented making the impossible possible as 10 years ago I had major spinal surgery. The treatment I received from the sports physician, physios and podiatrist at pure sports medicine was incredible, I really felt supported and encouraged during my training and treatment. The care, focus and energy shown to me by the Pure Sports Medicine team made it possible for me to attain my goal. Thank you; I couldn't have done it without you!”

### **Penny Bateman**

As a totally novice runner & with 6 weeks until my first marathon, I was slightly scared when advised I needed to go & see a physio with regards to the ankle & knee pain I was experiencing. This was totally unnecessary! Karen at Pure Sports was absolutely amazing. She patiently explained everything and exactly why the pain was being caused and helped ease it. Added to which she gave great tips for exercises to do at home as well. An absolutely brilliant form of alleviating pre marathon aches, strains & psychological uncertainties/doubts any first time marathon runner will undoubtedly experience.

### **Jessica Holmes**

After months of training hard for my first London Marathon I was upset and disappointed when I developed a pain in my ankle which was stopping me from running. A friend recommended Pure Sports Medicine to me so I booked an appointment with one of their physiotherapists, Rebecca Christenson. Rebecca diagnosed my tib post dysfunction straight away and after only a few sessions and lots of home exercises taught by Rebecca I was on the road to recovery. To my delight I completed the Marathon in 3 hrs 47 minutes. I know that I could not have completed the run without Rebecca's help. I could not recommend Pure Sports Medicine highly enough.

### **Nina Osborne July 2006**

Most people baulk at the idea of training for a full marathon. Imagine attempting the 42km stretch with just your upper body.

Ade Adepitan, an ex- representative of the Great Britain Wheelchair Basketball team has been set the challenge of completing this years' London Marathon.

As a child Ade contracted Polio when he was 6 months old affecting the muscles from this mid torso downwards hugely and reducing the strength of his lower limbs. He is unable to stand and walk unaided, therefore, uses a wheelchair to maximize his ability.

The racing wheelchair design is completely different from a day-chair. It allows Ade to lean forward to become more aerodynamic and make better use of his upper back muscles.



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Ade has to complete his first marathon within a 3½ hour timeframe so the intensity of his training sessions is enormous. With the considerable amount of strain on the muscles and joints involved with the training for this event Ade feels that receiving regular weekly massage treatment will maintain good muscle health and prevent injuries.

This is hugely important for Ade as he relies on being able to use his upper body strength for everyday movements and getting around. It will also help him adapt from sprint to endurance based training which is required for the marathon.

### **Top Running Tunes/ Magazines/ Books**

- Don't Stop Me Now – Queen
- Show Me The Way To Amarillo - Peter Kaye
- We Are The Champions - Queen.
- Eye of the Tiger – Survivor
- Chariots of Fire – Vangelis
- Hey Ya – Outkast
- Wake Up Boo – The Boo Radleys
- The Boxer - Simon and Garfunkel
- Jumping Jack Flash– The Rolling Stones
- Summer of '69 – Bryan Adams
- Freedom - Neil Young
- Run on – Moby
- Elevation – U2
- Jungle Boogie – M Kool & The Gang
- Don't give up – Chicane
- Where's your head at – Basement Jaxx
- Insomnia – Faithless
- Love Generation – Bob Sinclar
- We come one - Faithless

### **Magazines**

- Runner's World Magazine
- Running Times

### **Books**

- Running Made Easy- *Susie Whalley*
- The "Runner's World" Complete Book of Running: Everything You Need to Know to Run for Fun, Fitness and Competition- *Amby Burfoot*
- Runner's World" Complete Book of Women's Running - Runner's World Complete Books- "*Runner's World*", *et al.*
- Marathon: From Start to Finish- *Sam Murphy*
- The Non-runner's Marathon Trainer- *David A. Whitsett, et al.*
- Marathon!: You Can Do It!- *Jeff Galloway*
- Marathon: The Ultimate Training and Racing Guide- *Hal Higdon*
- Barefoot Runner: The Life of Marathon Champion Abebe Bikila- *Paul Rambali*
- A World-class Marathon Runner: Making of a Champion S.- *Paul Mason*

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