Training for sprints

Fundamentals of a training program

Athlete must be
- A fast sprinter with good speed endurance
- Good at learning neuromuscular skills
- Strong
- Supple
- Competitive
- Mental strong and confidant

Training sessions for developing athletes will include (volume light)
- Mobility work and dynamic warm up
- Drills which enhance sprinting technique
- Speed work
- Speed endurance work (when applicable)
- Strength development
- A cool down

Training sessions for mature athletes will include (volume higher)
- Mobility work and dynamic warm up
- Drills which enhance sprinting technique
- Speed work
- Speed endurance work (bulk of winter work)
- Strength adaptation (through free weights, plyometrics etc)
- A cool down

Equipment for sprinting

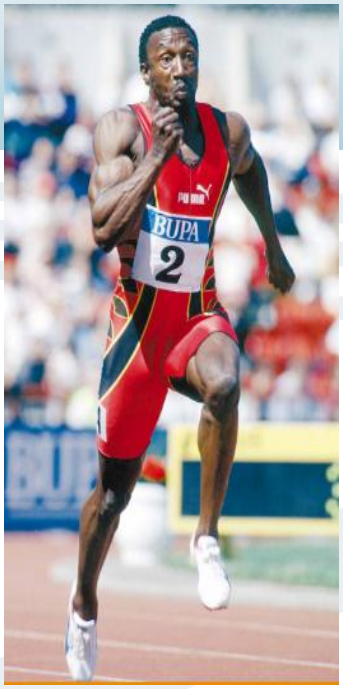
The Athlete:
- Starting blocks (available at most tracks).
- Warm clothing that allows an unrestricted sprinting action. This is vital in cold conditions.
- Two pairs of spikes: light weight sprint spikes for competition, and middle distance spikes for training (these give greater support for the foot when running at slower pace).
- 3m tape measure (for block sessions).

The Coach
- A few stop watches with whistles (for timing and controlling sessions).
- Clappers (replacing the starting pistol) for starts sessions.

Adapted from

Fredericton Legion Track Club

SPRINTS



Sprinting Basics

The challenge for a sprints coach can be compared to putting together a jigsaw puzzle. The pieces might all be there, but they must be assembled in the correct way to ensure that the sprinter runs faster. The demands of the event must be understood, as must the individual strengths and weaknesses of each athlete. From 60m to 400m, each element of the race must be addressed in constructing a training cycle appropriate to the age and athletic maturity of the athlete.

Sprinting speed is a combination of stride length and leg speed (stride frequency). The best sprinters are those who can optimize both elements to achieve maximum speed and develop the endurance necessary to sustain speed to the end of the race. The sprinter must have dynamic muscular strength, aligned to flexibility which will support good stride length, and also good neuromuscular co-ordination to achieve high leg speed. Upon this foundation, essential speed endurance can be developed. The shorter sprints (60m and 100m) rely heavily on muscular power, but as distance increases from 200m through to 400m, speed endurance and race strategy become more important. As all sprinters use the anaerobic (without oxygen) energy systems, these must be trained to provide energy for the duration of the race.

Basic Rules of Sprinting

Recommended reading on the IAAF web site: www.IAAF/Downloads/constitution & rules/IAAF competition rules

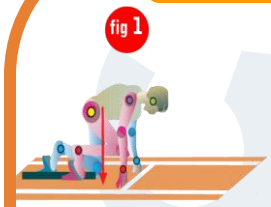
The Start rule 162
- Starter's instructions paragraphs 2, 3, 4 & 5
- False start paragraphs 6, 7,& 8

The Race rule 163
- Running in lanes paragraphs 3, 4 & 6
- Wind measurement paragraphs 8, 9 & 10

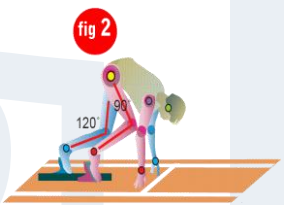
The Finish rule 164
- Finishing line paragraph 1
- When do you finish paragraph 3

Sprint

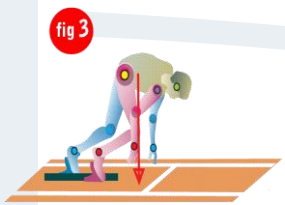
The sprint start



On your marks (fig 1)
Shows the "on your marks" position (Medium Start). The weight is evenly distributed between hands, feet and one knee. The block angles are 45° for the front and around 70° for the rear block. The head is naturally aligned with the body and should be throughout the start.



Set position (fig 2)
The sprinter is now in the "set" position. This is achieved by lifting the hips upwards and forwards while still applying pressure to both blocks. The classic knee angle shown should be apparent. The shoulders should be just forward of the hands. This is not necessarily a comfortable position; it is only held for 1 to 3 seconds.



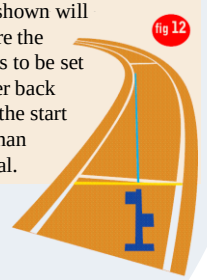
Break contact with the track (fig 3)
After the sound of the gun, the first action is increased pressure on the blocks. The first visible movement is the hands leaving the track and vigorously achieving synchronization with the legs.

Drive (fig 4)
Both legs are applying force to the blocks with the arms enhancing leg forces. At this point the sprinter is off balance and consequently must leave the blocks fast!

Break contact with the blocks (fig 5)
Shows the last contact with the blocks as the front toe is applying the final force to the front block. The ankle, knee, and hip should be both fully extended and in a straight line.

First stride (fig 6)
The first contact with the track completes the first stride. The sprinter has recovered balance now that the weight is partially supported but the athlete must continue to drive forwards to retain balance.

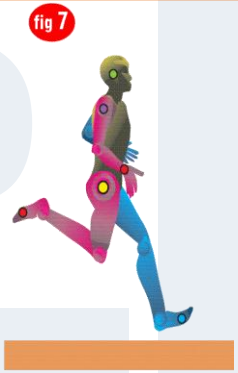
Tangential setting (fig 12)
When setting the blocks on a bend, it is desirable to modify the block position to allow the first 10m to be run in a straight line and thus not have to negotiate the bend whilst in the initial drive phase. By sprinting the bend close to (but not on) the inside line, the shortest possible distance is run. This can save 1.5metres over the sprinter running in the middle of the lane. Note the imaginary start line shown will require the blocks to be set further back from the start line than normal.



The starting position

The start position used by modern sprinters uses one of the three block spacings described below (distances given are approximate and are dependant on leg length):-
The Bullet Start; Distance between blocks less than 25cm. Gives rapid block clearance, but a lack of force off the blocks. This gives advantage over the first few strides but it can be lost after 25m. This position is used only occasionally.
The Medium Start; Distance between blocks from 28cm to 53cm. The block clearance is slightly slower, but with more force than with the "Bullet" and faster but with less force than the "Elongated" type. This gives a better platform for the whole race which becomes evident after the first 25m. This position is the most popular.
The Elongated Start; Distance between blocks over 60cm. The block clearance is the slowest of all three, but with the most power. This position is rarely used.

The sprint stride



Landing phase (fig 7)
Shows the start of the landing phase, the soon to be support leg is a long lever. The recovering leg is a short lever. This reflects the positions of the arms. As the left leg is landing, the right elbow should have an open angle as it drives back, the recovering left arm is in forward motion with a shorter lever.

Support phase (fig 8)
In this view we see the 'support phase', the first point of contact in the stride cycle. The foot contact should not be much in front of the hips as this will produce a braking effect.

Start of drive phase (fig 9)
The hips have passed over the contact foot to start the drive phase and the recovery leg is on its forward path with the knee angle starting to extend.

End of drive phase (fig 10)
Shows the completion of the drive phase, the rear leg is fully extended, the front leg has maximum knee lift and the arms are at their end range positions.

Flight phase (fig 11)
In the "flight phase" shown, the body has broken contact with the track. No forces can be applied by the athlete. The forward arm has started to drive backwards assisting the opposite (front leg) to drive back onto the track. The rear arm having ended its drive now starts its recovery as does the opposite leg.

Sprinting speed is the balance of stride length x leg speed. To produce maximum velocity, each must be at its optimum, do not sacrifice one at the expense of the other i.e. over striding or pattering! Note the relationship of the arms and its opposite leg action in the drive and the recovery phases. A much neglected area of the stride cycle is the extension and flexion of the ankles. Most of the range of movement patterns associated with the stride cycle can be broken down into drills, which will improve co-ordination