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## Sprinters success secret: “Decoded”

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### Abstract

Success of an sprinter has always been an mystery. The secret formula of a champion is never revealed by the sprinter. Here an attempt is made to formulate the best approach to attain success secret which will give a sprinter an overall advantage and boost to perform well and gives success, this is done by stepwise approach.

**Keywords:** Sprinters success secret, human prehistory, ancient Olympic pentathlon

### Introduction

The sport of track and field has its roots in human prehistory. Track and field-style events are among the oldest of all sporting competitions, as running, jumping and throwing are natural and universal forms of human physical expression. The first recorded examples of organized track and field events at a sports festival are the Ancient Olympic Games. At the first Games in 776 BC in Olympia, Greece, only one event was contested: the stadion footrace. The scope of the Games expanded in later years to include further running competitions, but the introduction of the Ancient Olympic pentathlon marked a step towards track and field as it is recognized today. Athlete is a person trained or gifted in exercises or contests involving physical agility, stamina, or strength; a participant in a sport, exercise, or game requiring physical skill. Races over short distances, or sprints, are among the oldest running competitions. The first 13 editions of the Ancient Olympic Games featured only one event, the stadion race, which was literally a race from one end of the stadium to the other. Sprinting events are focused around athletes reaching and sustaining their quickest possible running speed. Three sprinting events are currently held at the Olympics and outdoor World Championships: the 100 metres, 200 metres, and 400 metres. These events have their roots in races of imperial measurements that later changed to metric: the 100 m evolved from the 100 yard dash, the 200 m distances came from the furlong (or 1/8 of a mile), and the 400 m was the successor to the 440 yard dash or quarter-mile race.

At the professional level, sprinters begin the race by assuming a crouching position in the starting blocks before leaning forward and gradually moving into an upright position as the race progresses and momentum is gained. Athletes remain in the same lane on the running track throughout all sprinting events, with the sole exception of the 400 m indoors. Races up to 100 m are largely focused upon acceleration to an athlete's maximum speed. All sprints beyond this distance increasingly incorporate an element of endurance. Human physiology dictates that a runner's near-top speed cannot be maintained for more than thirty seconds or so because lactic acid builds up once leg muscles begin to suffer oxygen deprivation. Top speed can only be maintained for up to 20 metres.

The 60 metres is a common indoor event and indoor world championship event. Less-common events include the 50 metres, 55 metres, 300 metres and 500 metres which are run in some high school and collegiate competitions in the United States. The 150 metres, though rarely competed, has a star-studded history: Pietro Mennea set a world best in 1983, Olympic champions Michael Johnson and Donovan Bailey went head-to-head over the distance in 1997, and Usain Bolt improved Mennea's record in 2009.

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## Methodology

A systematic and stepwise approach towards an individual (sprinter) has to be undertaken which includes a detailed anatomy of the body structure, well planned sports training, balanced diet, a potent sports medicine knowledge and a strong psychological balance and ethics.

### 1. Anatomy

Sprinting uses the same muscles as running, but requires that they are considerably more limber for short bursts of speed while avoiding injury. Running is powered by the legs, hips and glutes, so training the same muscles with a focus on speed will prepare you for sprinting. While training, avoid raising on the toes or pumping too high with the arms. Allow the primary muscles used for running to provide the power to sprint.

#### i) Quadriceps

The quadriceps are the muscles at the front of the thighs. These muscles raise the leg and propel the runner forward.

#### ii) Hamstrings

The hamstrings are the agonist muscles at the back of the thighs that work with the quadriceps.

#### iii) Glutes

The glutes, or muscles of the backside, are some of the largest muscles in your body. Sprinters use them to assist in propulsion and to support the work of the quadriceps and hamstrings.

#### iv) Hip Flexors

The hip flexors are a group of muscles that surround the hips and work with the glutes, quads and hamstrings.

#### v) Calves

The calves comprise two muscles: gastrocnemius and soleus.

### 2. Traing

Before a athlete begins his training it is very important to do warm up so that all the muscles are stretched, increase blood circulation and most important to avoid injury of the muscles while training.

Following are the set of exercise which will help sprinter to attain faster burst:

- i) Tuck Jumps. (2x6)
- ii) Rocket Jumps. (2x6)
- iii) Lunge Jumps. (2x6)
- iv) Line Hops. (2x8)
- v) Skips For Height. (3x30 meters)
- vi) Skips For Distance. (3x30 meters)
- vii) Straight Leg Bounds. (3x30 meters)
- viii) Forward Weight Throws. (5)
- ix) Overhead Weight Throws. (5)

- i) Tuck jumps are done by squatting down then exploding off the ground as high as possible. While in the air, the goal is to "tuck" your legs into your chest as high as possible before landing again. Immediately upon landing, quickly squat down and explode off again. There should be a constant and smooth transition throughout all the jumps.
- ii) Rocket jumps are performed exactly like tuck jumps in the initial exploding phase. Except this time, the point is to get a full stretch from the tips of your fingers to your

toes. While in air, your body will look like a straight line. Immediately upon landing, quickly squat down and explode off again.

- iii) Lunge jumps are done by beginning in the "lunge" position then exploding off the ground. While in air, your legs will cycle so the front leg is behind you and the leg that was behind you is in front. The goal is to get as high as possible and to land in the lunge position with the legs that were switched in air. Then, explode off again.
- iv) Line hops are the quickest moving exercise out of the nine. Draw an imaginary line and stand on one side of it with your feet close together. The idea is to bounce back and forth across this "line" as quickly as possible while your feet stay close together. To keep a good balance, extend your arms out to the side.
- v) Skips for height are one of my favorites! They're simple. Using the basic skipping motion, spring up as high as possible with each skip. Really pump your arms when you explode for each skip. I do these for 30 meters, walk back and then repeat the drill.
- vi) Skips for distance are also great ones. Again using the basic skipping motion, the goal is to spring forward as far as possible. They're similar to bounding but not as strenuous on the body, so you won't get as beat up. Like the skips for height, be sure to pump the arms and use all of your leg, calf and ankle muscles. I also use 30 meters for these.
- vii) Straight leg bounds are great for targeting the hamstrings and glutes. They're performed by keeping your legs as straight as possible throughout the whole exercise. To cover ground, emphasize snapping your leg down and exploding forward instead of trying to reach. Thirty meters is a good distance for these also.
- viii) Forward weight throws are a great overall strength and power exercise. The throw is performed by holding a shot put between your legs, squatting down and then exploding up and out while your arms rip forward to release the weight. Use a challenging weight without sacrificing technique or possible injury. The goal is to throw the weight as far as possible.
- ix) Overhead weight throws are also great for your overall power output. Although the weight is thrown behind you, the execution is similar to the forward weight throws. Stand with your back facing wherever you're throwing, hold the weight between your legs, squat down, then explode up and back releasing the weight over your head. This is definitely my favorite throwing exercise! It's a good idea to keep a record of your throws and monitor your progress throughout the season.

### 3. Diet

Carbohydrate intake should be sufficient (\*5 g/kg body mass) to maintain glycogen stores during training.. Energy intake should be carefully considered: if increased muscle mass is desired, energy intake should be increased; if muscle mass is optimal, energy intake should be maintained and perhaps monitored. Protein intake is likely adequate for the majority of sprinters, but if energy intake is increased a portion of this increase could, and perhaps should, be protein. Type of protein and timing of protein ingestion should be considered if increased muscle mass is the goal. Race day nutrition should be developed individually with the goal of avoiding gastrointestinal distress and dehydration. Creatine supplementation may enhance increases in muscle mass and strength, but sprinters must consider the extra weight gain

associated with creatine use. 3:1 or 2:1 carb –protein ratio (most commonly followed)

#### 4. Sport medicine

Sprinting actually isn't very dangerous compared to other athletic pursuits. You're more liable to get injured playing a team sport, where you're responding quickly to unpredictable changes in the game, moving laterally and vertically, diving and leaping for balls or discs, jostling for position. Sprinting is linear, straightforward. You go from point A to point B. However, the very thing that makes sprinting work so well – the fact that it represents the highest intensity your body can lead to injury if you're not prepared.

Here are a few things to keep in mind

1. Raise your body temperature.
2. Don't static stretch before.
3. Instead, do dynamic stretches.
4. Do dynamic stretches before, but not too many.
5. Do a few depth jumps.
6. Do a few trial ramp up runs.
7. Use proper technique.
8. Never run barefoot on rubberized tracks.
9. Listen to your body signals
10. Optimize your rest intervals.
11. Choose the right surface.
12. Don't sprint on a treadmill.
13. Don't neglect eccentric strength training movements.
14. Cool down.
15. Choose the right vehicle for sprinting.

#### 5. Yoga

For people who are sprinters, they're working mostly on fast-twitch muscle fibers, and there is some concern that too much stretching can convert fast twitch to slow twitch muscles. But someone that's a runner is going to run more often than not, and yoga could serve more as a way to cross train. Cross training is meant to work the muscle groups you don't usually work, and to give you a mental break—yoga is great for that. Depending on the type of TRAINING program sprinter dose based on that a customized yoga training is planned, There is some literature that shows that in order to see changes in muscle length, static stretching must be sustained over the course of weeks. Stretching once isn't going to do it, but in order to sustain that length, you need to continually practice yoga. Time on the mat can help improve strength and flexibility in the core, quads, hamstrings, and hip-flexors—all essential to run. yoga can reduce injuries through this increased strength and all-around heightened awareness of body. Yoga can be an excellent way to cross train, and a particularly good mind-cleanser.

#### Conclusion

Success stories are not predetermined but they are rather achieved by a disciplined and a systematic approach in the life of sprinter. Talent alone cannot win race but a stepwise approach and knowledge of one own body, diet, training, sports medicine and yoga when make wonders and the day of the race.

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