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## A comparative study of speed in crouch start (medium) and standing start among 4 x 100 meter relay runners

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### Abstract

The purpose of the study was to compare the speed in crouch start (medium) and standing start among 4 x 100 meter relay runners. For the purpose of the study 28 male state level 4 x 100 meter relay runners who have participated in first Haryana state senior Athletics Championship held at District Panipat in January 2015 were randomly selected as the subjects for this study. The age of the selected subjects ranged from 18-22 years. 50 meter run test is used to collect the data for speed. The 28 male relay runners are made to run 50 meter run first in crouch start medium with the use of starting block in medium start position and on the next day, all 28 relay runners are made to run 50 meter run in standing start position. The data was collected in the evening at 4:30 pm to 7:30 pm at Shivaji stadium, Panipat. To find out the significant difference in the speed variable t test was applied and the level of significance was set at 0.05 levels. The results of the study shows that crouch start medium timing is faster and better as compared to standing start timing in 50 m. run. It is recommended that athletic coaches must given regular crouch start (medium) to their trainees for excellent results in Relay races/ sprint events.

**Keywords:** Crouch start (medium), Standing start, Hand Timing, Relay runners etc.

### 1. Introduction

Athletics, also called track- and -field sports or Track & Field, a variety of competitions in running, walking, jumping and throwing events. Although these contests are called Track and Field (or simply track) in the United states, they are generally designated as athletics elsewhere. Track -and -field athletics is the oldest forms of organized sport having developed out of the most basic human activities - running, jumping and throwing. Athletics have become the most truly international of sports, with nearly every country in the world engaging in some form of competition. Most nations send teams of men and women to the Olympic Games and to the official world championships of Track and Field. There also are several continental and intercontinental championship meets held, including the European, commonwealth, African, Pan-American and Asian.

All track events begin with the firing of a gun. In races of one lap or less the runners remain in their marked lanes for the entire distance. In longer events the runners may ignore the lane markers and run as close to the inside edge of the track as is prudent. The runner whose torso reaches the winning line first is the winner.

4 x 100 meter Relay is undoubtedly not only one of the most beautiful out also. One of the most difficult events of the athletics spectrum. The relay is most often used as the highlight of major games beginning with the Olympics in Stockholm in 1912. When the relay was first run. It is an event all on its own. It is a competition between squads which are chosen for their mental and physical qualities and victory will be achieved by the squads which has developed the most efficient technique in starting, running with a baton and passing of the baton. The demands of relay running often enable runners to find hidden reserves enabling them to excel. In the relay races teams of four athletes run separate distances, or legs. They exchange a hollow tube called a baton with in designated exchange zones. The most common relay event are the 4 x 100 meter (109.3 -yd.) relay and the 4 x 400 m. (437.2-yd.) relay. Relay meets are particularly in the United states, owing in part to the American School system, which has traditionally placed emphasis on inter scholastic team competition.

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## 2. Crouch Start

The Crouch start is used in all running events up to the 400 meters. It allows the runner, through proper positioning of his centre of gravity in the 'set' position, to respond most quickly to the gun and start the race. At the starter's command "on your marks the athlete moves forward and adopt a position with his hands just behind the starting line, the feet on the starting blocks and the knee of the back leg resting on the ground. On the 'set' the athlete lifts the knee of the back leg off the ground, thereby elevating the hips and shifting the centre of gravity forward. Finally, when the gun is fired, the athlete lifts his hands from the tracks swings the arms vigorously (One forward and one backwards) and with a forceful extension of both legs drives the body forward away from the blocks and into the running strides.

### 2.1 Types of crouch starts

- ❖ The Bunch or Bullet start: (Sometimes referred to as Bullet start) This is where the feet are close together with the toes of the back foot opposite the heel of the front foot. Sometimes the feet are even close together.
- ❖ The Medium start: The knee of the rear / back leg is placed opposite a point towards the toes of the front foot.
- ❖ Elongated start: The knee of the back leg is placed level or slightly behind the heel of the front foot.

### 2.2 Standing start

In medium distance races, standing start should be taken by an athlete because Crouch start is not beneficial in these races. In these races no signal of 'set' is given by the starter. He only says 'On your marks' at this signal all the runners take their standing stance behind the starting lines. In this position the front leg of the runner should be bend slightly and his body should also be bent slightly forward. The elbow should be bent and both arms should be relax. At this time attention of runners should be at the flush of the gun shot.

## 3. Material and Methods

### 3.1 Subjects

The purpose of the present study was to compare the speed in crouch start (medium) and standing start among 4 x 100 m. relay runners. The subjects of the present study were consists of 28 male 4 x 100 m. relay runners. The age of the selected subjects were ranged from 18-22 years. They have participated in first Haryana State senior athletic Championship held at

Shivaji stadium, Panipat in the year January 2015. The 28 male relay runners are made to run 50 meter run first in crouch start medium with the use of starting block in medium start position and on the next day, all 28 relay runners are made to run 50 meter run in standing start position.

### 3.2 Variable & Test

Variable	Test	Unit of Measurement
Speed	50 meter run	Seconds

### 3.3 Data Collection

Before the data collection, straight 50 meters lines marked on the standard 400 meter track. All athletes were asked to go for proper warm up. The test for speed were demonstrated and complete instructions regarding test were given to all the relay runners. When all relay runners were ready for the test, the data was recorded by the administering the test.

## 4. Administration of Test

### 4.1 50 meter run

Sprint or speed tests can be performed over varying distances, depending on the factor being tested nad the relevance to the sport. The 50 meter sprint is part of the international physical fitness test and their protocol is listed here:

### 4.2 Purpose

The aim of the test is to determine acceleration and speed.

### 4.3 Equipment Required

Measuring Tape or marked track, stopwatch, cone markers, flat and clear surface of at least 70 meter.

### 4.4 Procedure

The test involves running a single maximum sprint over 50 meters, with the time recorded.

### 4.5 Results

To trials are allowed, and the best time is recorded to the nearest 2 decimal places.

## 5. Result & discussions

The results of the study shows that in crouch start (medium) timing is faster than the standing start timing in 50 meter run.

Table 1

Result of 50 meter run Test	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig.(2-tailed)
Crouch Start (Medium)	28	6.553571429	0.376732681	0.071195785	17.972	27	P< 0.01
Standing start	28	6.988571429	0.357540097	0.067568727			

Significant at 0.05 level

Table Value = 2.0518

The relay runners crouch starts (medium) mean performance in 50 m. run is 6.553571429, standard deviation is 0.376732681 and Std. Error Mean of crouch start (medium) is 0.071195785 respectively. The relay runners's standing start mean performance in 50 m. run is 6.988571429, standard deviation is 0.357540097 and std. Error Mean of standing start is 0.067568727. The relay runners in crouch start medium are having the better speed i.e 6.553571429 compare the relay runners in standing Start is 6.988571429. The t value is 17.972 which is significant at 0.05 level.

## 6. Conclusion

Within the limitations of the present study it may be concluded that crouch starts (medium) having better speed compare to standing start in 4 x 100 meter relay run.

## 7. Recommendations

1. It is recommended that athletic coaches must given regular crouch start (medium) training to their trainees of relay runners to achieve better performance.
2. It is recommended that similar studies can be conducted on hurdles and relay in athletics and also on female athletes.

### **8. Acknowledgement**

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