History Research Journal

ISSN: 0976-5425

Vol-5-Issue-6-November-December-2019

Different Block Starting Position Attributing To Athletic Performance

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Abstract

Kinematic Parameters angle of block release, initial velocity, final velocity, initial Acceleration. Eight Female State level athletes have been selected purposively, the age of the subjects were 18-25 ranged. 1 Mean comparison of Initial Velocity of Three different block starting position shows that the mean Initial velocities of athletes (appears that the group mean to start the sprint with foot distance of twelve inches, sixteen inches and twenty inches were 1.42±0.17sec, 1.45±0.13sec and 1.45±0.16sec respectively. The mean value of final velocity to cover 5 meter with foot spacing of 12inchs, 16inchs, and 120inchs were 5.73±.17sec, 5.93±.17sec, 5.78±.17sec respectively. Figure 1 clearly shows that the initial velocity is less in each starting position in comparison to final velocity which is much greater. Table 2: Mean difference of Initial Acceleration in different starting position, bunch start, medium start and elongated start. Table 2 shows the mean difference is lower in case of Bunch start for this group of subjects and SD also lower. The Mean of Initial acceleration for bunch start was 6.78 and SD (.40). Where Mean of Initial acceleration for Medium start (7.34) which higher than the others and SD was Higher than Bunch start and Similar with Elongated. Elongated Initial acceleration SD was. In the present study there were 8 Female subjects- trained athlete group. While analysing the mean Initial velocities of athletes (appears that the group mean to start the sprint with foot spacing of 12 inches, 16 inches and 20 inches were 1.42±0.17sec, 1.45±0.13sec and 1.45±0.16sec respectively. The result suggests that the adoption of medium block spacing is preferred. The mean value of final velocity to cover 5 meter with foot spacing of 12inchs, 16inchs, and 120inchs were 5.73±.17sec, 5.93±.17sec, 5.78±.17sec respectively. The Mean value of Initial Acceleration

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to cover 5 meter with foot spacing of 12inch, 16inch, 20inch were 6.78±.65sec, 7.33±.60sec, 6.74±.68sec respectively. It has been analysed that 12 inches foot distance was lower than the other two. There is difference in-between 16 inches as well as 19 inches. With comparison to other two medium distance block spacing has the higher velocity. Medium foot spacing mean value is higher than the other two.

Introduction

Block starting is the most essential and beneficial part of sprint start. There are three different block start, those are bunch start, medium start and elongated start. These three different block start depends on its distance. Generally short height athletes used to take bunch start, medium height athletes used to take medium start and tall height athletes used to take elongated start. But it totally depends on athlete's comfortable zone. There are some different phases for 100mtr sprint. Here the researcher tends to find out the effect of different block starting position on initial acceleration. It is an integral part of the total race and consequently is not distinct from the entire sprinting event.

Hypothesis

It will be hypothesized that:-

H1: It may be Hypothesizes that there will be a significant difference in Initial Velocity among different Block starting position.

H2: It may be Hypothesizes that there will be a significant difference in Final Velocity among different block starting position.

H3: It may be Hypothesizes that there will be a significant difference in Initial Acceleration among different block starting position

Objectives Of the Study

To determine different block start.

To determine Initial acceleration.

To find out the effect of different block start on initial acceleration.

To know the different joint angle at the time of block start.

To know the advantage of taking different starting position to gain the maximal initial acceleration.

Significance of the study

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The study will provide guideline for physical education profession.

The study will be helpful to design sport training.

The study will help to improve sports performance.

The study will help to know the relation for block distance and initial acceleration.

Selection of Subject

Eight Female State level athletes have been selected purposively, the age of the subjects were 18-25 ranged.

Kinematic Parameters

Angle of block release

Initial Velocity

Final Velocity

Initial Acceleration

Procedure for the administering of test

Age

Age has been calculated from the matriculation certificate of the subject.

Standing Height

The subject was asked to stand erect on a horizontal surface3 of stadiometer. Then the subject was instructed to stretch upward maximally without heels touching the ground and a scale were placed on the top of the subject's head and the actual height was measured, which was recorded in meter.

Body Weight

For measuring the weight of the subject an electronic weighing machine was used which was available in the laboratory. The subject was instructed to stand on the middle of the platform of weighing machine in erect posture. The weight of each subject was recorded in kg. From the display of the weighing machine.

Administration of Bunch Start

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All the selected subjects were asked to perform 10 meter sprint start from starting block in the natural way as they actually perform. The subjects were also asked to go for complete movement of running i.e. from starting point to up to 10 meter with full execution. The path of running was already marked. The distance from front to rare block was fixed. But subject were used their comfortable leg to keep front or back. For bunch start the distance was 12inch.

Administration of Medium Start

Before starting the medium start distance of block from starting line and in between distance of block has been changed as per medium start. As bunch start subject were again asked to perform 10meter sprint start from starting block. In case of medium start the distance in between blocks were 16inch.

Administration of Elongated Start

Again the distance has been changed of front block to rear block as well as the distance from starting line to front block. The subjects were asked to perform 10meter sprint start from block. In this case also the distance has been changed as per the fixed distance of elongated start. The distance was 20inch.

Camera position

One camera placed linear to the starting line by keeping 5 meter distance. Parallel to the 1st camera towards the running track placed the camera with 5 meter distance.

Recording of movements

In the beginning of recording of movement the purpose of recording was briefly explained to all the subjects for better understanding and to increase motivation level. The movement of the subject was recorded by two video camera manufactured by Nikon company following the basic principle of photography:

A) The recording of movement was done by fixed camera.
B) The camera was placed 5 meter far from the subject to keep “obliquity” error as small as possible.
C) The axis of the camera perpendicular to the direction of movement.

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D) The lateral distance of the camera from the shooting area was 5 meter for three different starts.

E) A reference scale was also recorded horizontally for calculating and converting the recorded distance into real distance after completing the required preparation for the subject and in the filming environment the filming was done.

Method for analysis recorded film

To measure the selected kinematic parameters the film was analysed. The captured measurement transferred from the camera to the computer for analysis purpose. Then the recorded movement was displayed by computer and the movement of each subject was analyzed with the appropriate software (kinovea- 0.8.26). The time information was obtained from the frequency of the camera (24 fps). Following the above mentioned procedure the kinematic parameters for the present study were recorded.

Measurement of initial Velocity

Initial Velocity indicates the distance from starting to release the block to landing of 1st step (10 fps). Through the software the two points was detected and by using the ruler the horizontal line was drawn from the 1st point to 2nd point. And the horizontal line gives the original displacement in reference with the calibration.

Measurement of final Velocity

Final Velocity indicates the distance from starting to Fifth step. Through the software the two points was detected and by using the ruler the horizontal line was drawn from the 1st point to 2nd point. And the horizontal line gives the original displacement in reference with the calibration.

Measurement of angle of Starting position

The angle option of the software placed on the specific joint position. After placing the angle was adjusted with the flexion areas and pointed out the original angle.

Procedure for analysis of data

The data obtained from the film analysis, Standard statistical technique was applied to analyse the data. The mean was used as the measure of central tendency; Standard deviation

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was calculated as the measure of variability; to know whether these differences among the means were statistically significant or not "f" test was done.

Level of significance

Significance was judged at 0.05 level of significance.

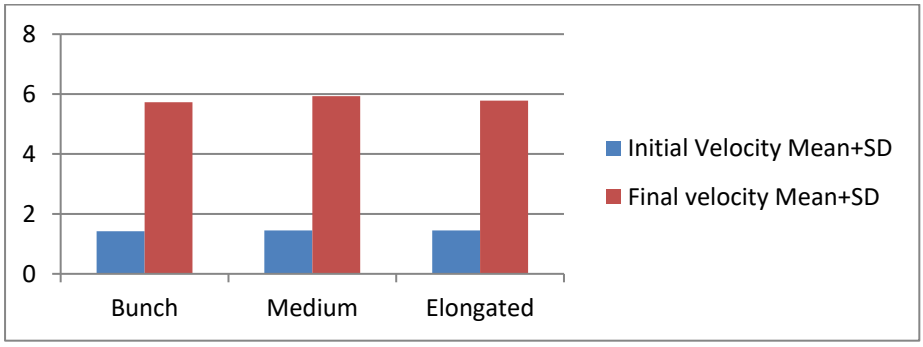
Result and Discussion

In this chapter the data were collected by the procedure mentioned in the chapter-iii had been presented. Statistical analysis of data, result obtained from statistical analysis, discussion on the result and testing of hypothesis had been included in this chapter.

Mean comparison of Initial Velocity of Three different block strating position

Initial velocity	Initial Velocity	Final velocity
	Mean+SD	Mean+SD
Bunch	1.42	5.73
Medium	1.45	5.93
Elongated	1.45	5.78

Table no. 1 shows that the mean Initial velocities of athletes (appears that the group mean to start the sprint with the block distance of 12 inches, 16 inches and 20 inches were 1.42±0.17sec, 1.45±0.13sec and 1.45±0.16sec respectively. The output suggests that medium block distance is preferred. The mean value of final velocity to cover 5 meter with foot spacing of 12inchs, 16inchs, and 120inchs were 5.73±.17sec, 5.93±.17sec, 5.78±.17sec respectively.



Graphical presentation of Mean and SD of Initial velocity and Final Velocity

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Figure 1 clearly shows that the initial velocity is less in each starting position in comparison to final velocity which is much greater.

Mean difference of Initial Acceleration in different starting position, bunch start, medium start and elongated start.

Starting position	Bunch	Medium	Elongated
Mean±SD	6.78±.40(m/s^2)	7.34±.76(m/s^2)	6.74±.76(m/s^2)

Table 2 shows the mean difference is lower in case of Bunch start for this group of subjects and SD also lower. The Mean of Initial acceleration for bunch start was 6.78 and SD (.40). Where Mean of Initial acceleration for Medium start (7.34) which higher than the others and SD was Higher(.76) than Bunch start and Similar with Elongated. Elongated Initial acceleration SD was (.76).

In the present study there were 8 Female subjects- trained athlete group. While analysing the mean Initial velocities of athletes (appears that the group mean to start the sprint with distance of 12 inches, 16 inches and 20 inches were 1.42±0.17sec, 1.45±0.13sec and 1.45±0.16sec accordingly. The result suggests that the adoption of medium block spacing is preferred. The mean value of final velocity to cover 5 meter with foot spacing of 12inchs, 16inchs, and 120inchs were 5.73±.17sec, 5.93±.17sec, 5.78±.17sec respectively. The Mean value of Initial Acceleration to cover 5 meter with foot spacing of 12inch, 16inch, 20inch were 6.78±.65sec, 7.33±.60sec, 6.74±.68sec respectively. It has been analysed that 12 inches foot distance was lower than the other two. There is difference inbetween 16 inches as well as 19 inches. With comparison to other two medium distance block spacing has the higher velocity.

Mean comparison of Block release angle of different block starting position

Starting position	Bunch		Medium		Elongated	
Angle	Front	Rare	Front	Rare	Front	Rare
	81.625^0	100.375^0	83.25	101.5^0	77.375^0	114.625^0

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