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Relationship of Linear Kinematical Variables with 30 Meter Performance at 60/75 Angle of Block in Athletic

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Abstract
The purpose of the study was to find out the relationship between Linear Kinematical variables with 30 meter sprinting performance at 60/75 angle of block in athletics. Eight male (national / inter university level) sprinters were selected from Sub Centre Sports Authority of India, Lucknow and Banaras Hindu University Varanasi who's age ranged between 17 to 30 years. The data were analyzed using Pearson's Product Moment Correlation method. Insignificant relationship was found of Linear Kinematical variables with 30 Meter performance at 60/75 angle of block in athletics.

Keywords: biomechanics, linear kinematics, block angle 30 m performance

Introduction
Studying on sprint not only is important to this event itself, but also will accelerate the development of other events. Speed is an important index in sprint event and it is relate to stride length and stride rate. In this paper, we studied and analyzed the relationship of sprinting performance at 60/75 degree of block paddle. Casio Ex-F1 speed camera and got the data with which we analyzed the technique using Silicon coach-pro7 motion analysis system.

The main objective of science is the pursuit of knowledge. In the recent era Science is a significant force in the field of sport that search solutions to performance problems. The technology enhances performances by widening the application of these Sciences. The sprint start is a systematic complex motor task characterized by large amount of muscular forces exerted in the diagonally horizontal direction with the application of lever mechanics and by the ability to generate these forces in a short time period. The major training factors affecting these actions are the Motor ability and the Reaction ability. The starting position is an important aspect of sprint performance, from which the location of the center of mass (CM) and horizontal velocity have been identified as descriptors of a good starting block performance. Several other kinetic and kinematic variables such as the rear peak force, the block time, the block leaving velocity and the block leaving acceleration, have been reported as possible parameters influencing starting block performance (Dr. S. J. Shabu, 2011) [11].

Methodology
Subjects
Eight male (national / inter university level) sprinters were selected from Sub Centre Sports Authority of India, Lucknow and Banaras Hindu University Varanasi who's age ranged between 17 to 30 years.

Linear Kinematical variable
First step length, first stride length center of gravity.

Dependent variable
30 meter performance.

Table 1: Descriptive Statistics of Sprinter in Relation to Linear Kinematical Variables at 60/75 degree in athletics

Variables	Mean	Std. Deviation
First Step Length in Meter	1.31	.162
First Stride Length in Meter	2.37	.223
Center of Gravity in Centimeter	67.2	5.99
Performance in M/Second 0n 60 to 75 Degree	4.17	.218

It is evident from table - 1 that mean, standard deviation, scores of Linear kinematics variables First Step Length and First Stride Length in meter Center of Gravity in Centimeter Performance in M/Sec at 60/75 Angle of Block in Athletics have been found as follow: First step Length (1.31 ±. 162), First Stride Length (2.37 ±. 223), Center of Gravity (67.2 ± 5.9), 30 M Performance (4.17 ±. 218), respectively.

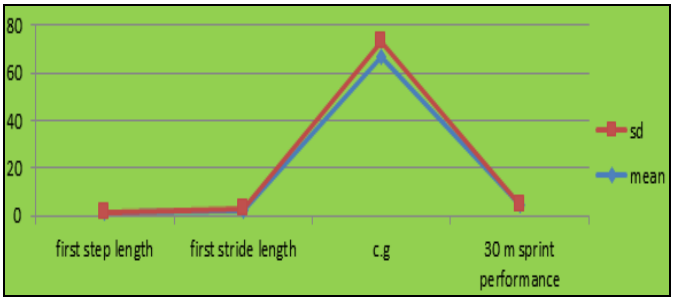

Fig 1: Graphical Representation of Mean and Standard Deviation of Selected Linear Kinematical Variables

Table 2: Relationship of Linear Kinematical Variables with 30 Meter Performance at 60/75 Angle of Block in Athletics (N=8)

S. No.	Variables	Correlation Coefficient (r)
1.	First step in meter	-.181
2.	First Stride length in meter	-.063
3.	Centre of gravity in centimeter	.287

*Significant at 0.05 level

Coefficient of correlation required significant at 6 degree of freedom (0.707)

Table -2 shows that the obtained values of "r" in case of First step length (-.181), first Stride length (-.063) and Centre of gravity (.287) are lower than tabulated value of "r" (0.707) therefore found insignificant relationship of these Linear Kinematical variables with 30 Meter performance at 60/75 angle of block in athletics.

Discussion and Findings

Relationship of Linear Kinematical variable has found insignificant difference with the 30 meter sprinting performance at 60/75 front and rear block angle of athletics. Due to major training factors affecting the motor ability and reaction time, speed of movement. Several other kinetic and kinematic variables such as the rear peak force, the block time, the block leaving velocity and the block leaving acceleration, have been reported as possible parameters influencing starting block performance Angle. Due to the acceleration phase sprinters trying to achieving vomax so there was insignificant relationship was found 30 m sprint at 60/75 angle of block in athletics. Lower Block Angle allows the highest possible force to be produced for the longest practicable time. Therefore it facilitates the athlete in producing the greatest impulse and leaving the blocks with the highest velocity. Only single combination of block setting not necessarily always will yield the best result. Movement from the Starting Block in the sprint start must not only be fast and forceful but should permit the sprinter to rapidly take up a mechanically efficient running position.

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