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A STUDY ON THE NATURE OF LAST THREE STRIDES OF RUNNING BROAD JUMP

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ABSTRACT

The running broad jump is one of the traditional Olympic events which has been included in a variety form in the ancient Greek games. It was included in Olympic game in 1896. The long jump is a classic field event, in that it is conceptually very difficult discipline to master. The Running broad jump has four distinct phase - the approach run, the take off, the flight and the landing. In the present study researcher analyzed the nature of the last three strides during Running Broad Jump. For the present study, 20 male broad jumpers of district level were selected. Their age ranges between 17 to 19 years. From the results it was observed that the length of the second last stride of all jumpers were shorter than the length of last but one stride. It was also observed that the take off stride length was shorter than both second and last but one stride length.

Key words: Approach run, Stride, Stride length and Take off,

Introduction

In high level of athletic performance effective movement is the result of the interplay of the three movement constants; the body, gravity and ground. Understanding each of the movement constants independently is one thing, but the real key is to understand how they interact. (Vern Gambetta, 2009). The running broad jump is one of the oldest athletic events that humans perform. Running broad jump can be divided into four phases- i) the approach run ii) take off iii) flight and iv) landing in a sand pit (Hay, 1986). A successful jump has been shown to be heavily dependent on the performance of the approach phase. A long jumper has to be perform three tasks during approach run (a) to develop a maximum horizontal velocity that can be used effectively during the take-off (b) to adjust the position of the body during the final few steps to bring it in an optimal take off position with minimum loss of horizontal speed and (c) to precisely adjust step length so that foot placement at jump take-off is as close as possible to be distal edge of the take-off board from which the jump is measured.(Hay 1988; Hay & Koh, 1988). Power is important in the take-off, as it needs to be explosive and fast. Balance is required in the flight phase because without good balance, it is impossible to be in position for excellent landing. Muscular strength and flexibility are

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also important as they help protect the body; strength allows the athlete to control and change the direction of the athlete's centre of mass and flexibility helps the athlete to avoid injury while competing. Top class jumpers require an approach run of 35-40 metre reaching a fast controlled speed. It is difficult to give hard and fast rules but the majority adopt a stride pattern of between 16-19 full running strides before strike the board. The long jumper does not rush at the board from the outset. The early strides are like those of the sprinter building up speed, but at about seven strides out form the board the running pattern must change. The accent will remain on speed but the emphasis on running action will change. The leg action of the sprinter is one of the powerful movements behind the body pushing it forwards and producing a degree of forward lean. Such an action, from the board, for the long jumper, would be fetal as it could not produce a significant amount of lift. During the strides immediately prior to jump, the athlete must prepare for take- off. Lee et al.1982 reported that it was not feasible for long jumpers to rely completely on a consistent step pattern to bring them precisely to the front edge of the take-off board at the end of the approach. In the present study researcher tried to analyse the pattern of last three strides of long jumpers during approach run.

Methodology

Subjects: Twenty (20) male long jumpers were selected for the present study. Their age ranged from 17 to 19 years. All the subjects were District level and most of them were up to 6 metre jumper. They belong to the middle and lower middle class of family of Hooghly and District, West Bengal.

Test: All the subject has to be performed their long jump performance. The following criteria were measured for the study –

i. Approach Run.
ii. Average Stride length.
iii. Second last stride length.
iv. Last but one stride length.
v. Take –off length

Test Administration: Along with five helping hands or assistants, researcher conducted the Running Broad Jump test. The approach run was marked by lime dust and jumping pit with take-off board and marked jumping line properly. All the assistants of the researcher had different task and the total process coordinated by the researcher himself. The first assistant marked the points from where the jumpers started their approach run. Second assistant counted the total strides during the approach run of all jumpers one by one. The third and fourth assistants observed and measure the distance of the second last and last but one strides and fifth with the researcher measured the take-off strides. All the measurements taken in metre. Three trials were given for each jumper and measurement of all the three trials were taken but the appropriate jump within the three trials is considered for the study.

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Results and Discussions

The collected data from the study is presented in tabular form.

TABLE NO. 1

MEAN AND RANGE OF THE APPROACH RUN, NO. OF STRIDES, AND AVERAGE STRIDE LENGTH

Variables	Mean	Range
Length of the Approach Run (Metres.)	23.95	22.5 – 25.5
Number of Strides During Long Jump	13	12 -14
Average Stride Length in (Metres)	1.82	1.75 – 1.89

From the table no.1 it was observed that the mean value of the approach run was 23.95 meter and the range was 22.5meter to 25.5meter the mean value of the total strides taken by the long jumpers was 13 and the range was 12 strides to 14 strides. The mean value of the stride length was 1.82meter and the range was 1.75meter to 1.89 meter.

TABLE NO. 2

MEAN AND RANGE OF THE LAST BUT SECOND STRIDE, LAST BUT ONE STRIDE, AND TAKE –OFF STRIDE LENGTH

Variables	Mean	Range
Last but Second Stride	2.10	1.95 – 2.22
Last but one Stride	2.29	2.10 – 2.35
Take –off	2.03	1.90 – 2.15

From the table no. 2 it was observed that the mean value of Second Last stride was 2.10 meters. and the range was 1.95meters to 2.22 meters. The mean value of Last but one Stride was 2.29meters and the range was 2.10 meters to 2.35meters. Similarly the mean value of the Take – off stride was 2.03 meters and the range of the take-off was 1.90 meters to 2.15 meters. From the table no. 2 it was also observed that the length of the second last stride of all the jumpers were shorter than the length of last but one stride and the take – off stride length were shorter than both second last and last but one stride length. The last couple of strides taken by the jumper are the most important ones when it comes to making just good jump. These two strides are taken at the time that the jumper prepare his or herself for take off , conserving as much as possible of the velocity he or she has built coming to the take off board. These two strides constitute perhaps the most important technical aspect involved in the long jump event. The last but one stride should be longer than the final stride or take off because as the jumper moves towards the ultimate take off position, he or she should bring the centre of gravity of the body to as low a position as possible. The final stride, shorter than the proceeding one, serves to move the body's centre of gravity higher as the jumper leaps; thereby providing some additional counter force to the earth's gravitational force which seeks to keep the jumper at as close a position to the surface as possible.

Conclusion

From the findings of the present study the following conclusions were drown-

i. The take – off Stride length was shorter than average stride length during Long Jump.

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ii. The last but second stride lengths of the jumper are shorter than last but one strides.
iii. Long jumper tried to adjust for better take – off and better jump into last three strides during approach run.
iv. Last three strides perhaps the most important technical aspects for a long jumper for better performance.

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