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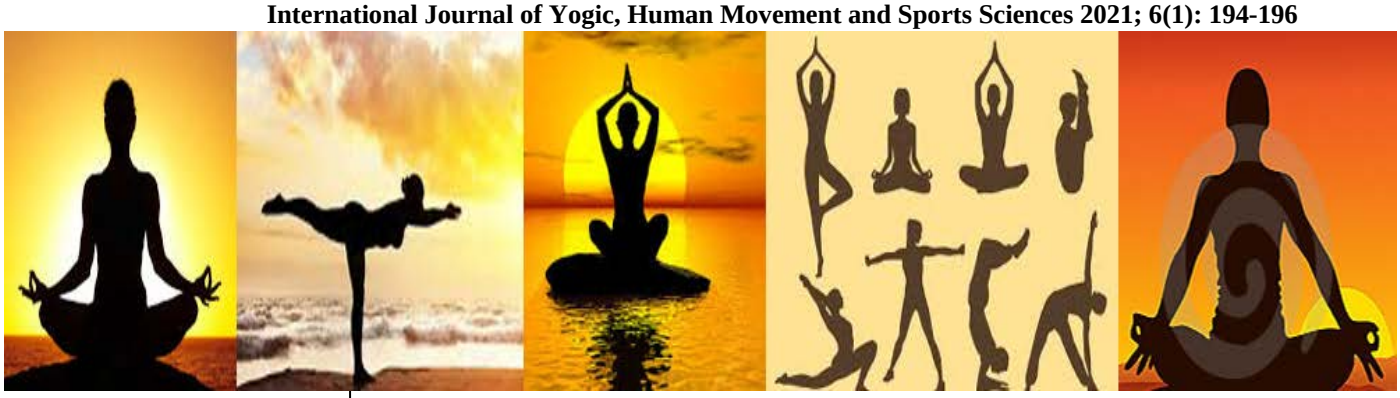

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Interrelationship study on speed among high jumpers and triple jumpers of Noida College of physical education

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Abstract
The purpose of the present study to compare the speed among High Jumpers and Triple Jumpers of Noida College of Physical Education (NCPE), Dadri, Uttar Pradesh. 20 male High Jumpers and 20 male Triple Jumpers those who have participated in Inter College Athletics Championship for the year 2016-17 were taken for the present study. The 50 Meters Run Test is used to measure the speed among High Jumpers and Triple Jumpers. The study is limited to the male High Jumpers and male Triple Jumpers of Noida College of Physical Education (NCPE), Dadri, Uttar Pradesh. This study shows that the Triple Jumpers are having good speed compare to High Jumpers. This study shows that the speed is good in Triple Jumpers because their approach run is 30 to 40 meters as compare to High Jumpers approach run is 15 to 20 meters. Speed training is essential for High Jumpers and Triple Jumpers.

Keywords: Speed, High Jump, Triple Jump, Speed Training, 50 Meters Run Test, etc

Introduction
Speed like strength and endurance is a conditional ability. Speed abilities are trainable to a very limited extent due to its marked dependence on the functioning of the central nervous system, important to be specific so that the athlete and coach understand which specific aspects of sports performance they are training. The definition of speed from a scientific standpoint is simply distance/time, but this is a rather simplistic view of speed. A more accurate definition of speed is this: speed is the ability of an athlete to move as fast as possible, through the optimal range of motion, in a deliberate and intentional manner, in a particular direction. Speed is not just measured on how fast a person is either; there are several components of measurement that give a complete picture of an athlete's speed
The High Jump is a track and field athletics event in which competitors must jump over a horizontal bar placed at measured heights without the aid of certain devices in its modern most practiced format; auxiliary weights and mounds have been used for assistance; rules have changed over the years. It has been contested since the Olympic Games of ancient Greece. Over the centuries since, competitors have introduced increasingly more effective techniques to arrive at the current form. Javier Sotomayor (Cuba) is the current men's record holder with a jump of 2.45 metres set in 1993, the longest standing record in the history of the men's high jump. Stefka Kostadinova (Bulgaria) has held the women's world record at 2.09 metres since 1987, also the longest-held record in the event.

Technical Aspects
Technique and form have evolved greatly over the history of high jump. The Fosbury Flop is currently considered the most efficient way for competitors to propel themselves over the bar.

Approach
For a Fosbury Flop, depending on the athlete's jump foot, they start on the right or left of the high jump mat, placing their jump foot farthest away from the mat. They take an eight- to ten-step approach, with the first three to five steps being in a straight line and the last five being on a curve. Athletes generally mark their approach in order to find as much consistency as

possible.

The approach run can be more important than the takeoff. If a high jumper runs with bad timing or without enough aggression, clearing the bar becomes more of a challenge. The approach requires a certain shape or curve, the right amount of speed, and the correct number of strides. The approach angle is also critical for optimal height.

The straight run builds the momentum and sets the tone for a jump. The athlete starts by pushing off their takeoff foot with slow, powerful steps, then begins to accelerate. They should be running upright by the end of the straight portion.

The athlete's takeoff foot will be landing on the first step of the curve, and they will continue to accelerate, focusing their body towards the opposite back corner of the high jump mat. While staying erect and leaning away from the mat, the athlete takes their final two steps flat-footed, rolling from the heel to the toe.

Most great straddle jumpers run at angles of about 30 to 40 degrees. The length of the run is determined by the speed of the approach. A slower run requires about eight strides, but a faster high jumper might need about 13 strides. Greater speed allows a greater part of the body's forward momentum to be converted upward.

The J approach favored by Fosbury floppers allows for speed, the ability to turn in the air (centripetal force), and a good takeoff position, which helps turn horizontal momentum into vertical momentum. The approach should be a hard, controlled stride so that the athlete does not fall from running at an angle. Athletes should lean into the curve from their ankles, not their hips. This allows their hips to rotate during takeoff, which in turn allows their center of gravity to pass under the bar.

Takeoff

The takeoff can be double-arm or single-arm. In both cases, the plant foot should be the foot farthest from the bar, angled towards the opposite back corner of the mat, as they drive up the knee on their nontakeoff leg. This is accompanied by a one- or two-arm swing while driving the knee.

Unlike the straddle technique, where the takeoff foot is "planted" in the same spot regardless of the height of the bar, flop-style jumpers must adjust their approach run as the bar is raised so that their takeoff spot is slightly farther out from the bar. Jumpers attempting to reach record heights commonly fail when most of their energy is directed into the vertical effort and they knock the bar off the standards with the backs of their legs as they stall.

An effective approach shape can be derived from physics. For example, the rate of backward spin required as the jumper crosses the bar in order to facilitate shoulder clearance on the way up and foot clearance on the way down can be determined by computer simulation. This rotation rate can be backcalculated to determine the required angle of lean away from the bar at the moment of planting, based on how long the jumper is on the takeoff foot. This information, together with the jumper's speed, can be used to calculate the radius of the curved part of the approach. One can also work in the opposite direction by assuming a certain approach radius and determining the resulting backward rotation.

Drills can be practiced to solidify the approach. One drill is to run in a straight line and then run two to three circles spiralling into one another. Another is to run or skip a circle of any size two to three times in a row. It is important to leap upwards without first leaning into the bar, allowing the momentum of the J approach to carry the body across the bar.

Flight

The knee on the athlete's non-takeoff leg naturally turns their body, placing them in the air with their back to the bar. The athlete then drives their shoulders towards the back of their feet, arching their body over the bar. They can look over their shoulder to judge when to kick both feet over their head, causing their body to clear the bar and ***land*** on the mat.

The Triple Jump, sometimes referred to as the hop, step and jump or the hop, skip and jump, is a track and field event, similar to the long jump. As a group, the two events are referred to as the "horizontal jumps". The competitor runs down the track and performs a hop, a bound and then a jump into the sand pit. The triple jump was inspired by the ancient Olympic Games and has been a modern Olympics event since the Games' inception in 1896.

According to World Athletics rules, "the hop shall be made so that an athlete lands first on the same foot as that from which he has taken off; in the step he shall land on the other foot, from which, subsequently, the jump is performed."

The current male world record holder is Jonathan Edwards of the United Kingdom, with a jump of
18.29 m (60 ft 0 in). The current female world record holder is Yulimar Rojas of Venezuela, with a jump of
15.74 m (51 ft 7+1/2 in).

Technique

Approach

The approach is one of the most important parts of an athlete's jump. The athlete sprints down a runway to a takeoff mark, from which the triple jump is measured. The takeoff mark is commonly either a piece of wood or similar material embedded in the runway, or a rectangle painted on the runway surface. In modern championships a strip of plasticine, tape, or modeling clay is attached to the far edge of the board to record athletes overstepping or "scratching" the mark, defined by the trailing edge of the board. These boards are placed at different places on the runway depending on how far the athlete can jump. Typically the boards are set 40 ft, 32 ft, and 24 ft from the pit. These are the most common boards seen at the high school and collegiate levels, but boards can be placed anywhere on the runway. There are three phases of the triple jump: the "hop" phase, the "bound" or "step" phase, and the "jump" phase. They all play an important role in the jump itself. These three phases are executed in one continuous sequence. The athlete has to maintain a good speed through each phase. They should also try to stay consistent to avoid fouls.

Hop

The hop begins with the athlete jumping from the take-off board on one leg, which for descriptive purposes, will be the right leg. Precise placement of the foot on the take-off is important in order for the athlete to avoid a foul. The objective of the first phase is to hop out, with athletes focusing all momentum forward. The hop landing phase is very active, involving a powerful backward "pawing" action of the right leg, with the right take-off foot landing heel first on the runway.

Step

The hop landing also marks the beginning of the step phase, where the athlete utilizes the backward momentum of the right leg to immediately execute a powerful jump forwards and upwards, the left leg assisting the take-off with a hip flexion thrust similar to a bounding motion. This leads to the

step-phase mid-air position, with the right take-off leg trailing flexed at the knee, and the left leg now leading flexed at the hip and knee. The jumper then holds this position for as long as possible, before extending the knee of the leading left leg and then immediately beginning a powerful backward motion of the whole left leg, again landing on the runway with a powerful backward pawing action. The takeoff leg should be fully extended with the drive leg thigh just below parallel to the ground. The takeoff leg stays extended behind the body with the heel held high. The drive leg extends with a flexed ankle and snaps downward for a quick transition into the jump phase. The athlete tries to take the farthest step they can while maintaining balance and control, using techniques such as pulling their leg up as high as possible.

Jump

The step landing forms the take-off of the final phase (the jump), where the athlete utilizes the backward force from the left leg to take off again. The jump phase is very similar to the long jump although most athletes have lost too much speed by this time to manage a full hitch kick, and mostly used is a hang or sail technique.

When landing in the sand-filled pit, the jumper should aim to avoid sitting back on landing or placing either hand behind the feet. The sandpit usually begins 13m from the take-off board for male international competition or 11 m from the board for international female and club-level male competition. Each phase of the triple jump should get progressively higher, and there should be a regular rhythm to the three landings.

Foul

A "foul", also known as a "scratch," or missed jump, occurs when a jumper oversteps the takeoff mark, misses the pit entirely, does not use the correct foot sequence throughout the phases, or does not perform the attempt in the allotted amount of time (usually about 90 seconds). When a jumper "scratches," the seated official will raise a red flag, and the jumper who was "on deck," or up next, prepares to jump.

It shall not be considered a foul if an athlete, while jumping, should touch or scrape the ground with his/ her "sleeping leg". Also called a "scrape foul", "sleeping leg" touch violations were ruled as fouls prior to the mid-1980s. The IAAF changed the rules following outrage at the 1980 Summer Olympics in Moscow, when Soviet field officials in the Men's Triple Jump ruled as foul eight of the twelve jumps made by two leading competitors (from Brazil and Australia) thus helping two Soviet jumpers win the Gold and Silver medals.

Methodology

Aim

To find out the speed between male High Jumpers and male Triple Jumpers.

Sample

The sample for present study consists of 20 male High Jumpers and 20 male Triple Jumpers from Noida College of Physical Education (NCPE), Dadri, Uttar Pradesh those who have participated in Inter College Athletics Championship for the year 2016-17.

Tools

50 Meter Run is used to collect the data for speed.

Limitations

The study is limited to students of the Noida College of Physical Education (NCPE) and 50 meters run is chosen for the study to find out the speed among High Jumpers and Triple Jumpers.

Procedure of Data Collection

The High Jumpers and Triple Jumpers are made to run 50 meters in each batch of two members. The timing is taken by the qualified technical official in Athletics at Noida College of Physical Education (NCPE) Grounds, Dadri, Uttar Pradesh.

Results and Discussion

Table 1: Is showing the speed among the High Jumpers and Triple Jumpers

50 Meters Run	N	Mean	SD	SE	t	table value	df	P-Value
High Jumpers	30	6.893	0.658	0.120				
					14.994	2.045	58	0.0000
Triple Jumpers	30	6.677	0.637	0.116				

The average speed of Triple Jumpers is 6.677 in 50m run compare High Jumpers speed is 6.893, there is a difference of 0.21 between triple jumpers and High Jumpers it is due to the Triple Jump Runway is 40 meters compare to the High Jump Runway is 15 to 20 meters.

Conclusions

It is concluded that Triple Jumpers are having good speed compare to the High Jumpers. Speed Training must be given to all High Jumpers and Triple Jumpers to enhance the performance because the jumping ability is mostly depend upon speed. Speed training must be given to High Jumpers and Triple Jumpers.

Recommendations

The similar studies can be conducted on different sports and games.

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