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Research Paper

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Performance of Athletes on Leg Motion

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ABSTRACT

40 male athletes of age between 19 to 25 years from Dr. Subhash College of Physical Education, Junagadh (Gujarat) were considered as subjects. Their anthropometric measurements and speed were measured. Standard anthropometric kit was used to measure the anthropometric measurements of athletes. The analyses of t-tests were computed to find out the significant difference between anthropometric measurements and kinematic parameters of athletes. Results & Discussion: Angular momentum was showing a high correlation with power (0.496) followed by weight (0.331) and height (0.331), however, the speed (0.209) did not yield any significant association. Angular velocity was showing a high correlation with speed (0.816) followed by height (0.528) and weight (0.528), however, the power (0.470) shown a moderate significance. Angular momentum was showing a high correlation with speed (0.774) followed by height (0.544), however, the power (0.567) shown a moderate significance. Conclusion: The interrelationship between speed and power of running has shown a significantly positive association in relation to their kinematic parameters. The kinematic parameters have shown a greater influence on the leg of the athlete which was finally given a cylindrical shape of the leg which is always appropriate in generating the leg motion of the athlete.

INTRODUCTION :

Motion requires some force to produce it.The location of the point of application of force to an object determines the type of motion resulting.Most human motions are rotator.The articulations of a segamented object determine the type of motion which can take place.The type of support given any object determines the type of motion which can take place. Motion is usually thought of as an observable change of position. This definition limits motion to that which is perceived by the eye and thereby fails to be all-inclusive. There are certain movements which proceed to slowly that the changing position is not perceived. Likewise, motion in space without a point of reference may not be perceived readily. At the other extreme, motion may take place so rapidly that detail or even the motion itself is not clear. For example, the propeller blade of an airplane turns so rapidly that one sees only the blurred circle, not the moving blade. For observational purposes, fast movement is often reduced to slow-motion film or other pictorial records. Since motion is of change in position it must be a term definition change relative to something else. For example, the fingers flex on the palm, the elbow flexes on the upper arm.

The pedestrian moves slowly with respect to the sidewalk, but the runner moves quickly around the track. This introduces a qualitative variation in the movement that may be beyond the observable range at both extremes.

Bradshaw E.J. Maulder P.S. Keogh J.W. (2007) study quantified biological movement variability on the start and early acceleration phase of sprinting. Ten male athletes aged 17-23 years (100-m personal best: 10.87+/-0.36s) performed four 10-m sprints. Two 250-Hz cameras recorded the sagittal plane action to obtain the two-dimensional kinematics of the block start and initial strides from subsequent manually digitized APAS motion analysis. Infra-red timing lights (80Hz) were used to measure the 10-m sprinting times. The coefficient of variation (CV%) calculation was adjusted to separate biological movement variability (BCV%) from estimates of variability induced by technological error (SEM%)for each individual sprinter and measure. Pearson's product – moment correlation and linear regression analysis were used to establish relationships between measures of BCV% and 10-m sprint start performance (best 10-m time) or 10-m sprint start performance consistency (10-m time BCV%) using SPSS version 12.0 Measurement error markedly inflated traditional measures of movement variability (CV%) by upto 72%. Variability in taks outcome measures was considerably lower than that observed in joint rotation velocities. Consistent generation of high horizontal velocity out of the blocks led to more stable and faster starting strides.

METHODOLOGY:

Sample: 40 male athletes of Dr. Subhash College of Physical Education, Junagadh, were considered as subjects. All subjects of the age between 19 to 25 years. Their anthropometric measurements and speed were measured.

Tools: Standard anthropometric kit was used to measure the anthropometric measurements of athletes.

Data Collection Procedure: The investigator collected the data separately for anthropometric measurements. The subjects were measured with two categories namely. (i) anthropometric measurements and (ii) kinematical parameters and fitness test (100m speed) was administered. The data was collected accurately for the total sample selected. The data collection procedure was completed in six months period.

The video analysis was taken during the measurement of anthropometric measurement and conducting the tests for kinematic parameters.

Statistical Techniques Used: The data collected in this study was subjected to statistical analysis with appropriate use of SPSS package The descriptive statistics were taken into consideration standard deviations, mean ranks and correlation. The analysis of t-tests were computed to find out the significant difference between anthropometric measurements and kinematic parameters of athletes

RESULTS & DISCUSSION:

Angular momentum was showing a high correlation with power (0.496) followed by weight (0.331) and height (0.331), however, the speed (0.209) did not yield any significant association. Angular velocity was showing a high correlation with speed (0.816) followed by height (0.528) and weight (0.528), however, the power (0.470) shown a moderate significance. Angular momentum was showing a high correlation with speed (0.774) followed by height (0.544) and weight (0.544), however the power (0.567) shown a moderate significance.

CONCLUSION:

Motion is the prime element in most sports. It is, therefore, essential to know the laws that

govern or describe motion if the coach or athlete is to obtain from the motion the most efficient and effective results that may be developed. In order to know how to move most effectively, one must know the why of the movement. An applied to athletic activities, this has significance in the integration of the movements of various parts of the body in the execution of techniques and in the economy of effort.

Direction, of course, is either vertical or horizontal or at an angle with the vertical or horizontal. To understand the real effect of direction of motion in the outcome of an effort, an understanding of vectors (which involves trigonometric functions) is necessary. Keeping in view the importance of leg motion in enhancing sports performance an attempt has been made by the investigator to probe the influence of kinematic parameters with regards to leg motion.

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