



## ANGULAR ANALYSIS OF SHOT PUT TECHNIQUES

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**Abstract:-** Quantitative biomechanical analysts are mainly interested in improving performance and reducing injury risk. Use a mixture of experimental and theoretical approaches to seek answers to such questions (Bartlett, 2007). The main feature of quantitative analysis is, naturally, the provision of quantitative information, which has been identified as relevant to the sport or exercise activity being studied. The information required may involve variables such as linear and angular displacements, velocities, accelerations, forces, torques, energies and powers. These may be used for detailed technical analysis of a particular movement. (Payton, Bartlett 2008).

**Keywords:** Angular Analysis , Shot put Techniques , Biomechanical , Reducing Injury Risk.

### INTRODUCTION :

The quantitative experimental approach often takes one of two forms, usually referred to as the cross-sectional and longitudinal approaches. A cross-sectional study, for example, might evaluate a sports movement by comparing the techniques of different sports performers recorded at a particular competition. This can lead to a better overall understanding of the biomechanics of the skill studied and can help diagnose faults in technique (Bartlett, 2007).

### HISTORY OF SHOT PUT:

The shot put has been an Olympic event since the inaugural Games of 1896 in Rome. It's a sport that requires technique as well as strength, and changes in throwing style have since led to significant gains in the power of the thrower and the distances achieved. Early shot put events were judged on the distance the stone, or shot, could be thrown from behind a raised wooden board following a short run-up of no more than seven feet. By the early 1890s, the run-up had been replaced by a seven-foot-diameter circle marked on the ground with the raised board, now shaped to follow the front edge of the circle. In both cases, stepping over the board meant the throw would be disallowed. An article published in 1892 in the American magazine "Outing" describes the events of the Caledonian projects are both affected by the projection velocity, increasing the projection velocity increases both these parameters, this common perception is incorrect. The choice of an appropriate projection angle dictates whether the vertical or the horizontal velocity is increased with increasing projection velocity. In addition, the angle of projection can be affected by the height of projection.

### RESEARCH METHOD:

The quantitative experimental approach often takes one of two forms, usually referred to as the cross-sectional and longitudinal approaches. A cross-sectional study might evaluate a sports movement by comparing the techniques of different sports performers recorded at a particular competition. This can lead to a better overall understanding of the biomechanics of the skill studied and can help diagnose faults in technique. An alternative cross-sectional approach, which is less frequently used, is to compare several trials of the same individual. This is done to identify the performance variables that correlate with success for that athlete. In a longitudinal study, the same

person, or group, is analyzed over a longer time to improve their performance. An alternative cross-sectional method was used for the present study.

### DATA ANALYSIS AND INTERPRETATION

Researcher endeavors to present the relevant features of the results and interpret for the facts. Data was analysed after the collection to verify the hypothesis stated in. Several different approaches have been used to identify the features of a performer's technique that influence the level of success achieved. These approaches generally involve the collection and analysis of data from the performances of a large number of subjects of a wide ability. This is essentially an empirical approach using high-speed cinematography, force platforms, etc. The data analysis will vary with the experimental design; we can identify the correlation and contrast methods (Hay et al., 1981).

In the correlation method (Nigget a/, 1973) a single group is used. Correlations between the performance criterion and various performance parameters, and inter correlations among parameters are established in a correlation matrix. The correlation coefficients are then used to deduce which performance parameters have an important influence on the performance criterion. Failure to select a sufficiently wide group can lead to the omission of important causal parameters (Parry and Bartlett, 1984). For example, Kunz (1980) found no significant relationship between take-off angle and distance in the long jump.

### CONCLUSION

The subject was performed 5 trial of shot put throw. The correlation coefficient between performance and angle of release is 905 which is significant at level. It is positive correlation. Therefore there was significant correlation found between performance and angle of release.

It is concluded that there is no significant correlation between angle of release and performance of inter university shot put athlete. And there is no correlation between height of release and performance of inter university shot put athlete. There is no significant correlation between peak height and performance of inter university shot put athlete. There is no significant correlation between final velocity and performance of inter university shot put athlete.

### SUMMARY

This study attempts to angular analysis of shot put technique of inter university shot put athletes. The major objectives of the study were, to find out the correlation between shot put performance and angle of release, height of release, peak height, initial velocity, final velocity. (Linthorne et al., 2001) studied that optimum release angle in the shot put and conclude that each athlete had his own optimum release angle because of individual differences in the rate of decrease in release speed with increasing release angle. Simple models of shot-putting were developed to explain the relations between release speed, height and angle in terms of the anthropometric and strength characteristics of the athlete. (Bartlett et al., Muller et al., Lindinger et al., Brunner et al., and Morriss et al., 1996) studied that Three dimensional release parameters and important features of the throwing technique for male javelin throwers of three different skill levels. (Bartlett and Best, 1988) studied that in javelin throw release velocity can be considered as the sum of run-up velocity and velocity generated by the thrower movements.

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