COMPARISON OF SELECTED KINEMATICAL VARIABLES AMONG SET SHOT AMONG BASKETBALL PLAYERS

Physical Education

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ABSTRACT The purpose of the study was to compare the selected kinematical variables among set shot among basketball players. The study was conducted only sixty (N=60) right hand Basketball players who were randomly selected from various Colleges of Alagappa University, Karaikudi, Tamil Nadu, India during 2015-2016. Based on the height of the players they were dived into three equal groups of twenty each(n=20) namely below 5.5 inches height group, below 6 inches height group, and below 6.5 inches height group. The age of the subjects were ranged between 17 and 22. The study was delimited to set shot while performing free throws only, in the study digital video cameras or camcorders was used for the determination of the technique. The selected kinematical variables are Angle at right ankle joint (ARAJ) and Angle at left ankle joint (ALAJ). One-Way Analysis of Variance (ANOVA) was used to study the significance of difference in selected kinematical variables among three different height groups while performing set shot at moment of stance and moment of release. Further to find out the significant difference between pair of means among the three groups Scheffe's post hoc test was run on SPSS. Significant difference among different height groups were found in angle at right ankle joint and angle at left ankle joint of the shooter at moment of stance.

INTRODUCTION

Biomechanics can be defined as 'the science that examines forces acting upon and within a biological structure and effects produced by such forces'. The 'biological structure' in this context can be wide spread and covers systems of different levels: cells, tissue, joints, segments, the entire body or even a complex system consisting of several bodies or the human body in combination with the surroundings (water, air, equipment, floor etc.). The main focus of applied sport biomechanics research is primarily directed to the entire human body in the complex sport discipline or sport specific situation.

The main goals of biomechanical research are to enhance performance in movement and to improve subject specific comfort in movement and locomotion. Biomechanical research is characterized by its interdisciplinary approach with other related fields such as medicine, neuroscience, physics and engineering. The content of biomechanics can be separated in three main areas with substantial overlapping: medicine, engineering as well as movement and sport science. The area of movement and sport science covers important interactions with motor control, training science, exercise physiology and orthopaedics. Due to the wide scope of application, sport biomechanics represents one of the main subcategories of biomechanics (Gil,1978).

Kinematics is the study of bodies in motion without regard to the causes of the motion. It is concerned with the describing and quantifying both the linear and angular positions of the bodies and their time derivatives.

Basketball is a team sport in which two teams of 5 active players each try to score points against one another by placing a ball through a 10 foot (3.048 m) high hoop (the goal) under organized rules. Basketball is one of the most popular and widely viewed sports in the world. Points are scored by throwing (shooting) the ball through the basket from above, the team with more points at the end of the game wins(Hay, 1978).

The two most common shots used in basketball are the set shot and the jump shot. The set shot is taken from a standing position, with neither foot leaving the floor, typically used for free throws. Set shot is mainly attempted from the line of 5.80mtrs for free throw shot in basketball and for each conversion one point is awarded to the converter. In this study, set shot is analyzed when attempted as free throw.

METHODOLOGY

The study was conducted only sixty (N=60) right hand Basketball players who were randomly selected from various Colleges of Alagappa University, Karaikudi, Tamil Nadu, India during 2015-2016. Based on the height of the players they were dived into three equal groups of twenty each(n=20) namely below 5.5 inches height group, below 6 inches height group, and below 6.5 inches height group. The age of the subjects were ranged between 17 and 22. The study was delimited to set shot while performing free throws only, in the study digital video cameras or camcorders was used for the determination of the technique. The selected kinematical variables are Angle at right ankle joint (ARAJ) and Angle at left ankle joint (ALAJ). One-Way Analysis of Variance (ANOVA) was used to study the significance of difference in selected kinematical variables among three different height groups while performing set shot at moment of stance and moment of release. Further to find out the significant difference between pair of means among the three groups Scheffe's post hoc test was run on SPSS.

RESULTS & DISCUSSION

Table – I

Showing F values of selected kinematical variables of three different height groups at the moment of stance

Sl No	Selected Variables	Sources of Variance	SS	df	MS	F
1	Angle at right ankle joint (ARAJ)	Between	1458.3	2	486.10	12.82*
		Within	2161.9	57	37.92	
2	Angle at left ankle joint (ALAJ)	Between	1461.6	2	730.95	19.21*
		Within	2169.7	57	38.06	

*Significant at .05 level
Table values for df 2 and 57 is 3.15.

Table-I shows that the value of F-ratio for the angle at right ankle joint and angle at left ankle joint, of three different height groups in the moment of stance while performing set shot. Review of table-I shows that the values of F-ratio of the angle at right ankle joint and angle at left ankle joint of three different height groups in moment stance while performing set shot were significant at .05 level. In other words, it can be stated that there are significant differences among three different height groups at moment of stance in following kinematical variables namely angle at right ankle joint and angle at left ankle joint. To find out the which group means were different, Scheffe's Post hoc test was run.

Table – II

Showing multiple comparison of different height groups in angle at right and left ankle joint at the moment of stance

Variables	Groups	Groups	MD
Angle at right ankle joint (ARAJ)	I	II	2.70*
		III	11.55
	II	I	2.87*
		III	8.85*
	III	I	11.59*
		II	8.77*
Angle at left ankle joint (ALAJ)	I	II	3.12*
		III	11.59*
	II	I	2.79*
		III	8.45*
	III	I	10.53*
		II	7.29*

*Significant at .05 level

Height groups: I= Below 5.5 inches group, II= Below 6 inches group, III = Below 6.5 inches group,

Table -II shows the mean differences between I=Below 5.5 inches group, II= Below 6 inches group, III = Below 6.5 inches group on Angle at right ankle joint (ARAJ) and Angle at left ankle joint (ALAJ). The results of the study showed that there was a significant difference between the different from of height group players in angle at right and left ankle joint at the moment of stance in set shot.

CONCLUSION

From the above results and discussions the following conclusions were drawn:

1. Significant difference among different height groups were found in angle at right ankle joint and angle at left ankle joint of the shooter at moment of stance.

REFERENCES
1.   Gil A. (1978). Falling Technique in the Martial Art - Biomechanics of Games and Sports Activities, ed. By Alyalon, A., Wingate: Wingate Institute of Physical Education and Sport.
2.   Hay, James G. (1978). The Bio-mechanics of Sports Techniques, Englewood Cliffs, N.J.: Prentice-Hall Inc.