iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 6 **Issue:** II **Month of publication:** February 2018

DOI: http://doi.org/10.22214/ijraset.2018.2048

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor : 6.887
Volume 6 Issue II, February 2018- Available at www.ijraset.com

Comparison of Kinematical variables of In-Step Kick in Football with the accordance of Skill level

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Abstract: ***In the present study twelve female footballer (n=12) were selected by purposive sampling and they were further divided into two groups. Video graphy was employed for the biomechanical kinematics analysis of In – Step Kick. The camera that was used for this study was a standard Nikon – D 5200 camera was used. The whole skill were divided into four phases i.e. Initial phase, Hip extension phase, Knee extension and ball touch phase and Follow through phase but for the present study the investigator compare the two groups at the movement of Hip extension phase that whether there is any significant difference among in two groups or not, Comparison of kinematical variables of in-step kick in football with the accordance of skill level were obtained by employing the Independent T Test technique by using SPSS (20.0) and for testing the hypothesis the level of significance was set at 0.05.It is hypothesized that there is no significant difference among two groups. The finding of the study shows only there was a significant difference in knee joint among two groups, t (10) = -7.706, p = .000 is much lesser then 0.05 and the remaining variables i.e. Shoulder joint, Hip joint, Center of gravity and the performance were found no significant difference among the two groups and with that the investigator is 95% confidant that the two groups were significantly different in knee joint at the phase of hip extension and the null hypothesis is failed to accept at 0.05 level of significance.***
Key words: Football, In-Step Kick, SPSS

I. INTRODUCTION

Biomechanics is most helpful in improving the performance in sports or activities where technique is the dominant factor rather than physical structure or physiological capacity. Since biomechanics is essentially the science of movement technique. All movement of material bodies both of men and animal are subjected, without expectation, to the low of mechanics as every movement involve mechanical movement and the locomotion of part of mass in space and time. It is the only first test of science to recognize this it is necessary to make this qualification, because movement is not only locomotion, but is also a change in quality in field above the purely mechanical. The concept of optimum skill development is broad and has implication for everyone who deals with movement i.e. the parents, the teacher, the coaches, physical educators, and research in this field. Recently, video tape has begun to replace conventional motion picture for teaching and coaching purpose. Since videography is erasable reusable does not require any developing, it is more economical then film. The relatively inexpensive portable recorders are simple to operate and permit immediate play back. This videotape was significant potential for instruction. Picture taken of students performing motor skill can provide them with further sight into their own action a greater appreciation of the mechanics of sorts' skill and increase interest in improving their performance the single most important kicking skill in soccer is the instep drive, also known as the instep kick or the "laces" kick. The instep drive uses the quadriceps muscles of the thigh to provide the most powerful kick available in the game, forcing the top of the foot (instep) to propel (drive) the soccer ball forward. Further, mastery of the instep drive forms the basis for any number of other kicks, including shooting, goal kicks, corner kicks, chips, long passes, clearances, volleys, half-volleys and more. Accordingly, the basic concepts of the instep drive must be well understood by coaches and taught properly to beginning players.

II. METHODOLOGY

Twelve female footballer (n=12) were selected by purposive sampling and they were further divided into two groups which are as follows:-

A. *Group – 1* = consist six girls who represented India in ISF World School Championship held at Prague, The capital of Czech Republic from 21st May to 29th May 2017.
B. *Group – 2* = consist six girls who represented Kendriya Vidhyalaya, Barwani (Madhya Pradesh in Subroto cup held at New Delhi from 3rd September to 15 September,2017)

There range of mean age, mean height and mean weight was 17.5 ±.84 years, 152.8 ± 4.60 cm and 49.7 ± 6.45 kg respectively. Videography was employed for the biomechanical kinematics analysis of In – Step Kick. The camera that was used for this study was a standard Nikon – D 5200 camera was used. The video camera was mounted on the tripod stand at the height of 1.40 mts. from the ground. The video camera was placed perpendicularly at center in the line of Penalty spot to the sagittal plane at a distance of 9.42 mts. The frequency of the camera was 50 frames/second. The subjects performed the skill three times and the best trail was used for the analysis. The whole skill were divided into four phases i.e. Initial phase, Hip extension phase, Knee extension and ball touch phase and Follow through phase but for the present study the investigator compare the two groups at the movement of Hip extension phase that whether there is any significant difference among in two groups or not, Comparison of kinematical variables of in-step kick in football with the accordance of skill level were obtained by employing the Independent T Test technique by using SPSS (20.0) and for testing the hypothesis the level of significance was set at 0.05.It is hypothesized that there is no significant difference among two groups. Videography technique was employed in order to register the performance of the subjects in In – Step Kick for the study. Selected kinematics variables (table 2 and table 3) and four selected phases (Figure 1) of whole skill i.e. of Initial phase, Hip extension phase, Knee etension and ball touch phase and Follow through phase were analyzed.

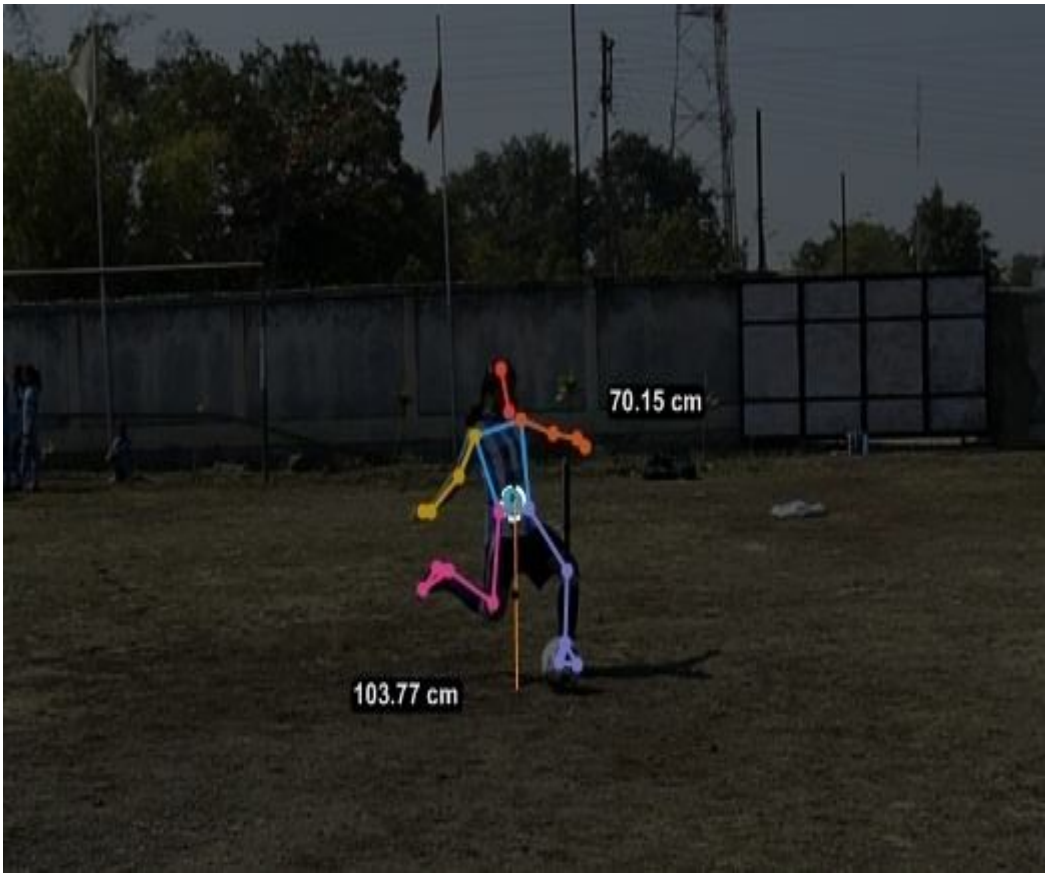

Figure no. 1 Photographic phase Elgon and Center of Gravity in Hip Extension phase in In-Step Kick

The selected phases and the stick figures of the selected movements and the centre of gravity of different phases were located by Kinovea software. The selected angular kinematic variables were obtained at Initial phase, Hip extension phase, Knee extension and ball touch phase and Follow through phase. Angles of selected joints were measured by the help of Kinovea software at the nearest of degrees. The performance of each subject of In – Step kick was collected on the basis of three judge's evaluation. The average of three judges was considered as the final point obtained by each footballer . Further, to easy calculation it was reduced out of ten points.

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III. RESULTS AND DISSCUSSION

Table no. 1Descriptive Statistics of Two Different Groups

	Groups	N	Mean	Std. Deviation	Std. Error Mean
Shoulder Joint	1.00	6	46.3333	13.20101	5.38929
	2.00	6	50.0000	21.67948	8.85061
Hip Joint	1.00	6	202.6667	9.87252	4.03044
	2.00	6	214.0000	16.04992	6.55235
Knee Joint	1.00	6	83.8333	7.08284	2.89156
	2.00	6	120.0000	9.05539	3.69685
Center of Gravity	1.00	6	116.5767	7.64179	3.11975
	2.00	6	111.0983	8.09106	3.30316
Performance	1.00	6	7.8833	.89759	.36644
	2.00	6	6.6167	1.07036	.43697

Table no. 2
Independent Samples Test of Two Different Groups in Football

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Shoulder Joint	Equal variances assumed	1.179	.303	-.354	10	.731
	Equal variances not assumed			-.354	8.260	.732
Hip Joint	Equal variances assumed	1.423	.261	-1.473	10	.171
	Equal variances not assumed			-1.473	8.310	.178
Knee Joint	Equal variances assumed	.488	.501	-7.706	10	.000
	Equal variances not assumed			-7.706	9.452	.000
Center of Gravity	Equal variances assumed	.042	.842	1.206	10	.256
	Equal variances not assumed			1.206	9.968	.256
Performance	Equal variances assumed	1.402	.264	2.221	10	.051
	Equal variances not assumed			2.221	9.705	.051

**Level of significance 0.05* **Degree of freedom =10*

The finding of the study shows only there was a significant difference in knee joint among two groups, $t\ (10) = -7.706$, $p = .000$ is much lesser then 0.05 and the remaining variables i.e. Shoulder joint, Hip joint, Center of gravity and the performance were found no significant difference among the two groups and with that the investigator is 95% confidant that the two groups were significantly different in knee joint at the phase of hip extension and the null hypothesis is failed to accept at 0.05 level of significance.

The significant difference in the knee joint founds because due to their training methods, level of performance and the individual differences. In Football the In-Step kick founds to be most powerful kick in all skill and for performing that one should follow these steps -

A. Demonstration of the ultimate result
B. Identify the instep
C. Foot down and locked, toes curled, position
D. Balance on one foot
E. Leg swing
F. Instep contacting the ball
G. Placement of the non-kicking foot
H. Kicking the ball

Among the different phases the Hip Extension phase plays the vital role in it, so group two founds weak in Hip extension phase and it is concluded that if the coach improves the knee joint and there legs muscles strength through strengthening and stretching exercises and then the performance of the footballer in In-Step ick will develop faster.

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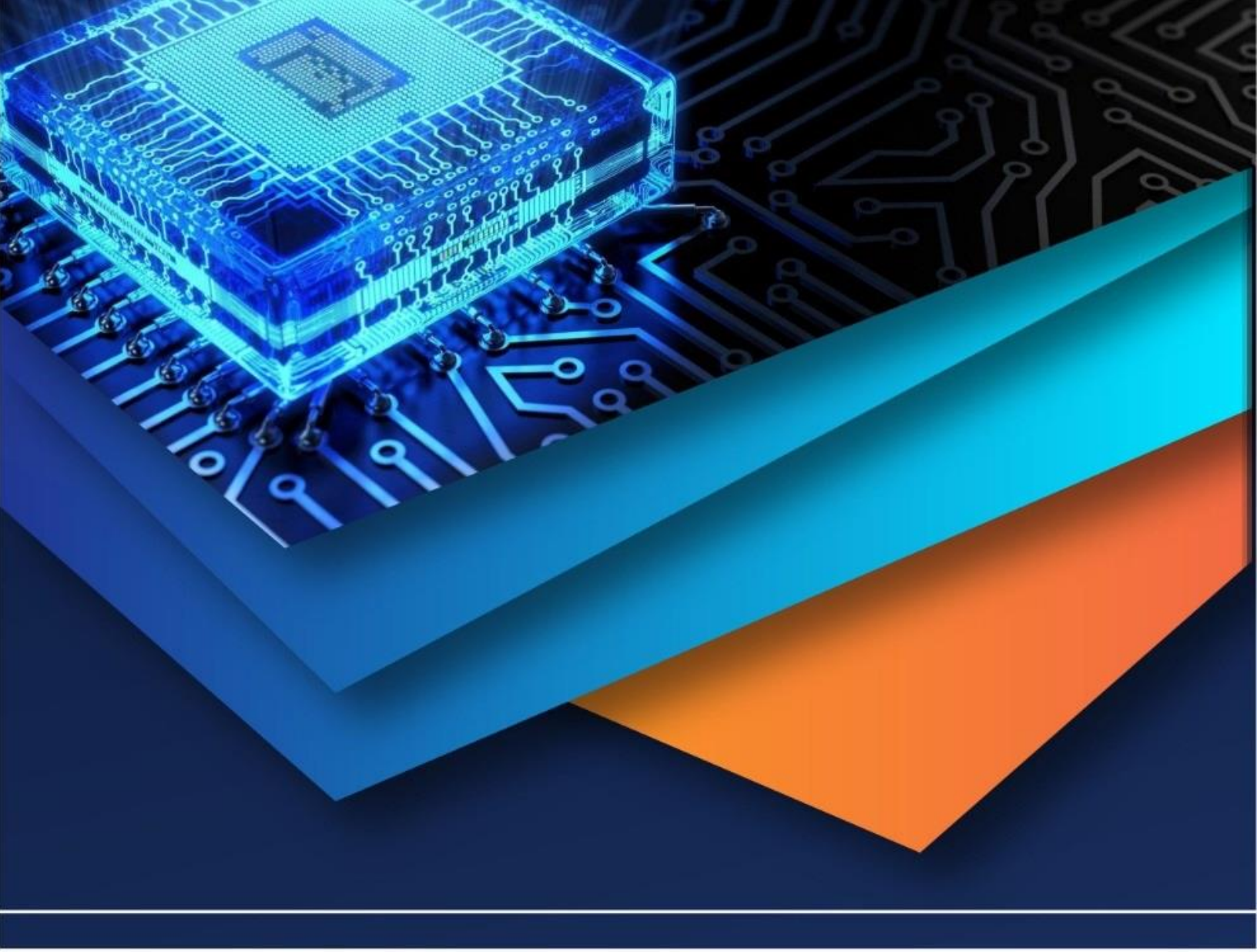

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