



ANALYSIS OF COORDINATIVE ABILITIES AS PREDICTIVE FACTOR FOR FEMALE LONG JUMPERS

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Mrs. Deepti Joshi

Department of Physical Education,
Sam Higginbottom Institute of Agriculture, Technology and Sciences,
Deemed University Allahabad, Uttar Pradesh.



Abstract

For the purpose of this study 55 female national level long jumpers were selected as a subject. The purposive sampling method was adopted to select the subjects for the study. Data was collected from 54th National Inter State Senior Athletic Championship held at Lucknow in June 2014, Federation Cup National Senior Athletic Championship held at NSNIS Patiala in September 2014, And All India Inter University Athletic Championship held at Moodbidri Mangalore in January 2015 after completion of long jump event during the competition and from coaching camps of above mentioned championships. Age group of athletes was 17 - 28 years. The test items selected for this study were coordinative abilities which were orientation ability, differentiation ability, balance ability, rhythm ability. The data on jumping performance along with coordinative abilities was examined by Pearson's Product Moment Correlation in order to find out the relationship of jumping performance to each of the coordinative ability separately. Multiple Regression analysis was done in order to predict jumping performance on the basis of coordinative abilities. The analysis was done with the help of SPSS 16.0 software. The level of significance to check the relationship obtained by Pearson's Product Moment Correlation was set at 0.05. Results of the study shows that significant relationship was found out between balance ability and rhythm ability with long jump performance in

female long jumpers and no significant relationship was found out in orientation ability and differentiation ability with long jump performance.

Key Words: Coordinative Abilities, Long Jump, Explosive Power and Strength.

Introduction

Competitiveness is an innate characteristic of human beings and they are always competitive and motivated for excellence in every field. Performance of long jump is not only dependent on one factor. However, to get mastery over the skill sports person needs various abilities in a balanced manner, such as coordinative abilities because long jump is an event of combination of various movements like running, jumping, action performed in the air and landing on the ground. Coordination is one of the major components of physical fitness. It is the ability to execute particular movement with perfection & involving different parts of the body. For the execution of perfect movement athlete needs good awareness of relative limbs and body positions and good integration between the senses and muscles involved in that movement. In different sports requirement of coordinative abilities are different. Coordinative abilities ensure higher movement efficiency, movement economy, high movement frequency, high explosiveness and application of force etc as per the requirement of the game or event and contribute towards better learning of skill.



Therefore, researcher conducted a study on analysis of coordinative abilities as predictive factors for female long jumpers to understand the importance of coordinative abilities for long jump performance. The purpose of this study was to found out the coordinative abilities of national level female long jumpers. Besides that, this research will also help to determine the coordinative abilities that are the significant contributing factors to long jump performance.

Methodology

For the purpose of this study 55 female national level long jumpers were selected as a subject. Data was collected form 54th National Inter State Senior Athletic Championship held at Lucknow in June 2014, Federation Cup National Senior Athletic Championship held at NSNIS Patiala in September 2014, And All India Inter University Athletic Championship held at Moodbidri Mangalore in January 2015 after completion of long jump event during the competition and from coaching camps of above mentioned championships. The purposive sampling method was adopted to select the subjects for the study. Age group of athletes was 17 - 28 years. The test items selected for this study were coordinative abilities which were orientation ability, differentiation ability, balance ability, rhythm ability. Orientation ability was measured by numbered medicine ball run test, differentiation ability was measured by backward medicine ball throw test, balance ability was measured modified bass test and rhythm ability was measured by straight and rhythm run test. The data on jumping performance along with coordinative abilities were examined by Pearson's Product Moment Correlation in order to find out the relationship of jumping performance to each of the coordinative abilities separately. Multiple regression analysis was done in order to predict jumping performance on the basis of coordinative abilities. The level of significance

to check the relationship obtained by Pearson's Product Moment Correlation was set at 0.05. Data was calculated on SPSS (16.0) computer software.

Results of the Study

TABLE-1

DESCRIPTIVE ANALYSIS OF COORDINATIVE ABILITIES

S. No.	Coordinative Abilities	Mean	SD	Min	Max
1	Orientation Ability	8.136	0.483	7.11	10.2
2	Differentiation Ability	10.180	1.441	7	14
3	Balance Ability	79.036	10.654	49	97
4	Rhythm Ability	1.080	0.375	0.04	1.78

Above table shows the descriptive analysis of selected coordinative abilities (Independent Variable). Mean values of coordinative abilities: orientation ability, differentiation ability, balance ability and rhythm ability are 8.136, 10.180, 79.036 and 1.080 respectively. Standard deviation values of coordinative abilities: orientation ability, differentiation ability, balance ability and rhythm ability are 0.483, 1.441, 10.654 and 0.375 respectively. Graphical representation of above table has been given below in figure no 1:

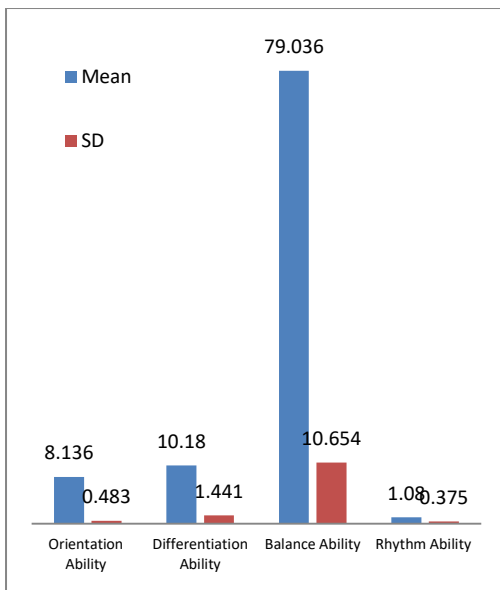


Figure - 1 Mean and Standard Deviation Values of Coordinative Abilities of Female Long Jumpers

TABLE- 2

RELATIONSHIP OF COORDINATIVE ABILITIES WITH JUMPING PERFORMANCE (LONG JUMP)

S. No	Variables	Coefficient of Correlation
1	Orientation Ability	-0.248
2	Differentiation Ability	0.216
3	Balance Ability	0.737*
4	Rhythm Ability	0.343*

*Significant at 0.05 Level of Significance.

Table no 2 revealed the relationship between coordinative abilities (Independent variables) and Long jump performance (Dependent variables). Significant relationship was found

between balance ability (-0.737) and rhythm ability (0.343) with long jump performance. And no significant relationship was found with orientation ability (-0.248) and differentiation ability (0.216) with long jump performance at 0.05 level of significance.

TABLE - 3

MULTIPLE CORRELATIONS OF COORDINATIVE ABILITIES OF FEMALE LONG JUMPERS

S. No.	Variables	Multiple Correlation (R)
1	Balance Ability	Rc.34 = 0.773*
2	Rhythm Ability	

*Significant at 0.05 Level of Significance

Above table shows the significant multiple correlations among selected coordinative abilities (Orientation Ability, Differentiation Ability, Balance Ability and Rhythm Ability) with Long jump performance i.e. 0.773* at 0.05 level of significance.

Multiple regression equation in order to predict coordinative abilities in long jump performance is:

$$Y = (0.030 \times \text{Balance Ability}) + (0.282 \times \text{Rhythm Ability}) + 2.599$$

Where Y = Long jump performance.

Conclusion

The purpose of this study to find out the relationship of coordinative abilities with long jump performance and also to develop multiple regression equation of coordinative abilities as predictive factor for long jump performance. In selected coordinative abilities it is observed that balance ability and rhythm ability have



significant relationship with long jump performances and orientation ability and differentiation ability have insignificant relationship with long jump performance. Balance ability and rhythm ability plays an important role in long jump performance may be because long jump event is a combination of various motor movements where an athlete has to run fast but rhythmically, an athlete has to take off from the ground to move his/her body in the air to cover maximum horizontal distance but first he/she has to take vertical flight for that, after getting vertical height they have to perform action in the air whether it is hang technique or hitch kick technique and then they have to prepare their body for appropriate landing so that they can utilize their covered maximum horizontal distance as a recorded performance without making any fouls. In case of coordinative abilities many researchers assert that there is an essential correlation exists between coordinative abilities and perfection in technical skills (Hirtz, 1985; Sadowski & Gierczuk, 2007). Authors suggested that achieving a high level of sports technique coaches has to focus on proper development of coordinative abilities in athletes. Some authors maintain that the importance of coordinative abilities increases together with the increase in sports technique, while others do not share this opinion (Sikkut, 1987). So in findings significant balance ability and rhythm ability shows that the good long jump performance required balanced movements in a rhythmical way during the jump. Orientation ability and differentiation ability found out insignificant relationship with long jump performance.

References:

- Barrow Harold M. and McGee Rosemary (1975) A Practical Approach to measurement in Physical Education Philadelphia: Lea and Febiger.
- Bosco James S. and William, Gustafson, F.(1983) Measurement and Evaluation in Physical Education, Fitness and Sports Englewood Cliffs, N.J.: Prentice Hall, Inc.
- Hertz Peter (1985) Koordinative Fahigketer in School sports Berlen, Volk and Wissen Volkeiger Verleg,
- KalberLother(1989) Introduction to General Theory and Methods of Training Leipzig DHER Publication.
- Singh, Hardayal (1995), Science of Sports Training, D.V.S. Publications, New Delhi.
- Kumar Jitendra (2004) Co-ordinative Abilities of Indian Kabaddi Players at Different Levels of Participations (Unpublished Ph D Thesis), Lakshmbai National Institute of Physical Education, Gwalior.
- U.S. Sports Academy in Contemporary Sports Issues, Sports Studies and Sports Psychology, (2012) Effect of Coordination Training Program on Learning Tennis Skills, Refereed Sports Journal, the United States Sports Academy.
- Esfahankalati Akram & Venkatesh C.(2013) Relationship between Coordinative Abilities and Performance in Elite Female Handball Players, Asian Journal of Multi- disciplinary Studies, Volume1, Issue 5.
- Verma J. Prakash, A Text Book on Sports Statistics (Venus Publication Gwalior).
- Verma J. Prakash, Statistical Methods for Sports and Physical Education (Tata Mc Graw Hill Education Private Limited New Delhi).