

Effect of plyometric exercises on flexibility and leg strength of Kho-Kho players

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Abstract

The present study is state that as in plyometric exercises on flexibility and leg strength of Kho-Kho players in Nagpur city, for this study, the subjects were selected from Nagpur city. For the Present study were collected from the inter-collegiate Kho-Kho players of Nagpur city. The 40 subject's inter-collegiate subjects were selected from the Nagpur city. For this study the simple random sampling method was applied to select the subjects for this study. The following criterion measures were chosen for testing the hypothesis. Flexibility was measured with the help of Sit and reach test. Standing broad jump, Leg strength was measured with the help of standing broad jump. The distance between the starting line and the nearest point of landing provide the score of the test. The best (Maximum distance) trial is used as the finale score of the test. The data pertaining to the study was collected by administering the tests for the selected items. The simple random sampling method was applied to select the subjects for this study. Before Collection of data, the subjects was given a chance to practice the prescribed tests so that they should become familiar with the tests and know exactly what is to be done to ensure uniform testing condition the subjects was tested during morning and data was collected. To test the hypothesis the level of significance was set at 0.05 level of confidence which was considered adequate and reliable for the purpose of this study.

The data collected on 40 male subjects before and after four week training programmes on flexibility and leg strength was analyzed by comparing the means of control and experimental groups and was again statistically analyzed by applying t-test to check the significant difference among selected items. Therefore separate tables and graphs have been presented for each item as follows.

Keywords: plyometric exercises, Kho-Kho players

Introduction

The intense complex movement of top level performance in sports calls for great amount of physical capacity, to develop which, sophisticated techniques are adopted which are known as physical conditioning. In the selection of players, measurement of physical fitness forms an important criterion to a large extent technique and tactics are dependent upon the physical fitness. Therefore, it is important that during selection of sportsmen for competition a relatively high weight age should be given to physical fitness.

The decision to carry out a physical fitness program cannot be taken lightly. It requires a lifelong commitment of time and effort. Exercise must become one of those things that you do without question, like bathing and brushing your teeth. Unless you are convinced of the benefits of fitness and the risks of unfitness, you will not succeed. It has been realized that fitness adds not only years to one's life, but life to one's years. The physicians Kraus and Raab (1961) demonstrated that certain diseases like low back pain, obesity, hypertension, degenerative cardiovascular diseases, abdominal ptosis, foot problems etc. are the conditions produced by sedentary life style of the affluent and tension producing society. These diseases are the consequent of lack of exercise and are termed as hypo kinetic diseases.

It has also been reported that sedentary people suffer a higher incidence of coronary heart disease than active persons (Moris *et al*, 173, Parffenbarger and Hale, 1975). Hence, this concept of physical fitness directly conveys a meaning of healthful living. Through the process of factor analysis, Fleishman (1964) and Falls *et al*. (1965) has prescribed specific physical fitness test batteries.

Flexibility

The range of movement in a joint or sequence of joints is known as flexibility. For example, touching of fingers to toes while sitting or standing without bending knees. Strength alone will not assure success in any sport. It is usable strength that is the key, the strength which can be applied to the body to make it more laster, change speed, change the direction of body movement, put a greater speed into a cricket bat or racket head, or make the pull on an oar faster and longer. Hence, while strength is a dominant factor one must also call upon skill, mobility and speed a pupil will not be able to hold the tennis racket as instructed if he does not have sufficient strength. How can a pupil learn to pole vault if he cannot hold his own weight? Moreover, lack of sufficient strength results in rapid muscular fatigue, which limits the amount of practice time available for learning skills.

Strength

Strength is the ability to overcome resistance jor to act against resistance (Singh, 1991). Strength has been considered as the most important conditional ability. It has been the most significant factor to enhance sports techniques and performance. Development of strength also contributes to indirect development of other conditional abilities namely speed and endurance.

Types of Strength

a) Maximum Strength: It is the ability of muscle to get over resistance of maximum intensity of stimulus in a single muscular contraction. The best examples are weight lifting

and throwing events (shot, discus and hammer throws in track and field).

b) Explosive Strength: It is the ability of muscle to get over resistance of sub-maximum intensity of stimulus as fast as possible. The best examples are sprints, jumps, smashing in volleyball, hitting in hockey etc.

c) Strength Endurance: It is the ability of muscle to get over resistance of medium intensity of stimulus for as long time as possible. The best examples are long distance races in track and field, swimming, distance cycling, wrestling, boxing etc.

Kho-Kho

History of Kho-Kho in India goes back a long way, as it was first started in the state of Maharashtra. The game has been very popular in the Marathi speaking people. This game, for many years, was played in an informal ways! In order to make the game very popular, the Deccan Gymkhana club of Poona tried to formalize the game! The first edition of the rules, of Aryapatya Kho-Kho and Hu-Tu-Tu, was published in 1935, by the newly founded Akhil Maharashtra Shareerika Shikshan Mandal. In order to suite the playing condition some amendments have been made.

One of the main points of a successful animal life is "Active Chase" which is a fundamental principle of the Indian game called Kho Kho, synonymous with the phrase "Game of Chase". It will not be a mistake to say that Kho Kho was a recognized sport in the ancient times even earlier to the oldest mythological writings of classics- Mahabharata. The game of chase was then also regarded as legend, as it used in phraseology as "putting Kho to someone's active chase meaning putting an effective block and stopping the progress". The current adaptation of the game was actually an adaptation about the time of World War I in 1914, but at the same time lacked exacting rules and regulation that govern the games in the modern times. There were neither any dimension to the playground nor the poles which demarcate the central line, and the factor was also missing!

The 1923-24 saw the foundation of Inter School Sports Organization and Kho Kho was introduced to promote at the grass roots and consequently popularize the sports. The certainly conveyed the results and the game of Kho Kho mainly owe it to the efforts taken by Deccan Gymkhana and Hind Vijay Gmykhana.

Methodology

- **Source of Data:** The data pertaining to this study were collected from the inter-collegiate Kho-Kho players of Nagpur city.
- **Selection of Subject:** The 40 subject's inter-collegiate subjects were selected from the Nagpur city.
- **Sampling Method:** The simple random sampling method was applied to select the subjects for this study.
- **Criterion Measures:** The following criterion measures were chosen for testing the hypothesis. Flexibility was measured with the help of Sit and reach test. Standing broad jump, Leg strength was measured with the help of standing broad jump.
- **Scoring:** The distance between the starting line and the nearest point of landing provide the score of the test. The best (Maximum distance) trial is used as the finale score of the test.

Collection of Data

The data pertaining to the study was collected by administering the tests for the selected items.

Before Collection of data, the subjects was given a chance to practice the prescribed tests so that they should become familiar with the tests and know exactly what is to be done to ensure uniform testing condition the subjects was tested during morning and data was collected.

Level of Significance

To test the hypothesis the level of significance was set at 0.05 level of confidence which was considered adequate and reliable for the purpose of this study.

Findings

The data collected on 40 male subjects before and after four week training programmes on flexibility and leg strength was analyzed by comparing the means of control and experimental groups and was again statistically analyzed by applying t-test to check the significant difference among selected items. Therefore separate tables and graphs have been presented for each item as follows.

Table 1: Table showing leg strength comparison of controlled and Experimental Group

Group	Mean	S.D.	M.D.	S.E.	D.F.	O.T.	T.T.
Controlled	71.95	4.33	0.25	1.47	38	0.17	2.021
Experimental	71.7	4.95					

*Level of Significance = 0.05
 Tabulated 't' 0.05 (38) = 2.021

Table-1 reveals that there is significant difference between means of leg strength of controlled and experimental group as mean of Controlled group is 71.95 is Greater than mean of experimental group is 71.7 and there mean difference is 0.25. To check the significant difference between controlled group and experimental group. The data was again analyzed by applying 't' test. Before applying 't' test, standard deviation was calculated between controlled group whose S.D. is 4.33 and experimental group whose S.D. is 4.95. There was found significant difference in leg strength comparison of controlled and experimental group. Because value of calculated 't'= 0.17. Which is greater than tabulated 't'=2.021at 0.05 level of significance. Hence the hypothesis is rejecting.

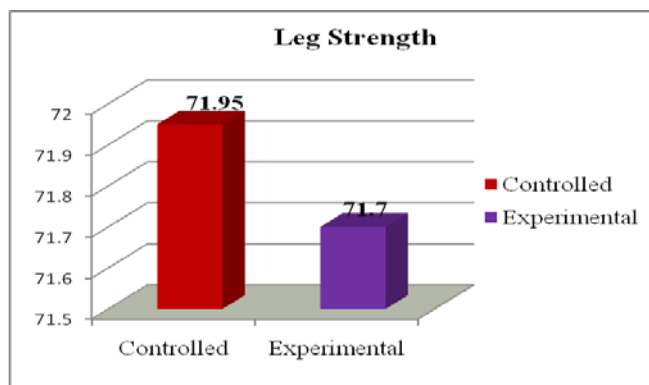


Fig 1: Graph showing leg strength comparison of controlled and Experimental Group

Table 2: Table showing flexibility comparison of controlled and Experimental Group

Group	Mean	S.D.	M.D.	S.E.	D.F.	O.T.	T.T.
Controlled	11.55	2.37	0.30	0.71	38	0.42	2.021
Experimental	11.25	2.12					

*Level of Significance = 0.05

Tabulated 't' 0.05 (38) = 2.021

Table-2 reveals that there is significant difference between means of flexibility comparison of controlled and experimental group as mean of Controlled group is 11.55 is Greater than mean of experimental group is 11.25 and there mean difference is 0.30. To check the significant difference between controlled group and experimental group. The data was again analyzed by applying 't' test. Before applying 't' test, standard deviation was calculated between controlled group whose S.D. is 2.37 and experimental group whose S.D. is 2.12. There was found significant difference in leg strength comparison of controlled and experimental group. Because value of calculated 't' = 0.42. Which is greater than tabulated 't' = 2.021 at 0.05 level of significance. Hence the hypothesis is rejecting.

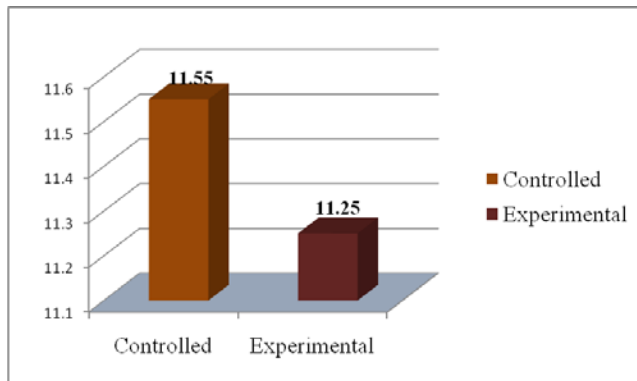


Fig 2: Graph showing flexibility comparison of controlled and Experimental Group

Discussion on findings

It has been observed from the analysis of data that there was significant difference between the same components among the groups after the administration of training programme. And there was great improvement mostly in both the selected components of the leg strength and flexibility of the Kho-Kho players.

Mostly the effect of four week training programme of Plyometric exercises showed a great improvement as well as the positive effects in the components like leg strength and flexibility of the Kho-Kho players.

Conclusion

Within the limitations of the study and from statistical analysis the following conclusion was drawn. There was significant effect on flexibility and leg strength of Kho-Kho players through the statistical analysis after four weeks training programme.

It was also ensured that for quite time the coaches and sportspersons have been trying to design training methods, which would enable them to run faster, jump higher, and throw an object farther. To achieve such goals, power is essential. Strength gains can be transformed into power only

by applying specific power training. Perhaps one of the most successful methods is training that employs are plyometric exercises.

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