

Physical Fitness Components in Improving Hand Spring on Gymnastic Vaulting

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The aim of present study was to assess the effect of Physical Fitness Component to Improve Handspring on Vaulting Table (Gymnastics) Jodhpur District. The researcher used the descriptive approach on a sample of 30 male Gymnast were selected. The sampling technique used was Random Sampling and their age range between 14-24 years. The Physical Fitness Components of required body parts was used. Further Descriptive Statistics (Mean and Standard Deviation) Analysis of variance was used to examine the performances of the participants. The results revealed that in the present study The Finding showed that the performance in Handspring on Vaulting Table had positive, combined Contribution all there variables have positive and significant Correlation with Handspring Performance.

Keywords: Physical, Fitness, Handspring, Vaulting

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Introduction

As the competition of gymnastics turning tough, the skills are moderate and new skills were discovered. The code of conduct is revised and brought under practice, the gymnastics skills lacked behind of technical analysis and arrangement. In this connection. Every moment is to be moderate and developed to exist in the competitive gymnastics. In this process, the knowledge and principles of biomechanics playing a key role to teach and train the accurate skill to the gymnast. In Gymnastics, every skill is having biomechanical orientation. In this context, the mechanical principles such as motion speed, center of gravity, angle of take off, push off, landing angle play an important role related with he performance.

Handspring is a skill which is performed in Gymnastics. It involves a short run and a lap, which brings him (or her) into the appropriate position, the gymnast perform a handspring into the air and over to land in a standing position. The hoping movement that leads into the handspring is made with the body inclined forward and the nonhopping leg extended behind. Then when the hopping foot lands slightly behind the gymnast's center of gravity, the body is in a position to enable it to rotate forward without delay. As the body begins this forward rotation, the gymnast brings the nonhopping foot forward and places it on the floor in front of the other one. A simultaneous lowering of the arms and trunk, together with a thrust from the rear leg moves the center of gravity forward, over and beyond the front foot. The angular momentum that has already developed is added to by the strong upward swing of the rear leg and by the moment of the weight about a horizontal axis through the ankle of the front leg. As the gymnast reaches forward and places the hands on the floor, a forceful extension of the front leg substantially increases the angular momentum of the body and carries it upward toward the handstand position. Assuming that the gymnast has now acquired all the angular momentum needed the next task is to develop the necessary lift to project him (or her) upward into the flight phase of the handspring. To do this the gymnast contracts the appropriate muscles of the flight phase of the handspring. To do this the gymnast contract the appropriate muscles of the arms and shoulder and thrust forcefully downward against the floor, as the center of gravity

Passes forward and over the hands. The factors governing the final phases of the movement (that is from the moment the gymnast leaves the floor until the completion of the handspring) are identical to those outlined relative to the neck spring.

Gymnastics exercise were employed in various nations for centuries for the primary purpose of developing the physical fitness level of citizen in general and on the development e.g. Strength, Agility, Flexibility, Balance and programme suppleness in particular with proper instructional programme which in turn may lay a stronger and lasting foundation for sports.

Flexibility is another important component of physical fitness which helps in synchronizing the various movements. Moreover flexibility is an essential part of life even to a common man who can avert a possible injury resulting from a fall while performing his daily chores. It has been common belief that a high degree of flexibility is necessary for success in all athletic endeavors. Greater amount of flexibility decreases the expenditure of energy and reduces the resistance that must be overcome performing the running action on any gymnastics movement of the gymnast.

Agility plays a vital role in all games and sports specially in the field of gymnastics because when a gymnast participate in sports he has to bring about a purpose to change in direction and movement of various parts of the body.

Sports is one of the most important components of physical fitness which affects the performance in any activity in some form or the other. It has got varied application in the field of sports. Football players need speed to reach the ball quickly and to pierce through the defence. On the other hand defender needs speed of recovery to guard his goal and even goal keeper needs speed to movement to control the ball as quickly as possible.

Speed is the product of two factors: stride length and stride frequency. Increasing either factors (without an off-setting decrease in the other factors) automatically increases the runner sprinting speed. From a training stand point it appears that stride length can be increased by increasing the leg strength, stride frequency, however, is largely an inborn characteristic. Although is might be possible to improve stride frequency slightly through training, it appears that this also brings a corresponding shortening of stride length.

Delimitation

- The study was restricted to the following Physical Fitness Components.

01. Strength Endurance (Shoulder)

02. Explosive Strength (Legs)

03. Spine Flexibility

04. Speed – Sprint

- The study was delimited to 30 male Gymnast of Jodhpur
- The Study was delimited to the age group of 14yrs to 24 yrs
- The study was delimited to the selected physical fitness components of required body parts.
- The study was confined to the selected fitness test (Push ups, Standing Broad jump, Arch Walking & 50m Dash).

Limitation

The researcher chose the available gymnast at Jodhpur of state level performance.

- Hundred percent accuracy will not be possible in recording the velocity owing non variability of sophisticated equipment such as electronic gadgets.
- No specific motivation technique was use during the test. Therefore, the differences that could occur in performance due to lack of motivation was recognized as the limitation of the study.

Procedure

This part deals with the selection of subjects, selection of test administration procedure of test items and statistical procedure employed for the analysis of data.

Selection of Subjects

Thirty male state level gymnast of jodhpur were selected as subject for the study. There age were between 14 to 24 years.

Selection of Test

Since the objective of the study was to find out the Effect of Physical Fitness Component in Improving Hand Spring in Vaulting Table (Gymnastics). For this study the variables selected were considered on the basis of requirements of gymnastics.

Criterion Measure

The performance of Handspring of each selected subjects was taken as the criterion measure for the purpose of present study. The performance was recorded on the basis of execution of the skill evaluated by four judges on the basis of followings criteria which is explain Table1.

Enclosed as Annexure 01

01. Approach Run & Take Off: - The optional running speed for approach run should be 7.5m/sec. A good amount of both forward horizontal speed and forward rotatory , motion must be generated at take off. The take off angle should be between 6- 12° from vertical line.
02. Supporting phase: - At the time of hands contact body is completely extended and feet are higher tan all other part of body. During contact with table the body should be at the angle of 35° - 45°.
03. Push Off: - The body rotates around the hands for about 45° and during this period a strong hand push off help to rotate as well as lift the body through the hand stand in to the air. The optimal for releasing the table is from 84° to 88°.
04. Second Flying Phase: - During the post flight body is kept extended by raising the hands over the head. A gymnast must attain a height of at least One meter over the table and distance about 3.5 meter from the table in second flying phase.
05. Landing_: - As soon as the gymnast lands, he ,must bend his knee and hip joint to absorb the pressure of the landing. The landing angle must be between 65° to 70° from the horizontal level of the landing mat.

Statistical Procedure

The relationships of selected Physical Fitness Components with performance of Handspring wereobtained by employing the person's product moment correlation method. Further the significance of relationship if any was tested at 0.05 level of confidence

Result

The statistical analysis of data collected on thirty male students studying in different school and college of jodhpur division

Is presented in this chapter. The data on performance of handspring on vaulting table along with strength endurance (shoulder push ups). Explosive strength (Leg – Standing Broad Jump), Spine Flexibility (Arch Walking), Speed (50 Mtr. Sprint) was analyzed by person's product moment correlation to find out the relationship of Hand Spring performance to each of the selected variable separately.

Level of significance

The level of significance to ascertain the relationship obtained by Pearson's product moment correlation was set at .05 level of confidence which has considered adequate for the purpose of this study.

Reliability of data

Test – retest method was employed to determine reliability of performance of subjects. The performance of subjects of various qualities were recorded on two day with a gap of one day in between under identical conditions and person correlation was used and co-efficient of reliability obtained by correlation the performance of differences variables on these two days have been presented in table.

TABLE-2

COEFFICIENTS OF RELIABILITY OF TEST RETESTS SCORES

Enclosed as Annexure 02

It is quite evident from Table 2 that the data used for the purpose of this study was quite reliable.

Relationship Between Dependent Variables and Independent Variables

The relationship between the dependent variables i.e. Handspring performance on Vaulting Table and Independent variables – Strength Endurance, Explosive Strength, Spine Flexibility and Speed were obtained by using Pearson Correlation method.

The Coefficients of relationship obtained by correlating the dependent variables to independent variables are presented in table 3.

TABLE - 3

RELATIONSHIP OF DEPENDENT VARIABLES (HANDSPRING) TO INDEPENDENT VARIABLES

Enclosed as Annexure 03

Finding and Discussion

Table 3 indicates that the Independent variables of strength with Hand Spring (.0521), Explosive with Hand spring (.417) and Speed with Handspring (.390) were significant at the fixed level of significant as the obtained value .521, .417 and .390 were higher then the required value to be significant. The other Independent variables Spine Flexibility and Handspring performance was not significant, as obtained values for correlation .289 was less than the value required for the correlation to be significant at .05 level of confidence.

The significant relationship obtained strength and Handspring performance Explosive Strength with Handspring and Speed with Handspring may be attributed to the fact that the strength & speed is the pre requisite of all the events of gymnastics performance and gymnast who were employed as subjects in this study were in regular practice and this might have contributed to the significant relationship.

The non – significant relationship obtained between Handspring and Spine Flexibility performance may be attributed to the fact that the performance in gymnastics is based on the simultaneous and combined interaction of the qualities and this particular Spine Flexibility i.e. Arch walking may not be significantly contributing to performance in isolation.

Annexure

Annexure 01

Table-1: EVALUATING CRITERIA OF HANDSPRING

S.No.	Component	Points
1.	Initial Placement	2 Points
2.	Placement of hands & Legs Swing	2 Points
3.	Stretching of Shoulders & push off	2 points
4.	Post Flight	2 Points
5.	Landing	2 Points
Total :-		10 points

Annexure 02

TABLE-2: COEFFICIENTS OF RELIABILITY OF TEST RETESTS SCORES

S.NO.	Variables	Pearson "r"
1.	Strength Endurance	.83
2.	Explosive Strength	.80
3.	Spine Flexibility	.81
4.	Speed (50 mtr. Sprint)	.80
5.	Hand Spring	.80

Annexure 03

TABLE-3: RELATIONSHIP OF DEPENDENT VARIABLES (HANDSPRING) TO INDEPENDENT VARIABLES

S.NO.	Independent Variables	Correlation "r"
1.	Strength Endurance	.521*
2.	Explosive Strength	.417*
3.	Spine Flexibility	.289*
4.	Speed	.390*

N=30, * Degree of Freedom 28,

*r required to be significant at .05 level is .361.

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