OPEN ACCESS JOURNALS
Indiana Journal of Agriculture and Life Sciences
Abbreviate Tittle- Ind J Agri Life Sci
ISSN *(Online)*- 2583-1623
Journal Homepage Link- https://indianapublications.com/journal/IJALS
DOI- https://doi.org/10.5281/zenodo.17226336

INDIANA PUBLICATIONS
PRODUCTIVE AND QUALITY RESEARCH

Research Article

ICFFL Goa Conference|2025

A Comparative Study on Effect of Functional Training and Skill Based Training on the Performance of Vaulting Table

Dr. Shonan Padte

Assistant Professor, Department of Sports and Exercise Science, Somaiya Vidyavihar University

Article History
Received: 01.07.2025
Accepted: 20.08.2025
Published: 25.09.2025

Citation
Padte, S. (2025). A Comparative Study on Effect of Functional Training and Skill Based Training on the Performance of Vaulting Table. Goa Conference 2025 Fit for Life: Empowering Youth Through Physical Education, Sports and Traditional Sports. *Indiana Journal of Agriculture and Life Sciences,* 113-115. Indiana Publications.

Abstract: The study title A Comparative Study on Effect of Functional Training and Skill Based Training on the Performance of Vaulting Table seeks to understand the effects of modern forms of training in comparison to the traditional forms of training. The study deploys an experimental design using parallel groups for experimentation. Yamashita skill was used as a dependent variable while functional training and skill-based training were used as independent variables. 30 sub-elite gymnasts from Mumbai and Pune Districts were selected for the study which spread over the duration of 16 weeks. The data was collected during the pre and post training phase using WAG FIG Code of Points the scoring patterns mentioned in the and was analyzed using Unpaired 't' test. The mean scores obtained for the FT were (M) = 10.74 and that of SBT was (M) = 9.38, the standard deviation (SD) for FT is 0.44 while that for SBT is 1.40. the Standard Error of Mean (SEM) for functional training is 0.11 and that for SBT is 0.36. the total number of samples for FT is (N) is 15 while the degree of freedom (df) is 14, the total number of samples for SBT (N) is 15 and the degree of freedom (df) is 14. The Calculated 't' value of FT was4.67 while that of SBT is 3.22. And the standard error of difference for FT is 0.17 and that for SBT is 1.03 both the results are significant at 0.05 level. Thus, proving that functional training is better in improving the performance of female gymnasts on vaulting table than skill – based training. It is recommended that this study can be used for other events as well as skill-based sports for performance enhancement.

Keywords: Artistic Gymnastics, Vaulting Table, Skill Based Training, Yamashita, Functional Training

Copyright © 2025The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (**CC BY-NC 4.0**).

INTRODUCTION

Gymnastics is a sport with the oldest origins recorded. From being used as a recreational activity paving its way as a fitness regime to finally molding itself into an organized and globally recognized sport, gymnastics has undergone many changes ranging from changed equipment design to difficulty levels of skills executed. Gymnastics is a multi-disciplined sport having different equipment and training styles. The disciplines are as follows:

1. Artistic Gymnastics –Women Artistic Gymnastic & Men Artistic Gymnastics
2. Rhythmic Gymnastics – Women
3. Acrobatic Gymnastics – Both for Men & Women
4. Aerobic Gymnastics – Both for Men & Women
5. Tumbling – Both for Men & Women
6. Trampoline – Both for Men and Women

This study focuses on Women Artistic Gymnastics which has four compulsory events namely Vaulting Table, Uneven Bars, Balancing Beam and Floor Exercise on which the gymnast performs a series of skills based on varying difficulty levels mentioned in the rule book named as Women Artistic Gymnastics Code of Points. The duration of performance on Uneven Bars, Balancing Beam and Floor Exercise is for 90 seconds while that for Vaulting Table lasts for less than 30 seconds. All the four events for women comprise of speed, power, balance, reaction time, flexibility, precision, co-ordination and agility. The gymnasts also use mental imagery and visualization as part of mental training.

Over the years coaches in the state of Maharashtra, in India, have been struggling to come up with a suitable training program that will enable gymnasts to develop physical fitness, skill execution and above all performance enhancement. After an understanding of the various styles of coaching programs executed across the state of Maharashtra, two major styles of coaching were identified to be further studies within this research namely 21st century Functional Training and the age-old understanding of Skill Based Training. This research was conducted to understand the efficacy of each of these training programs on Vaulting table performance and thereby understanding which of the training types would be more efficient in performance enhancement of gymnasts on vaulting table performance than the other. The present study is thus "A Comparative Study on Effect of Functional Training and Skill Based Training on The Performance of Vaulting Table."

Hypotheses

H_1: It is hypothesized that functional training will have better effect over vaulting table performance of female gymnasts than skill-based training.

*Corresponding Author: **Dr. Shonan Padte**

METHODOLOGY

Form 75 sub – elite gymnasts from the state of Maharashtra 30 gymnasts were selected for the study using purposeful sampling keeping the geographical demographics in mind for the easy of treatment and test administrations. The subjects were selected from the Mumbai Suburban and Pune District from the age group 11 to 16 years respectively. The samples were from pre – competitive and competitive training phase participating at Sub – junior and junior levels of competitions.

A parallel group experimental design was framed for the conduct of this study. The selected subjects were divided into two experimental groups of 15 gymnasts based on geographical locations. 15 gymnasts were selected from Mumbai Suburban District and were administered with functional training while the 15 gymnasts selected from Pune District were administered skill-based training. The training was assigned to each of the groups for 16 weeks (4 months), over 5 days a week for a duration of one and half hours (90 minutes).

The study was conducted in three phases namely pre – test phase, training phase and post – test phase. The data was collected in during the pre and post – test phases by administering the performance evaluation scoring mentioned in the Code of Points given by Federation International Gymnastics (FIG). The pre and post – test was administered on vaulting table skill performance of handspring pike vault (Yamashita) keeping in mind the age group, competition requirements and the safety of the gymnasts. The pre – test was conducted before the administration of the respective training phase while the post – test was conducted after the administration of the respective training.

The independent variables chosen for this study were functional training and skill-based training, while the dependent variable was vaulting table skill performance (handspring pike / Yamashita).

The subjects were given prior orientation about the aim, need and purpose of the study and then their consent to be subject for the study was procured. After which the pre- test was conducted and the data for the same was collected, and the researcher introduced the two experimental groups with specific training programmes respectively. The functional training was administered to subjects from Mumbai Suburban District while subjects from Pune District were administered with skill-based training these training sessions were monitored and progressively changed after every four weeks due to adaptation of the training load. At the end of 16 weeks of the administration of the training a post – test was conducted on the vaulting table skill performance and the data was collected. The obtained pre and post – test data was tabulated systematically. And the post test data of both the experimental groups that is functional training and skill – based training were used for further comparison and interpretation.

RESULTS AND DISCUSSIONS

The data was obtained using the evaluation methods prescribed by the Women Artistic Gymnastics Code of Points laid by the Federation International Gymnastics. The obtained data from the pre and post – test was systematically arranged and analysed using unpaired ‘t’ test using the Graph Pad Calculator Software. The results of the analysis were as follows:

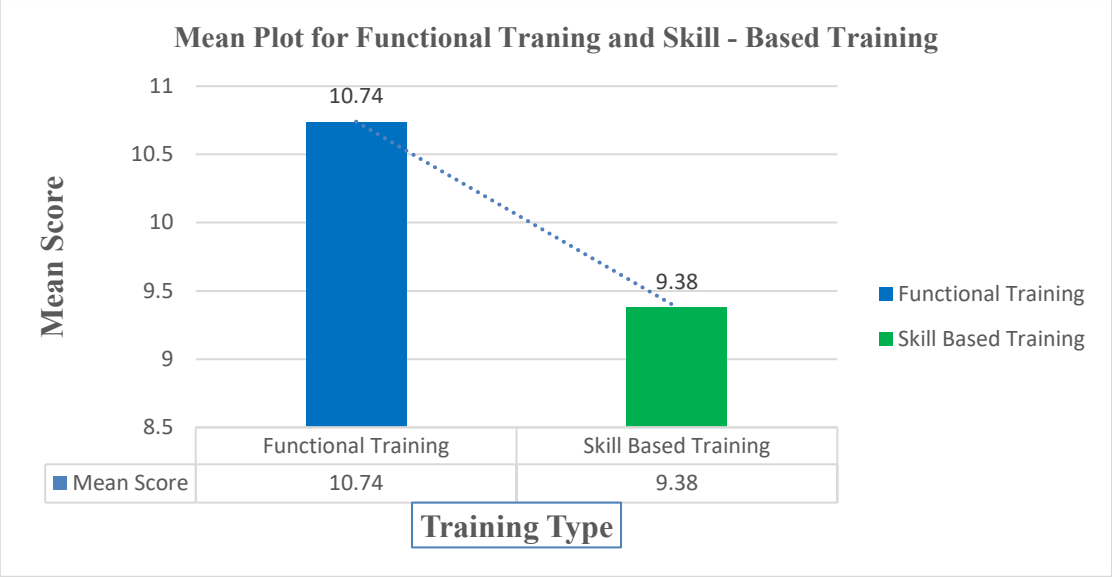
Table 1: Analysis of Pre and Post – Test Data of Vaulting Table Performance of Female Gymnasts due to Functional Training

Group	Mean	SD	SEM	N	T	Df	Standard Error of Difference
Functional Training	10.74	0.44	0.11	15	4.67	14	0.17
Skill Based Training	9.38	1.40	0.36	15	3.22	14	1.03

From the above table it can be stated that Mean (M) for functional training is 10.74 while the mean score for skill-based training is 9.38, the standard deviation (SD) for functional training is 0.44 while that for skill - based training is 1.40. the Standard Error of Mean (SEM) for functional training is 0.11 and that for skill – based training is 0.36. the total number of samples for functional training is (N) is 15 while the degree of freedom (df) is 14, the total number of samples for skill – based training (N) is 15 and the degree of freedom (df) is 14. The Calculated ‘t' value of functional training is 4.67 while that of skill – based training is 3.22. And the standard error of difference for functional training is 0.17 and that for skill – based training is 1.03 both the results are significant at 0.05 level. Thus, proving that functional training is better in improving the performance of female gymnasts on vaulting table than skill – based training.

The tabulated mean score is graphically presented for better understanding of the study. the graph represents the mean plot of the data scores obtained after the application of statistical procedures.

***Corresponding Author:** Dr. Shonan Padte



From the above graphical representation, it can be concluded that functional training has significantly improved vaulting table performance of female gymnasts than skill – based training, as there is a decline in the mean scores of skills – based training in comparison to functional training. Hence, the hypothesis

H_1: It is hypothesized that functional training will have better effect over vaulting table performance of female gymnasts than skill-based training is **Accepted.**

CONCLUSION

While concluding it can be stated that:

- Functional training provided greater efficiency in the performance of vaulting table of the female gymnasts in comparison to skill – based training
- The research has proved to be successful both statistically and graphically.

REFERENCES

1. Padte, S., & Vasanthi, K. (2018). Effect of skill-based training on vaulting table performance of female gymnasts. *Shodh Sangam Research Confluency* (Special Issue), *2*, 462–464. ISSN 2249-717X.
2. Padte, S., & Vasanthi, K. (2021). Comparative effect of functional training and skill-based training on overall performance of female gymnasts. *Journal of Education: Rabindra Bharti University*, *XXII*(1), 209–215. ISSN 0972–7175. (UGC CARE Approved)
3. Hall, E., Bishop, D. C., & Gee, T. I. (2016, February 9). Effect of plyometric training on handspring vault performance and functional power in youth female gymnasts. *(Conference paper or unpublished manuscript – specify if published)*
4. Irwin, G., & Kerwin, D. G. (2009). The influence of the vaulting table on the handspring front somersault. *Sports Biomechanics*, *8*(2), 114–128. https://doi.org/10.1080/14763140902770545
5. Sands, W. A., McNeal, J. R., & Urbanek, T. (2003). On the role of functional training in gymnastics and sports. *(Journal or book not specified – please clarify for accurate citation)*
6. Padte, S., & Kadhiravan, V. (2016). Effect of Functional Training on Performance of Female Gymnasts on Uneven Bars. *Journal DOI*, 44975451.

Websites:

1. https://www.researchgate.net/publication/343826263_Effect_of_Skill_Based_Training_on_Vaulting_Table_Performance_of_Female_Gymnasts
2. https://www.researchgate.net/publication/359221220_Comparative_Effect_of_Functional_Training_Skill_Based_Training_on_Overall_Performance_of_Female_Gymnasts
3. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0148790
4. https://doi.org/10.1080/14763140902745027 https://www.researchgate.net/profile/William-Sands/publication/237307069_On_the_Role_of_Functional_Training_in_Gymnastics_and_Sports/links/53f6b4ce0cf22be01c4516a4/On-the-Role-of-Functional-Training-in-Gymnastics-and-Sports.pdf.

***Corresponding Author:** Dr. Shonan Padte