ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 12| Issue: 4| April 2026|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2026: 8.753 || ISI Value: 1.188

EFFICACY OF SLACKLINE TRAINING ON SELECTED PHYSICAL FITNESS AND PHYSIOLOGICAL VARIABLES AMONG INTERCOLLEGIATE MALE CRICKET BOWLERS

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Article DOI: https://doi.org/10.36713/epra27060
DOI No: 10.36713/epra27060

ABSTRACT

The purpose of this study was to determine the effect of slackline training on selected physical fitness and physiological variables among intercollegiate male cricket bowlers. Thirty male cricket players from Coimbatore district, aged between 18 and 25 years, were selected and randomly divided into two groups, namely experimental (n = 15) and control (n = 15). The study employed a true experimental research design with pre-test and post-test measurements. The selected physical fitness variables were grip strength and balance, while the physiological variables included breath-holding time and peak expiratory flow rate. Prior to the commencement of the training program, all subjects were tested to obtain baseline data. The experimental group participated in a six-week slackline training program, conducted five days per week for 60 minutes per session. The control group did not undergo any specific training apart from their regular activities. After the completion of the training period, post-tests were conducted using the same procedures as the pre-tests. The collected data were statistically analyzed using paired sample t-tests to evaluate the significance of differences between pre-test and post-test scores. The level of significance was fixed at 0.05. The results of the study indicated that slackline training significantly improved grip strength, balance, breath-holding time, and peak expiratory flow rate among intercollegiate male cricket bowlers.

KEYWORDS: *Slackline Training, Cricket Bowlers, Balance, Grip Strength, Breath Holding Time, Peak Expiratory Flow Rate*

INTRODUCTION

Cricket is one of the most popular sports worldwide, requiring a combination of physical fitness, technical skill, and physiological efficiency. Among cricket players, bowlers play a crucial role, as their performance directly influences match outcomes. Effective bowling demands high levels of balance, coordination, muscular strength, and respiratory efficiency.

In recent years, innovative training methods have gained importance in sports conditioning. One such method is **slackline training**, which involves balancing on a flexible line suspended between two anchor points. This form of training challenges the neuromuscular system and enhances proprioception, coordination, and core stability. It is widely used to improve balance and functional strength. Slackline training has been shown to activate stabilizing muscles and improve postural control, which are essential for cricket bowlers during run-up, delivery stride, and follow-through phases. Additionally, physiological parameters such as breath-holding time and peak expiratory flow rate are important indicators of respiratory efficiency, which supports endurance and performance. Despite its growing popularity, limited research has been conducted on the effects of slackline training among cricket players, particularly bowlers. Therefore, this study aims to examine the efficacy of slackline training on selected physical fitness variables (grip strength and balance) and physiological variables (breath-holding time and peak expiratory flow rate) among intercollegiate male cricket bowlers.

SELECTION OF SUBJECTS

The purpose of this study was to determine the efficacy of slackline training on selected physical fitness and physiological variables among intercollegiate male cricket bowlers. To achieve the purpose of the study, 30 male intercollegiate Cricket players are studying in and around Coimbatore district were randomly selected as subjects. Their age as range from 18 to 25 years respectively.

SELECTION OF VARIABLES

The research scholar reviewed the available literature pertaining to the slackline training practices from books, journals, periodicals, magazines and research papers. Taking into consideration feasibility criteria, availability of instrument and the relevance of the variables of the present study, the following variables will be selected. By considering the feasibility the following physical fitness and physiological variables are selected for this study.

- **PHYSICAL FITNESS VARIABLES**
  - Grip strength
  - Balance
- **PHYSIOLOGICAL VARIABLES**
  - Breath holding
  - Peak expiratory flow rate

CRITERION MEASURES

As per the available literature and consultation with experts the following standardized tests was used to collected data on selected physical fitness and physiological variables. The

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selected criterion variables were measured using standardized test and equipment's. The criterion variables selected, test item used and the units of measurement were presented in Table-I

TABLE-I
LIST OF CRITERION VARIABLES AND TEST ITEMS

S.No	Variables	Test/Equipment used	Measuring unit
I Physical Variables			
1	Grip strength	Grip Dynamometer	In Kilograms
2	Balance	Stork balance stance test	In Timing
II Physiological variables			
3	Breath holding time	Breath holding stop watch	In Beats per Minute
4	Peak expiratory flow rate	Peak flow Meters	In liters per Minute

TRAINING PROGRAMME

The training group, namely the slackline training group, underwent their training program for six weeks. They trained five days a week, with each session lasting 60 minutes, including warm-up and cool-down exercises. The control group did not participate in any specific training; however, they continued with their regular physical education curriculum. All the subjects who participated in the training program were monitored throughout the training period. None of them reported any injuries. However, muscle soreness was reported during the early weeks but subsided later. Attendance was recorded before the commencement of each training session, and all subjects attended more than 90% of the total training sessions.

EXPERIMENTAL DESIGN

This study was conducted to determine the possible causes and efficacy of slackline training on selected physical fitness and physiological variables among intercollegiate male cricket bowlers. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (N=30) were randomly assigned to two groups, namely Group-I experimental group (N=15) and Group-II control group (N=15), with fifteen subjects in each group. All the participants were tested before and after the experimentation on physical fitness variables, namely Grip strength and Balance and physiological variables namely: breath holding and peak expiratory flow rate were using standardized tests. After the pre-test, the experimental group underwent six weeks of slackline training for five days per week for 60 minutes per day, while the control group was not given any specific training. After six weeks of training, the post-test was conducted, and the readings were carefully recorded as post-test scores.

TABLE – II
THE SUMMARY OF MEAN AND DEPENDENT 't' TEST FOR THE PRE AND POST TESTS ON GRIP STRENGTH OF EXPERIMENTAL AND CONTROL GROUPS

Groups	Pre test mean ±SD	Post test mean ± SD	M. D	SEM	P Value	't'-ratio
Experimental	56.51 ±0.34	61.82 ±1.35	5.31	0.40	0.00	13.27*
Control	56.31 ±0.22	56.44 ±1.80	0.13	0.52	0.05	0.25

**** Significant at 0.05 level.***

Table – II Indicates the paired sample 't' was computed on selected dependent variables. The 't' test value of Slackline training group and control group are 13.27 and 0.25 for Grip strength performance. The experimental 't' value is 13.27 significantly higher than the required table value of 2.20 with degrees of freedom 11 at 0.05 level of confidence. The 't' test value of control group is 0.25 which is less than the required table value, it indicates that there was not significant improvement on Grip strength performance due to they were not subjected to any specific training. The result of the study shows that Slackline training group has significantly improved the performance of Grip strength. The Graphical Representation of the Pre and Post Test Mean Value of Slackline training Group and control Group on Grip strength presented in Figure-1

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FIGURE – I
THE GRAPHICAL REPRESENTATION OF THE PRE AND POST-TEST MEANS VALUES OF SLACKLINE TRAINING GROUP AND CONTROL GROUP ON GRIP STRENGTH

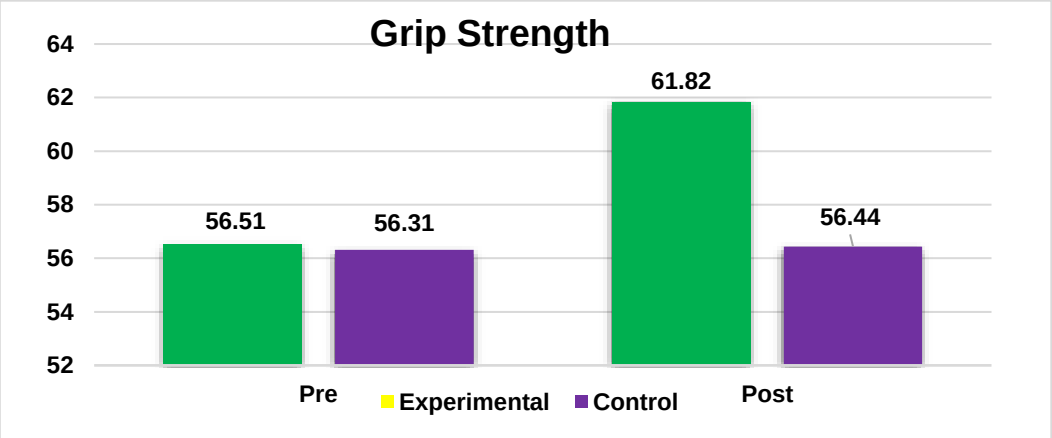


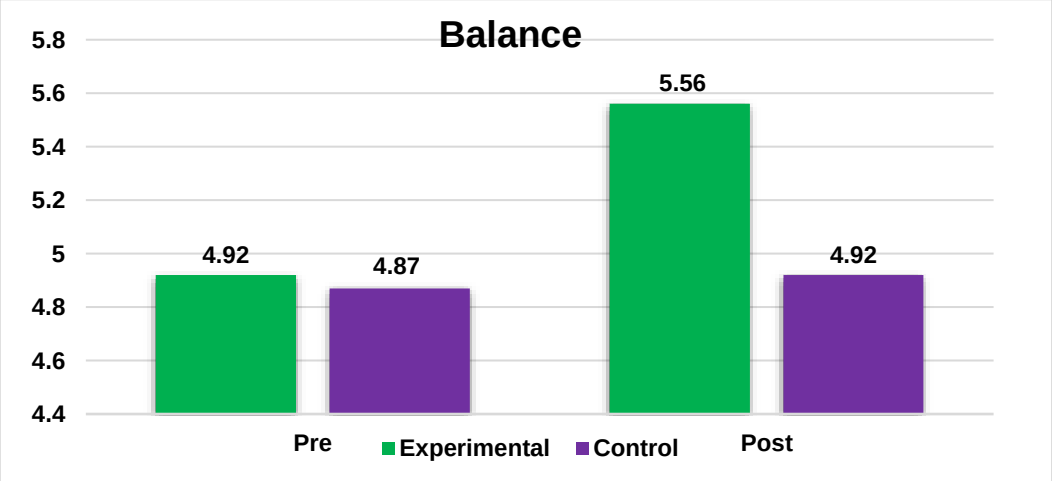
TABLE – III
THE SUMMARY OF MEAN AND DEPENDENT 't' TEST FOR THE PRE AND POST TESTS ON BALANCE OF EXPERIMENTAL AND CONTROL GROUPS

Groups	Pre test mean ±SD	Post test mean ± SD	M. D	SEM	P Value	't'-ratio
Experimental	4.92 ±0.07	5.56 ±0.13	0.64	0.04	0.00	14.88*
Control	4.87 ±0.06	4.92 ±0.13	0.20	0.04	0.24	1.22

**** Significant at 0.05 level.***

Table – III Indicates the paired sample 't' was computed on selected dependent variables. The 't' test value of Slackline training group and control group are 14.88 and 1.22 for Grip strength performance. The experimental 't' value is 14.88 significantly higher than the required table value of 2.20 with degrees of freedom 11 at 0.05 level of confidence. The 't' test value of control group is 1.22 which is less than the required table value, it indicates that there was not significant improvement on Balance performance due to they were not subjected to any specific training. The result of the study shows that Slackline training group has significantly improved the performance of Balance. The Graphical Representation of the Pre and Post Test Mean Value of Slackline training Group and control Group on Balance presented in Figure-II

FIGURE – II
THE GRAPHICAL REPRESENTATION OF THE PRE AND POST-TEST MEANS VALUES OF SLACKLINE TRAINING GROUP AND CONTROL GROUP ON BALANCE



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TABLE – IV
THE SUMMARY OF MEAN AND DEPENDENT 't' TEST FOR THE PRE AND POST TESTS ON BREATH HOLDING TIME OF EXPERIMENTAL AND CONTROL GROUPS

Groups	Pre test mean ±SD	Post test mean ± SD	M. D	SEM	P Value	't'-ratio
Experimental	20.14 ±0.21	23.86 ±1.28	3.72	0.37	0.00	9.95*
Control	20.54 ±0.38	20.95 ±1.08	0.41	0.33	0.24	1.24

**** Significant at 0.05 level.***

Table – IV Indicates the paired sample 't' was computed on selected dependent variables. The 't' test value of Slackline training group and control group are 9.95 and 1.24 for breath holding time performance. The experimental 't' value is 9.95 are significantly higher than the required table value of 2.20 with degrees of freedom 11 at 0.05 level of confidence. The 't' test value of control group is 1.24 which is less than the required table value, it indicates that there was not significant improvement on breath holding time performance due to they were not subjected to any specific training. The result of the study shows that Slackline training group has significantly improved the performance of breath holding time. The Graphical Representation of the Pre and Post Test Mean Value of Slackline training Group and control Group on breath holding time presented in Figure-III

FIGURE – III
THE GRAPHICAL REPRESENTATION OF THE PRE AND POST-TEST MEANS VALUES OF SLACKLINE TRAINING GROUP AND CONTROL GROUP ON BREATH HOLDING TIME

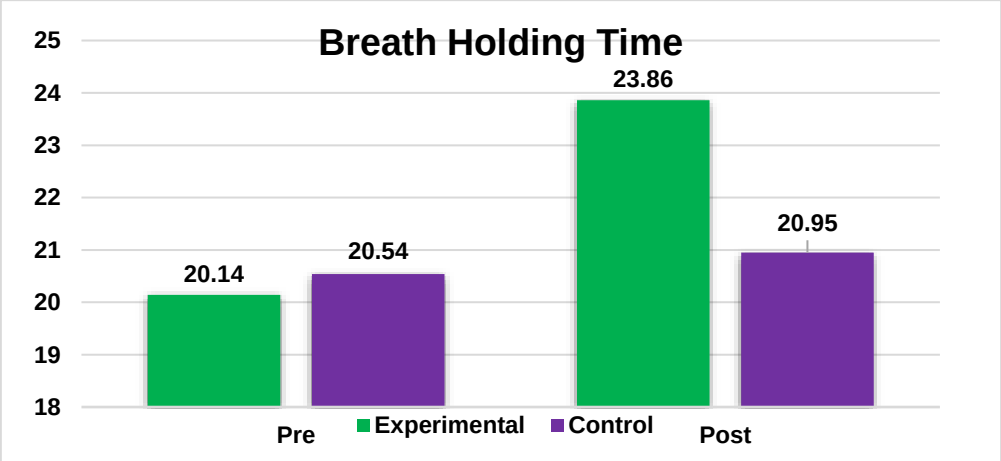


TABLE – V
THE SUMMARY OF MEAN AND DEPENDENT 't' TEST FOR THE PRE AND POST TESTS ON PEAK EXPIRATORY FLOW RATE OF EXPERIMENTAL AND CONTROL GROUPS

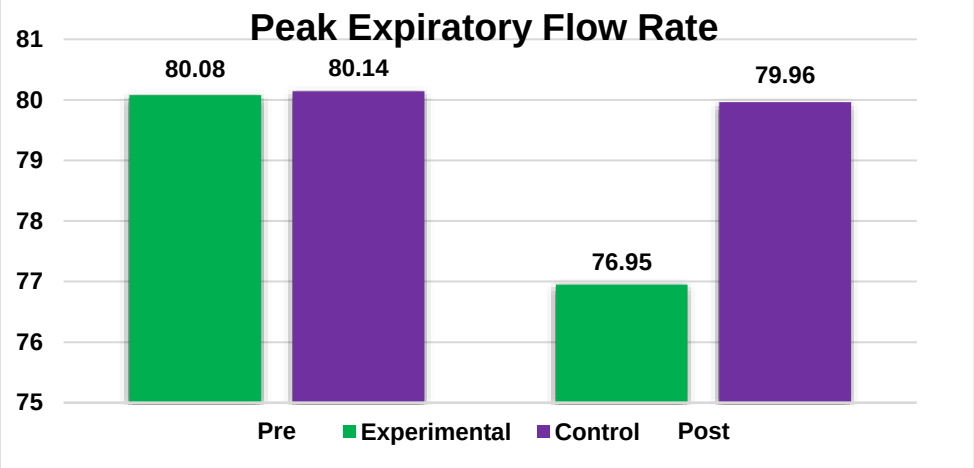
Groups	Pre test mean ±SD	Post test mean ± SD	M. D	SEM	P Value	't'-ratio
Experimental	80.08 ±0.66	76.95 ±1.05	3.13	0.36	0.01	8.69*
Control	80.14 ±0.59	79.96 ±0.88	0.18	0.31	0.05	0.58

**** Significant at 0.05 level.***

Table – V Indicates the paired sample 't' was computed on selected dependent variables. The 't' test value of Slackline training group and control group are 8.69 and 0.58 for peak expiratory flow rate performance. The experimental 't' value is 8.69 are significantly higher than the required table value of 2.20 with degrees of freedom 11 at 0.05 level of confidence. The 't' test value of control group is 0.58 which is less than the required table value, it indicates that there was not significant improvement on peak expiratory flow rate performance due to they were not subjected to any specific training. The result of the study shows that Slackline training group has significantly improved the performance of peak expiratory flow rate. The Graphical Representation of the Pre and Post Test Mean Value of Slackline training Group and control Group on peak expiratory flow rate presented in Figure-IV

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FIGURE – IV
THE GRAPHICAL REPRESENTATION OF THE PRE AND POST-TEST MEANS VALUES OF SLACKLINE TRAINING GROUP AND CONTROL GROUP ON PEAK EXPIRATORY FLOW RATE



DISCUSSION OF FINDINGS

The results of the study indicate that the experimental group that underwent slackline training showed significant improvement in the selected physical fitness variables, namely grip strength and balance, physiological variables namely breath holding and peak expiratory flow rate compared to the control group. The findings further suggest that slackline training had a greater impact on enhancing grip strength and balance, breath holding and peak expiratory flow rate compared, than the absence of specialized training.

These results align with previous research, such as Caspersen **Donath, L (2013)** effects of slackline training on balance, jump performance & muscle activity in young children, such as **Wilmore, L. J (2004),** which examined the Physiology of sports and Exercise. (2nd ed.). champaign, IL: human kinetics. The study found that the training group demonstrated significant improvements in Muscular strength and flexibility compared to the control group. Similarly, the present study confirms that slackline training can be an effective method for improving key physical fitness and physiological variables of cricket players.

CONCLUSION

The findings of this study demonstrate that slackline training significantly improved physical fitness variables, namely grip strength and balance, physiological variables namely breath holding time and peak expiratory flow rate of intercollegiate-level cricketers compared to the control group. The results suggest that incorporating slackline training as part of a structured cricket training program can have a greater impact on enhancing these physical fitness and physiological variables than the absence of specialized training. Therefore, slackline training can be considered an effective method for improving key physical attributes essential for cricket performance.

REFERENCE

1. *Wilmore, L. J., & Costill, D. L. (2004). Physiology of sports and Exercise. (2nd ed.). champaign, IL: human kinetics.*
2. *Donath, L., Roth, R., Rueegge, A., Groppa, M., Zahner, L., and Faude, O. (2013). Effects of slackline training on balance, jump performance & muscle activity in young children. International Journal of Sports Medicine, 4(12), 1093-8. doi: 10.1055/s-0033-1337949.*
3. *Robson, M. (1972). "Effect of Yoga on Flexibility and Respiratory Measure of Vital Capacity and Breath Holding Time", Doctoral Thesis, University of Oregan, Engutiem, p.5.*
4. *Volery, S., Singh, N,, de Bruin, E.D., List, R., Jaeggi, M.M., Mattli Baur, B., and Lorenzetti, S. (2017). Traditional balance and slackline training are associated with task-specific adaptations as assessed with sensorimotor tests. Europen journal of sports science, 17(7), 838-846.*