IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Study Of Effect Of Resistance Training On Motor Fitness Components (Reaction Time) And Skill Ability (Service) On Volleyball Players

[1]Mr. Prasad Chandrakant Gaonkar [2]Dr. Nilesh Ashok Lohar

[1]Ph.D. Scholar, [2]Assistant Professor

[1,2]Department of Physical Education, University of Mumbai

Abstract:

Sports training is a systematic process of preparing athletes based on scientific and technical principles to enhance performance. It is planned and controlled to achieve specific goals by improving motor skills and behaviour through structured content, methods, and organization. This preparation involves carefully organized exercises that foster an athlete's development in a pedagogical manner. The aim of the sports training is to develop the sports specific skills, techniques and tactics which ultimately helps in betterment of spots performance. Volleyball is one of the most popular sports globally, enjoyed by millions of people. Its widespread appeal stems from its engaging gameplay and the physical and mental challenges it offers to players of all skill levels. Resistance training, often referred to as strength or weight training, involves the use of resistance to promote muscular contraction. This process helps in building the strength and size of skeletal muscles, making it an integral part of athletic training programs. A six-to-eight-week resistance training regimen can be implemented to maintain and improve performance, with adjustments made through progressive resistance. Resistance bands are a versatile tool in such programs. They act as portable, elastic bands that provide consistent resistance during movements. Their adaptability makes them suitable for various workouts and an effective option for strength training. The study will signify the effect of resistance training on Motor Fitness components and skills abilities of college male volleyball players. Current study was done on 30 male volleyball players for the period of 8 weeks. The difference between initial and final means on criterion variables were considered as the effect of separate treatment among the subjects. Significance level was fixed to 0.05% to test the hypothesis and data was analysed using t-test. The study will ensure the effectiveness of resistance training in improving co-ordination, reaction time and service as well as passing ability.

Keywords: Resistance training, Reaction Time, Service.

Introduction

Volleyball is a sport that welcomes players of all ages and skill levels, making it a favourite in schools, community leagues, and professional settings worldwide. Its inclusivity and adaptability contribute to its broad appeal. It provides a fun and engaging way to stay active, build teamwork, and maintain physical fitness, making it a sport that brings people together.

Sports training is a systematic process designed to prepare athletes using scientifically proven methods to optimize their performance and sustain physical capabilities. This training aims to improve an athlete's fitness, refine their skills, and enhance efficiency in their chosen sport. The primary goals of sports training include boosting physical fitness, developing technical and tactical expertise, and elevating overall athletic performance. Various methods are used in this process, such as continuous training, circuit training, interval training, plyometric exercises, weight training, Fartlek training, and cross-training. Each approach targets specific aspects of an athlete's development, ensuring comprehensive preparation for competition.

Strength training, also known as resistance or weight training, is a method aimed at improving muscular strength and endurance by gradually increasing resistance. Training programs typically last six to eight weeks to achieve and maintain consistent progress. These programs incorporate key variables such as sets, repetitions, intensity, frequency, and rest periods to maximize effectiveness. Resistance bands are a versatile and popular tool in strength training. These portable bands provide resistance when stretched, making them suitable for targeting various muscle groups. Their adaptability allows them to be integrated into diverse workout routines. Additionally, resistance bands offer continuous resistance throughout each movement, ensuring effective muscle engagement and improved strength development.

Motor fitness is a comprehensive concept encompassing ten fitness components, including five additional motor performance elements: power, speed, agility, balance, and reaction time. These elements are critical to achieving success in sports. Evaluation of sports skills is typically conducted through various standardized tests, which can include skill-based assessments, rating scales, and performance metrics.

Objectives

The research scholar, who is both a player and a coach, concluded after consulting experts that physical fitness and motor skills vary significantly between individuals and athletes. Athletes generally exhibit higher levels of physical fitness due to their participation in structured training programs. For volleyball players, it is essential to develop both motor fitness and skill abilities to enhance overall performance in the game.

Key components such as reaction time and service play a crucial role in a volleyball player's success during matches. Therefore, prioritizing these elements is vital for improving the skill abilities of players. The objective of this study is to examine the impact of resistance training on selected motor fitness components and the skill abilities of male volleyball players aged 16-18 years.

Hypothesis of the study

1. **HO_1** There is no significant difference in adjusted mean scores of Reaction Time of Male volleyball players belonging to Resistance and control groups by considering their pre- Reaction Time as covariate.
2. **HO_{11}** There is significant difference in adjusted mean scores of Reaction Time of Male Volleyball Players belonging to Resistance and Control Groups by considering their pre- Reaction Time as covariate.
3. **HO_2** There is no significant difference in adjusted mean scores of Service of Male Volleyball Players belonging to Resistance and Control Groups by considering their pre- Reaction time as covariate.
4. **HO_{22}** There is significant difference in adjusted mean scores of Service of Male Volleyball Players belonging to Resistance and Control Groups by considering their pre- Service as covariate.

Methodology

This study aims to investigate the effects of resistance training and plyometric training on motor fitness components, specifically reaction time, as well as skill abilities such as service, among male volleyball players aged 16 to 18 years from the Mumbai suburban district.

The research involved a sample of 30 male volleyball players, randomly divided into two equal groups. Group I, referred to as the Resistance Training Group (RTG), participated in resistance training, while Group II served as the Control Group (CG). Both groups underwent pre-training tests to assess their motor fitness and skill abilities.

After a six-week training period, the same tests were administered to both groups to evaluate changes in reaction time and service ability. The differences between the pre- and post-training means were calculated, and the hypothesis was tested at a 5% level of significance. Data analysis was performed using a t-test to determine the effectiveness of the training programs.

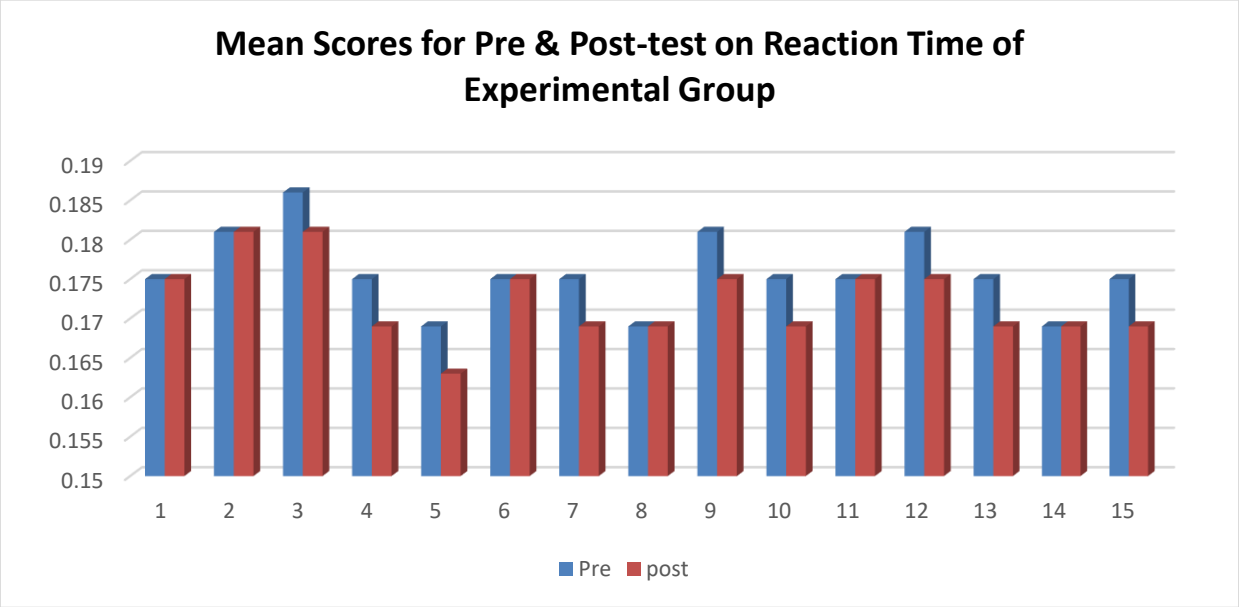
Findings

The data has been analyzed by using independent t-test with online Vassar stats computational package to test this hypothesis as shown in the following table.

Table 1: Mean Scores for Pre & Post-test on Reaction Time of Experimental Group

	N	ΣX	ΣX^2	SS	Mean	Mean Diff	df	t	LoS
Pre-Experimental	15	2.636	0.463	0.0003	0.1757	0.0035	28	+1.96	0.060017
Post Experimental	15	2.583	0.445	0.0004	0.1722				

Graph 1: Graphical representation for Pre & Post-test on Reaction Time of Experimental Group



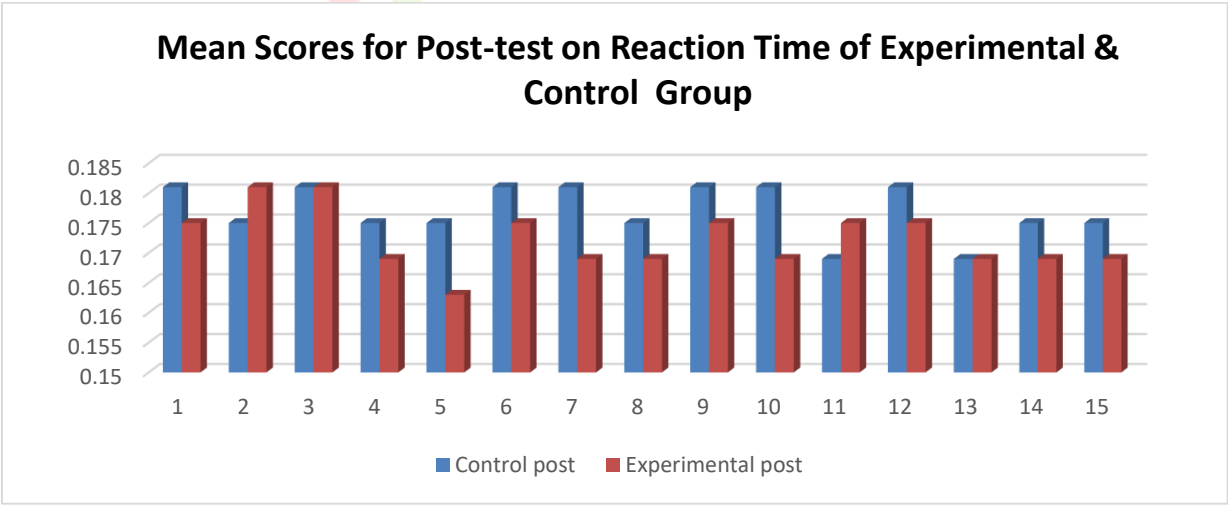
Interpretation:

The mean gains for Pre & Post-test on Reaction Time of Experimental Group is 0.0035, the calculated t for the observed values is +1.96 (p= 0.060017) for df =28 at 5% level of significance, which is not significant, hence the Motor Fitness Component (Reaction Time) of Experimental Group is improved significantly due to Resistance training among the male volleyball players.

Table 2: Mean Scores for Post-test on Reaction Time of Experimental & Control Group

	N	ΣX	ΣX^2	SS	Mean	Mean Diff	df	t	LoS
Post Control	15	218	3178	9.7333	14.5333	0.8	28	+2.81	0.008937
Post Experimental	15	230	3534	7.3333	15.3333				

Graph 2: Graphical representation for Post-test on Reaction Time of Experimental & Control Group



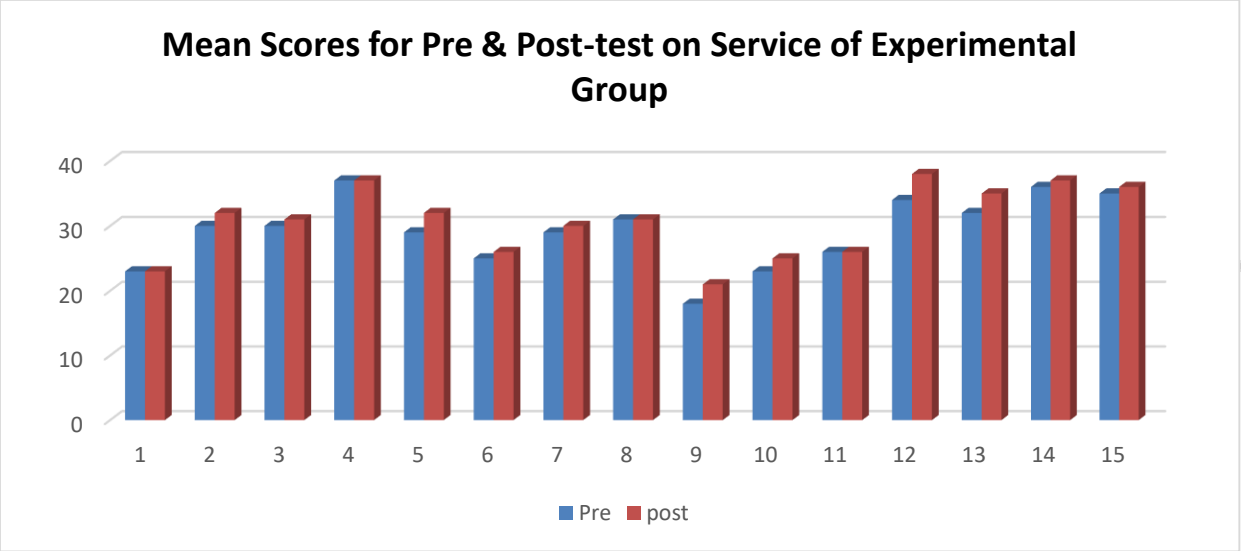
Interpretation:

The Mean gain for Post-test on Reaction Time of Experimental & Control Group is 0.8, the calculated t for the observed values is +2.81 (p= 0.008937) for df =28 at 5% level of significance, which is highly significant, hence the Motor Fitness Component (Reaction Time) is improved significantly with the Resistance training programme.

Table 3: Mean Scores for Pre & Post-test on Service of Experimental Group

	N	ΣX	ΣX^2	SS	Mean	Mean Diff.	df	t	LoS
Pre-Experimental	15	438	13196	406.4	29.2	1.4667	28	+0.74	0.465460
Post Experimental	15	460	14520	413.3	30.6				

Graph 3: Graphical representation for Pre & Post-test on Service of Experimental Group



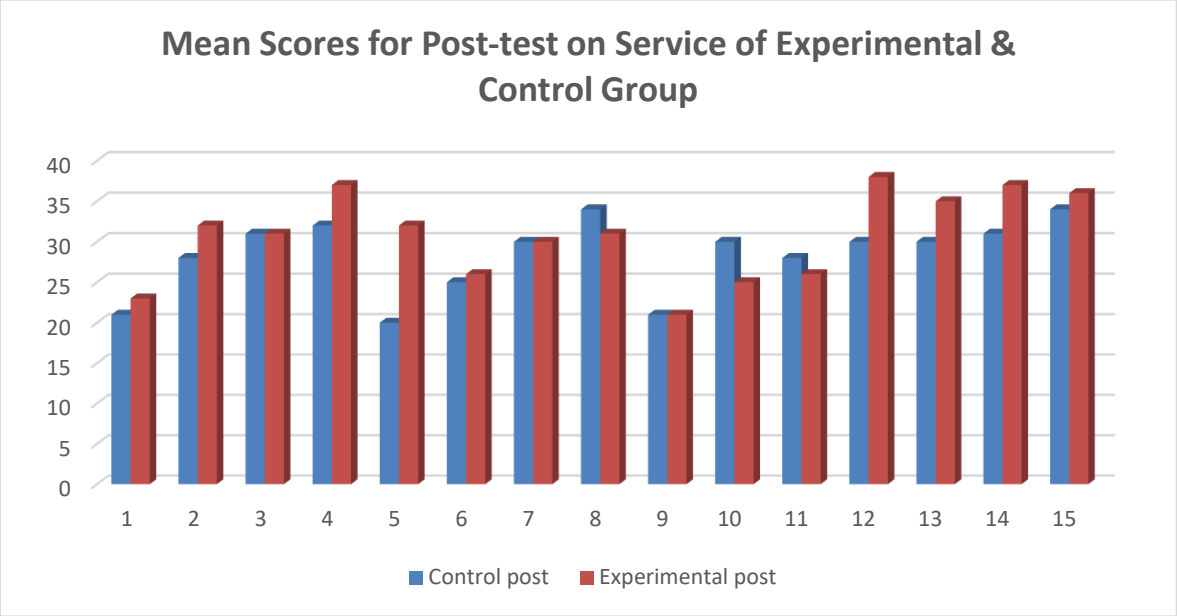
Interpretation:

The Mean gains for Pre & Post-test on Service of Experimental Group is 1.4667, the calculated t for the observed values is +0.74 (p= 0.465460) for df =28 at 5% level of significance, which is significant, hence the Skill ability (Service) is improved significantly with the Resistance training.

Table 4: Mean Scores for Post-test on Service of Experimental & Control Group

	N	ΣX	ΣX^2	SS	Mean	Mean Diff.	df	t	LoS
Post Control	15	425	12333	291.3333	28.3333	2.3333	28	+1.27	0.214538
Post Experimental	15	460	14520	413.3333	30.6667				

Graph 4: Graphical representation for Post-test on Service of Experimental & Control Group



Interpretation:

The Mean gains for Post-test on Service of Experimental & Control Group is 2.3333, the calculated t for the observed values is +1.27 (p= 0.214538) for df =28 at 5% level of significance, which is Highly significant, hence the Skill ability (Service) is improved significantly with the Resistance training.

Conclusion

- Resistance training programme proved to be effective for developing the Motor Fitness Component (Reaction Time) of volleyball players.
- Resistance training programme proved to be effective for developing the Skill Ability (Service) of volleyball players.

References:

1. **Noe, R. A.,** (2020) Employee Training and Development
2. **McArdle, W. D., Katch, F. I., & Katch, V. L.** (2014). Exercise Physiology: Nutrition, Energy, and Human Performance (8th ed.). Lippincott Williams & Wilkins.
3. **A.K Uppal**, (2015) "Principles of Sports Training", (Friends Publications India)
4. **D. V. Palwe & K. N. Singh** "Health & Physical Education" (D.N. Publication, 2023)
5. **A. Rawat**, "A Textbook of Physical Education", (Oswal Publication 2024)
6. **Bompa, T. O., &Buzzichelli, C.** (2018). Periodization: Theory and Methodology of Training. Human Kinetics.
7. **Erin A. McGill**, Ian Montel, (2019) "Essential of Sports Performance Training," (Jones & Bartlett Learning Publishers)
8. **Bompa, T. O., & Haff, G. G.** (2009). Periodization: Theory and methodology of training. Human Kinetics.
9. **Munender**, "Sports Training", (Sports publication,2019)
10. **Pradeep Kumar Biswal**, "Theory of Sports And games" (Sports publication,2017)
11. **Phill Page**, "strength and Band Training "Third Edition, (Human Kinetics,1967)

12. **Miller**, "The Volleyball Handbook winning essentials for players and coaches" (Human Kinetics,2005)
13. **Klika, B.** (2010). Speed, Agility, and Quickness Training for Performance Enhancement. In Clark, M. A., & Lucett S. C. (Eds.), NASM's Essentials of Sport Performance Training.