Available online at https://jshpe.in/

JOURNAL OF SPORTS, HEALTH AND PHYSICALEDUCATION (JSHPE)

Journal of Sports, Health and Physical Education (JSHPE), 01(01), 34-42; 2024

IMPACT OF DIFFERENT PACKAGES OF TRAINING PROGRAMS ON ANTHROPOMETRIC AND PHYSIOLOGICAL VARIABLES IN YOUNG CURIOUS VOLLEYBALL PLAYERS

Dr. G. SURESH KUMAR
Assistant Professor,
Department Of Physical Education.
Dhanalakshmi Srinivasan College Of Physical Education.,Perambalur -621 212,
Tamilnadu,India

APA Citation:

Suresh Kumar, G (2024). IMPACT OF DIFFERENT PACKAGES OF TRAINING PROGRAMS ON ANTHROPOMETRIC AND PHYSIOLOGICAL VARIABLES IN YOUNG CURIOUS VOLLEYBALL PLAYERS, Journal of Sports, Health and Physical Education. 01(01), 34-42; 2024

Submission Date: 17.09.2024
Acceptance Date: 11.10.2024

ABSTRACT

The purpose of the study was to find out the impact of different packages of training programs on anthropometric and physiological variables in young, curious volleyball players. To achieve this purpose of the study, sixty male volleyball players were selected at random to study for a bachelor's degree in the Department of Physical Education, AVVM. Sri Pushpam College, (Autonomous) of Physical Education, Poondi, Tanjavur, Tamil Nadu, India. The age of the subjects ranged between 18 and 23 years. They were divided into four equal groups of fifteenplayers: the circuit training group (Group I), the plyometric training group (Group II), the SAQ training group (Group III), and the control group (Group IV). Groups I and III underwent their respective training programs for three days per week for twelve weeks; they did not undergo any special training programs apart from their regular physical education curriculum. The control group did not go for any training. All the subjects were tested prior to and after the experimentaltreatment periods on selected criterion variables related to physical fitness. The followingvariables, such as arm girth and breath holding Time, were selected as criterion variables: Arm girth was assessed by a measuring tape (in centimeters), and breath holding Time was assessed by a Nose clip method (In seconds). All the subjects in the three groups were tested on selected criterion variables prior to and immediately after the training program as pre- and post-tests. Ananalysis of covariance

(ANCOVA) was used to find out the significant difference, if any, among the groups on each selected criterion variable separately. In all the cases, a.05 level of confidence was fixed to test the significance, which was considered appropriate. There was a significant difference between the circuit training group, plyometric training group, SAQ training group, and the control group on criterion variables such as arm girth and breath holding Time.

Keywords: *circuit training group, plyometric training group, SAQ training group and the control group on criterion variables among arm girth and breath holding Time for the volleyballplayers.*

Circuit Training

Circuit training involves performing a series of exercises in a specific order with minimal rest in between. This form of training has been found to have a positive impact on the anthropometric and physiological variables of young volleyball players. It helps in improving muscular strength, endurance, and cardiovascular fitness. Additionally, circuit training contributes to the reduction of body fat percentage and the development of lean muscle mass, which are crucial for optimal performance on the volleyball court.

Plyometric Training

Plyometric training focuses on explosive movements aimed at enhancing power and speed. It involves exercises such as jumps, hops, and bounds. When incorporated into the training regimen of young volleyball players, plyometric training has been shown to improve lower body strength, agility, and vertical jump height. These enhancements are essential for spiking, blocking, and overall agility on the volleyball court.

SAQ Training

Speed, agility, and quickness (SAQ) training programs are designed to enhance an athlete's ability to move quickly and efficiently in multi-directional patterns. For young volleyball players, SAQ training contributes to improved footwork, reaction time, and change of direction capabilities. These attributes are crucial for maneuvering around the court, positioning for serves, and responding to opponents' movements effectively.

METHODOLOGY

In this chapter deals with the procedures followed in the selection of the subjects,selection of variables, selection of tests, instrument reliability, reliability of the data, pilot study,

orientation to the subjects, training program, collection of data, test administration, experimental design, and statistical procedure.

SELECTION OF SUBJECTS

The purpose of the study was to find out the impact of different packages of training programs on anthropometric and physiological variables in young, curious volleyball players. To

achieve this purpose of the study, sixty male volleyball players were selected at random to study for a bachelor's degree in the Department of Physical Education, AVVM. Sri Pushpam College, (Autonomous) of Physical Education, Poondi, Tanjavur, Tamil Nadu, India. The age of the subjects ranged between 18 and 23 years. They were divided into four equal groups of fifteen players: the circuit training group (Group I), the plyometric training group (Group II), the SAQ training group (Group III), and the control group (Group IV). Groups I and III underwent their respective training programs for three days per week for twelve weeks; they did not undergo any special training programs apart from their regular physical education curriculum. The control group did not go for any training. All the subjects were tested prior to and after the experimental treatment periods on selected criterion variables related to physical fitness. The following variables, such as arm girth and breath holding Time, were selected as criterion variables: Arm girth was assessed by a measuring tape (in centimeters), and breath holding Time was assessed by a Nose clip method (In seconds). All the subjects in the three groups were tested on selected criterion variables prior to and immediately after the training program as pre- and post-tests. An analysis of covariance (ANCOVA) was used to find out the significant difference, if any, among the groups on each selected criterion variable separately. In all the cases, a.05 level of confidence was fixed to test the significance, which was considered appropriate.

TRAINING PROGRAMME

The subjects (volleyball players) were comprised during the training period, there were four groups: experimental group I (circuit training), experimental group II (plyometric training), experimental group III (SAQ training), and control group IV (without training). The experimental groups were given training programs, whereas the control group was given trainingprograms without any training. The training procedure was conducted for three days per weekfor twelve weeks in addition to their regular physical education activities. Every day's workout lasted about 45–60 minutes, including warm-up and warm-down exercises. Group III acted as a control group and did not participate in any specific training; however, they participated in a regular physical education program. Thus, the training program was conducted with the following instruments: anthropometric and physiological variables selected, such as arm girth and breath holding time.

STATISTICAL ANALYSIS

The data was collected from four groups prior to and after the completion of the training period on selected criterion variables and statistically examined for significant differences, if any, by applying analysis of covariance (ANCOVA). The Scheffe's post hoc test was applied to determine if there was a significant difference between groups if their 'F' ratio was significant.In all cases, a.05 level of confidence was utilized to test the significance. All these techniques were used with the help of the statistical procedure of the social sciences software (SPSS-20).

ANALYSIS OF DATA

The analysis of covariance of the data obtained for Arm Girth of the pre-test and post-test of the Circuit training group, plyometric training group, SAQ training group and Control group has been presented in Table I.

Table-I

COMPUTATION OF ANALYSIS OF COVARIANCE FOR ARM GIRTH ON PRE-TEST AND POST-TEST DATA OF EXPERIMENTAL AND CONTROL GROUPS

(In Centimetres)

Test	SAQ Training Group	Plyometric Training Group	Circuit Training Group	Control group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test									
Mean	26.70	26.93	26.53	26.73	Between	1.21	3	.404	.059
S.D.	3.44	2.51	2.14	2.15	Within	383.50	56	6.84	
Post Test									
Mean	26.96	27.26	27.00	26.86	Between	1.31	3	.437	.065
S.D.	3.52	2.47	2.05	2.03	Within	376.40	56	6.72	
Adjusted Post Test									
2.36 Mean	26.99	27.06	27.18	26.85	Between	.853	3	.284	2.36
					Within	6.60	55	.120	

* Significant at 0.05 level
Required Table value for df (3&55 and 3&56) at 0.05 level = 2.77

Table I revealed the arm girth of the pre-test and post-test group of the experimental and control groups. In this context, the mean value observed for the SAQ group was (M = 26.70, SD = 3.44), the plyometric group (M = 26.93, SD = 2.51), the circuit group (M = 26.53, SD = 2.14), and the control group (M = 26.73, SD = 2.15) with reference to arm girth among them. The analysis of covariance observed that there was no significant difference in the pre-test score between the control and experimental groups. The F-value was identified as F (3, 56) =.059, showing an insignificant difference among them.

The mean value of the arm girth of the post-test group of experimental and control group was observed to be (M = 26.96, SD = 3.52), the plyometric group (M = 27.26, SD = 2.47), the circuit group (M = 27.00, SD = 2.05), and the control group (M = 26.86, SD = 2.03), with reference to the arm girth among them. The analysis of covariance observed that there was no significant difference in post-test score between the control and experimental groups. The F- value was identified as F (3, 56) =.065, showing an insignificant difference among them.

The mean value of Arm Girth of adjusted post-test groups of experimental and control groups, the mean value observed that the SAQ group was (M= 26.99), Plyometric group (M= 27.06), Circuit group (M= 27.18) and Control group (M=26.85) with reference to Arm Girth among them. The analysis of covariance observed that there was no significant difference in the adjusted post-test score between the control and experimental groups. The F-value was identified as F (3, 56) = 2.36, showing an insignificant difference among them.

Table-II

COMPUTATION OF ANALYSIS OF COVARIANCE FOR BREATH HOLDING TIME ON PRE-TEST AND POST-TEST DATA OF EXPERIMENTAL AND CONTROL GROUPS

(In seconds)

Test	SAQ Training Group	Plyometric Training Group	Circuit Training Group	Control group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test									
Mean	23.93	23.66	23.26	24.20	Between	7.13	3	2.37	1.67
S.D.	.798	1.23	1.22	1.42	Within	79.60	56	1.42	
Post Test									
Mean	28.13	27.06	26.40	24.13	Between	128.73	3	42.91	18.77*
S.D.	1.18	1.43	1.88	1.45	Within	128.00	56	2.28	
Adjusted Post Test									
2.36 Mean	27.97	27.16	26.87	23.72	Between	152.95	3	50.98	49.67*
					Within	56.45	55	1.02	

* Significant at 0.05 level

Required Table value for df (3&55 and 3&56) at 0.05 level = 2.**77**

Table II revealed the breath holding times of the pre-test and post-test groups of the experimental and control groups. In this context, the mean value observed for the SAQ group was (M = 23.93, SD =.798), the plyometric group (M = 23.66, SD = 1.23), the circuit group (M = 23.26, SD = 1.22), and the control group (M = 24.20, SD = 1.42), with reference to breath holding time among them. The analysis of covariance observed that there was no significant difference in the pre-test score between the control and experimental groups. The F-value was identified as F (3, 56) = 1.67, showing an insignificant difference among them.

The mean value of breath holding time in the post-test group of experimental and control groups was observed to be (M = 28.13, SD = 1.18), plyometric group (M = 27.06, SD = 1.43), circuit group (M = 26.40, SD = 1.88) and control group (M = 24.13, SD = 1.45) with reference to breath holding time among them. The analysis of covariance observed that there was a significant difference in post-test scores between the control and experimental groups. The F- value was identified as F (3, 56) = 18.77, showing a significant difference among them.

The mean value of breath holding time of adjusted post-test groups of experimental and control groups was observed to be (M = 27.97), (Plyometric group = 27.16), (Circuit group = 26.87), and (Control group = 23.72) with reference to breath holding time among them. The analysis of covariance observed that there was a significant difference in the adjusted post-test score between the control and experimental groups. The F-value was identified as F (3, 56) = 49.67, showing a significant difference among them.

TABLE - III

SCHEFFES POST-HOC TEST FOR MEAN DIFFERENCE BETWEEN GROUPS ON BREATH HOLDING TIME

(In Seconds)

SAQ **Training Group**	**Plyometric Training Group**	**Circuit Training Group**	**Control group**	**Mean Differences**	**Confidence Interval Value**
27.97	27.16		-	0.81	
27.97	-	26.87	-	1.1*	
27.97	27.16		23.72	4.25*	
-	27.16	26.87		0.29	1.04
-			23.72	3.44*	
-	-	26.87	23.72	3.15*	

**Significant at 0.05 level of confidence.*

Table III indicates a post-hoc test (Scheffe's method) between the control group and the three experimental groups. The post-hoc test was used to identify the significant difference in breath holding time among groups. The mean value of the respective groups‟ portrayed target score of breath holding time to find out significance differences between them. The adjusted post-mean score of breath holding time indicates the magnitude of breath holding time efficiency between groups. The results found that the mean difference was significant at the 0.05 level between the SAQ and control groups (MD = 4.25, p> 0.05), the plyometric and control groups (MD = 3.44, p> 0.05), and the circuit and control groups (MD = 3.15, p> 0.05). The results also portrayed that the significant mean difference between SAQ and the circuit group (MD = 1.1, p> 0.05) was at the 0.05 level with regard to breath holding time. In this context, the study indicates that there was no significant difference between the groups of SAQ and plyometric and the groups of plyometric and circuit.

CONCLUSIONS

Based on the results of the study the following conclusion where drawn:

1. The SAQ training, plyometric training, and circuit training had not showed any significant changes in anthropometric variables, namely arm girth, when compared with the control group
2. The SAQ training, plyometric training, and circuit training had showed significant improvement in physiological variables such as breath holding when compared with the control group.
3. The SAQ training was better than the circuit training in the improvement breathes holding time.
4. It was concluded that there was no significant difference among the three experimental groups on selected anthropometric variables, namely arm girth.

REFERENCES

1. Arnheim, D. D. (1985). **Modern Principles of Athletics Training**. Saint Louis: Mirror and Mosby College Publishing.
2. Baechle, T. R., & Earle, R.W. (2000). **Essentials of Strength Training and Conditioning**. 2nd Edition, Champaign, IL: Human Kinetics.
3. Barrow, Harold. M., Rosemary, & McGee. (1973). **A Practical Approach to Measurement in Physical Education, Londo**. Kenry Kimpton Publications.
4. Karpovich, P. V. (1962). **Physiology of Muscular Activity**. Philadelphia, W.B. Saunders company.
5. Lawrence, E., Morehouse., Augustine, T., & Miller. (1976). **Physiology of Exercise**. (5^{th} Ed), Saint Louis: The C.V. Mosby Company.
6. Mangal, S. K. (2010). **Statistics in Psychology and Education**. New Delhi: Asoke K. Ghosh, PHI Learning Private Limited.
7. Surinder. N. (1993). **Anthropometry: The Measurement of Body Size Shape and Form**. Friend publication, India.

8. Arazi, H., Mohammadi, M., & Asadi, A. (2014). Muscular adaptations to depth jump plyometric training: Comparison of sand vs. land surface. **Interventional Medicine and Applied Science**, 6(3), 125-130.
9. Babu, M.P., & Reddy, S. S. M. (2014). **Comparative Analysis of Speed and Agility Among University Players of different Disciplines**. International journal of Engineering Research and Sports Science, 1(3), 1-3.
10. Bal, B. S., Kaur, P. J., & Singh, D. (2011). Effects of a short term plyometric training program of agility in young basketball players. **Brazilian Journal of Biomotricity**, 5(4), 271-278.
11. Chittibabu, B., & Akilan, N. (2013b). Effect of Sports Specific Endurance Circuit Training on Peak Anaerobic Power and Aerobic Power of High School Male Basketball Players. **International Journal of Current Advanced Research**, 2(1), 48-50.
12. Devaraju, D. (2014). The purpose of the study was to examine the effect of S.A.Q training on vital capacity among Hockey players. **International Journal of Management**, 5(1), 102-105.
13. SURESH, D. "Effect Of Treadmill Training On Total Lung Capacity Among Male KabaddiPlayers." *Journal of Namibian Studies: History Politics Culture* 33 (2023): 4232-4236.
14. SURESH, D. "Effect Of Fartlek And Complex Training On Speed Among Physical Education Students." *Journal Of Xi'an University Of Architecture & Technology Volume Xii, Issue I* (2020).
15. Suresh, D. "Effect of Fartlek And Complex Training On Endurance Among Physical EducationStudents." *Journal of Xi'an University of Architecture & Technology., ISSN* 1006-7930 (2020).
16. Suresh, D. "Effect Of Specific Yogic Practice And Resistance Training On Selected PhysicalAnd Psychological Variables Among Male Kabaddi Players." (2017).
17. SURESH, D. "Effect Of Specific Yogic Practices And Resistance Training On Aggression Among Male Kabaddi Players." *Journal of Namibian Studies: History Politics Culture* 33 (2023):4227-4231.