



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 8.4
IJAR 2021; 7(6): 68-73
www.allresearchjournal.com
Received: 01-04-2021
Accepted: 07-05-2021

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Impact of three varied systems of training on selected physical fitness variables among the college level volleyball players

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DOI: <https://doi.org/10.22271/allresearch.2021.v7.i6b.8633>

Abstract

Background: The purpose of the study was to investigate the impact of three varied systems of training on selected physical fitness variables among the college level Volleyball players. It was hypothesized that there would have been a critical significant influence of eight weeks three varied systems of training such as physical activity group, gym or modern activity group and Yogic practice group on selected physical fitness variables among the college level Volleyball players.

Methods: For the present study forty-five intercollegiate men volleyball players were selected from Selvam College of Institutions, Namakkal, Tamil Nadu, India were selected as subjects at random and their age ranged from 18 to 24 years men. The subjects had been randomly assigned to 3 equal groups of fifteen each and named as Group 'A' underwent Physical Activity Group 'B' underwent Gym or Modern Activity and Group 'C' underwent yogic practice. The data was collected before and after eight weeks of training. The data was analyzed by means of applying Analysis of Co-Variance (ANCOVA) technique to find out the impact of three varied systems of training on selected physical variables among the college level Volleyball players. The level of significance was set at 0.05.

Result: Speed was assessed using 50 mts dash, Muscular strength was assessed using push-up, Leg explosive power was assessed using horizontal jump and Flexibility was assessed using sit and reach. Finally in the result of the study physical activity group had a significant improvement on speed, in gym or modern activity group had a better improvement on muscular strength and leg explosive power, then in the yogic practices group had a better improvement on flexibility of 0.05 levels of confidence.

Conclusion: The findings of the present study have strongly indicates that the physical activity group, gym or modern activity group and yogic practices group of eight weeks training have significant effect on selected physical fitness variables among the college level Volleyball player. Hence the hypothesis earlier set that three varied training groups could have been significant impact on selected physical fitness variables in light of the same the hypothesis was accepted.

Keywords: Physical activity, gym or modern activity, yogic practice, speed, strength, leg explosive power and flexibility

Introduction

Physical activity: Physical exercise is important for maintaining physical fitness and can contribute positively to maintaining a healthy weight, building and maintaining healthy bone density, muscle strength, and joint mobility, promoting physiological well-being, reducing surgical risks, and strengthening the immune system. Some studies indicate that exercise may increase life expectancy and quality of life. Physical exercise can also include training that focuses on accuracy, agility, power, and speed. Physical activity is defined as any body movement that works your muscles and uses more energy than you use when you're resting. Walking, running, dancing, swimming, jumping, and gardening are examples of physical activity. Exercise is a type of physical activity that's planned and structured. Volleyball is a sport that involves many basic movement skills, particularly jumping and overhead swings of the arm, and it requires quick bursts of strength, balance, agility and hand-eye coordination. The physical activities required when playing volleyball strengthen the upper body, arms, shoulders, thighs, abdominals, and lower legs. In addition, volleyball improves hand-eye coordination, reflexes, and balance. Last but not least, volleyball teaches teamwork and communication and is a great social activity.

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The aim of this study is to present the physical activity of top Polish sitting volleyball players and specify the type and intensity of incidence of various injuries resulting from the game (Jacek Wiczorek *et al.*). A health-related physical education curriculum can provide students with substantially more physical activity during physical education classes. Improved physical education classes can potentially benefit 97% of elementary school students (JF Salliset *et al.*). We provide an overview of key issues and challenges in the area plus best bets and recommendations for physical education and PA promotion in the school system moving forward (Andrew P Hills *et al.*). Numerous possibilities exist for improving PE in Australia as a way of improving the activity levels and experiences of our young people (Anthony D Okely *et al.*). Study was to found the degree of participation in physical activity among people with disabilities is affected by a multifactorial set of barriers and facilitators that are unique to this population. Future research should utilize this information to develop intervention strategies that have a greater likelihood of success (James H Rimmer *et al.*).

Gym or modern activity

Gymnasia apparatus such as bar-bells, parallel bars, jumping board, running path, tennis-balls, cricket field, fencing area, and so forth are used as exercises. In safe weather, outdoor locations are the most conducive to health. Gyms were popular in ancient Greece. Their curricula included Gymnastic militaries or self-defence, gymnastic medical, or physical therapy to help the sick and injured, and gymnastic athletic for physical fitness and sports, from boxing to dance. Muscle strength is very important for most sport games at the present time. In volleyball, the achieved level of explosive power is fundamental. This explosive power is the most essential part of player's skills and enables players' activities during the game to be not only at the required height and with the necessary power but also at the right moment. A volleyball player's use of explosive power in vertical, horizontal and side movements is critical. The relationship between explosive power and the technical and tactical level of the player is especially evident when observing the player's activities at the net, attack from the field and spike serve. The use of strength during the play is determined by the fact that the usage of maximum strength lasts from 0.5 to 0.7 seconds; however, most of the explosive movements take substantially less time. For this reason the optimal usage and transformation of the gained maximum muscle strength into the "explosively" of the main muscle groups of the lower limbs, which take part in the take-off, require special power training. This power training should be, according to (Vechoshanskij 1995). In addition to technical and tactical skills, it has been argued that muscular strength and power are the most important factors contributing to successful performance during elite competitions (Marques, MC *et al.*). Michal Lehnert *et al.* found that logically and statistically significant improvements of explosive power tested by tests of the standing vertical jump and the vertical jump with an approach after eight week training period on plyometric training, in my study was found Gym or Modern Activity. Study was found improvement of activities of daily life

could provide higher satisfaction and expectation about performing recreational sports, workout and gym activities (Yu Matsushita *et al.*).

Yogic practices

All the wonders of modern science will not bring happiness, peace of mind, health or long life. Although wonders have been achieved in our external environment – space travel, computer etc., our internal environment has been neglected. Thousands of years ago the ancient yogis turned their minds inwards and discovered their true nature. Yoga provides one of the best means of self-improvement and attaining ones full potential (Vishal Mangalwadi). "The Art of life is to know to enjoy a little and to endure much" said Hazlitt. Fitness programmes have become a trend that is now being a part of the peoples' in a way of life. Fitness means 'able to do a physical work easily', (According to Harrison Clarke). Usha Rani S *et al.* found that Yogic practices group was found to be better in improving flexibility when compared to the aerobic training group. Manjre, U., was found among yogic practices group in terms of flexibility and abdominal strength. Dr. Neelam Sharma says Speed indicating positive effect of selected yogic practices on Asana, Pranayama and Dhyana. Doing yogic exercises are something that has a huge positive impact on the muscles of back, calves, hands, shoulders, hamstrings, ankles and feet. It's worth noting that each of these muscles is incredibly important for a volleyball player. If a volleyball player does yoga exercises on a regular basis, then he/she will be able to strengthen all of these muscles over the time. It's fair to say that the performance of a volleyball player largely depends on his/her muscles. Obviously, yogic makes it possible for a volleyball player to improve his/her performance on the court. And of course, doing yoga helps volleyball players minimize the risk of injuries dramatically.

Methodology

To achieve the purpose of study, forty-five intercollegiate men volleyball players were selected from Selvam College of Institutions, Namakkal, in Tamil Nadu, India were selected as subjects at random and their age ranged from 18 to 24 years men respectively. The subjects selected for this study were randomly divided into three groups of 15 subjects each. The experimental group I were named as physical activity group, group II were named as gym or modern activity group and group III were named as yogic practice group. All the subjects in the experimental groups (three) were given their respective training program three alternative days in a week for 8 weeks duration in addition to the regular physical education activities of the department as per the curriculum. The subjects are free to withdraw their consent in case of feeling any discomfort or injuries during the period of their participation, however there were no drop out in the study.

Statistical technique

The analyses of covariance (ANCOVA) was used to find out the significant difference. The obtained 'f' ratio was significant, scheffe's test was applied as a post hoc to determine the means difference. In all the case level of confidence was fixed at 0.05 to test the significant.

Analysis of data

Table 1: The summary of mean difference pre, post-test mean and adjusted post on speed of physical activity, gym or modern activity and yogic practices groups

Test	PAG	GRMAG	YPG
Pre Test Mean	7.67	7.71	7.69
Post Test Mean	6.76	6.83	6.80
Adjusted Post	6.78	6.95	6.82

PAG - Physical activity group, GRMAG - Gym or Modern activity group, YPG - Yoga practices group

Table-1 show that the speed of pre-test mean physical activity, gym or modern activity and yogic practices groups were 7.67, 7.71 and 7.69 respectively. Shows that the post-test means physical activity, gym or modern activity and yogic practices groups were 6.76, 6.83 and 6.80 respectively. Shows that the adjusted post means physical activity, gym or modern activity and yogic practices groups were 6.78, 6.95 and 6.82 respectively.

Table 2: Analysis of covariance of the data of speed of adjusted post test scores on physical activity, gym or modern activity and yogic practices groups

Source of variance	Sum of square	DF	Mean square	'f' ratio
Between	8.16	2	4.29	107.25*
Within	1.97	42	0.04	

*Significant at 0.05 level of confidence.

PAG - Physical activity group, GRMAG - Gym or Modern activity group, YPG - Yoga practices group

Table-2 shows that the speed of adjusted post-test between and within of physical activity, gym or modern activity and yogic practices groups were 4.29 and 0.04 respectively. The obtained 'f' ratio of 107.25 for adjusted post-test means was greater than the table value of 3.22 for df 2 and 42 required significant at 0.05 level of confidence on speed.

Table 3: The summary of mean post-test Scheffe's test on speed of adjusted post test scores on physical activity, gym or modern activity and yogic practices groups

PAG	GRMAG	YPG	MD	CI
6.78	6.95		0.17*	0.15
6.78		6.82	0.04	
	6.95	6.82	0.07	

*Significant at 0.05 level of confidence.

PAG - Physical activity group, GRMAG - Gym or Modern activity group, YPG - Yoga practices group, MD - Mean difference, CI - Confidence interval

Table-3 shows that the speed of mean difference between physical activity group and gym or modern activity were significant at the level of confidence interval 0.15. But the mean difference between physical activity group and yogic practices group, gym or modern activity group and yogic practices group or not significant at the level of confidence interval 0.15. The result of the study indicated that there was significant difference between the groups the physical activity group was given a better result than the gym or modern activity group & yogic practices group for speed. The bar diagram show the mean values of physical activity, gym or modern activity and yogic practices groups for speed in figure-1.



Fig 1: Mean values of physical activity, Gym or Modern activity and Yogic practices groups for speed

Table 4: The summary of mean difference pre, post-test and adjusted post on muscular strength physical activity, gym or modern activity and yogic practices groups

Test	PAG	GRMAG	YPG
Per Test Mean	10.42	10.28	10.30
Post Test Mean	13.45	14.61	13.10
Adjusted Post	13.48	14.76	13.20

PAG - Physical activity group, GRMAG - Gym or Modern activity group, YPG - Yoga practices group

Table-4 shows that the Muscular strength of pre-test means physical activity, gym or modern activity and yogic practices groups were 10.42, 10.28 and 10.30 respectively. Shows that the post-test means physical activity, gym or modern activity and yogic practices groups were 13.45, 14.61 and 13.10 respectively. Shows that the adjusted post means physical activity, gym or modern activity and yogic practices groups were 13.48, 14.76 and 13.20 respectively.

Table 5: Analysis of covariance of the data of strength of adjusted post test scores on physical activity, gym or modern activity and yogic practices groups

Source of variance	Sum of square	DF	Mean square	'f' ratio
Between	73.52	2	36.75	45.22*
Within	26.01	42	0.81	

*Significant at 0.05 level of confidence.

PAG - Physical activity group, GRMAG - Gym or Modern activity group, YPG - Yoga practices group

Table-5 shows that the Muscular strength of adjusted post-test between, within of physical activity, gym or modern activity and yogic practices groups were 36.75 and 0.81 respectively. The obtained 'f' ratio of 45.22 for adjusted post-test means was greater than the table value of 3.22 for df 2 and 42 required significant at 0.05 level of confidence on strength.

Table 6: The summary of mean post-test Scheffe's test on strength of adjusted post test scores on physical activity, gym or modern activity and yogic practices groups

PAG	GRMAG	YPG	MD	CI
13.48	14.76		1.28*	0.94
13.48		13.20	0.28	
	14.76	13.20	1.56*	

*Significant at 0.05 level of confidence.

PAG - Physical activity group, GRMAG - Gym or modern activity group, YPG - Yoga practices group, MD - Mean difference, CI - Confidence interval

Table-6 shows that the Muscular strength of mean difference between physical activity group and gym or modern activity group, gym or modern activity group and yogic practices group was significant at the level of confidence interval 0.94. But the mean difference between physical activity group and yogic practices group was not significant at the level of confidence interval 0.94. The result of the study indicated that there was a significant difference between the groups the gym or modern activity group was given a better result than the physical activity group & yogic practices group for Strength. The bar diagram show the mean values of physical activity, gym or modern activity and yogic practices groups for strength in figure-2.

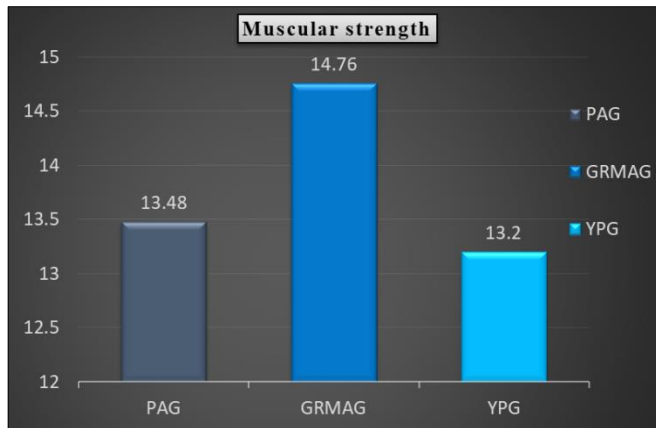


Fig 2: Mean values of physical activity, Gym or modern activity and Yogic practices groups for strength

Table 7: The summary of mean difference pre, post-test and adjusted post on leg explosive power physical activity, gym or modern activity and yogic practices groups

Test	PAG	GRMAG	YPG
Per Test Mean	2.17	2.15	2.19
Post Test Mean	2.27	2.29	2.26
Adjusted Post	2.27	2.29	2.26

PAG - Physical activity group, GRMAG - Gym or Modern activity group, YPG - Yoga practices group

Table-7 shows that the leg explosive power of pre-test means physical activity, gym or modern activity and yogic practices groups were 2.17, 2.15 and 2.19 respectively. Shows that the post-test means physical activity, gym or modern activity and yogic practices groups were 2.27, 2.29 and 2.26 respectively. Shows that the adjusted post means physical activity, gym or modern activity and yogic practices groups were 2.27, 2.29 and 2.26 respectively.

Table 8: Analysis of covariance of the data of leg explosive power of adjusted post test scores on non-laboratory, laboratory and yoga training groups

Source of variance	Sum of square	DF	Mean square	'f' Ratio
Between	0.14	2	0.46	10.39*
Within	0.24	42	0.04	

*Significant at 0.05 level of confidence.

PAG - Physical activity group, GRMAG - Gym or Modern activity group, YPG - Yoga practices group

Table-8 shows that the leg explosive power of adjusted post-test between, within of physical activity, gym or modern activity and yogic practices groups were 0.46 and 0.04

respectively. The obtained 'f' ratio of 10.39 for adjusted post-test means was greater than the table value of 3.22 for df 2 and 42 required significant at 0.05 level of confidence on leg explosive power.

Table 9: The summary of mean post-test Scheffe's test on leg explosive power of adjusted post test scores on non-laboratory, laboratory and yoga training groups

PAG	GRMAG	YPG	MD	CI
2.27	2.29		0.02*	0.01
2.27		2.26	0.01*	
	2.29	2.26	0.03*	

*Significant at 0.05 level of confidence.

PAG - Physical activity group, GRMAG - Gym or modern activity group, YPG - Yoga practices group, MD - Mean difference, CI - Confidence interval

Table-9 shows that the leg explosive power of mean difference between physical activity group and gym or modern activity group, physical activity group and yogic practices group, gym or modern activity group and yogic practices group was significant at the level of confidence interval 0.01. The result of the study indicated that there was a significant difference between the groups the gym or modern activity group was given a better result than the physical activity group & yogic practices group for leg explosive power. The bar diagram show the mean values of physical activity, gym or modern activity and yogic practices groups for leg explosive power in figure-3.

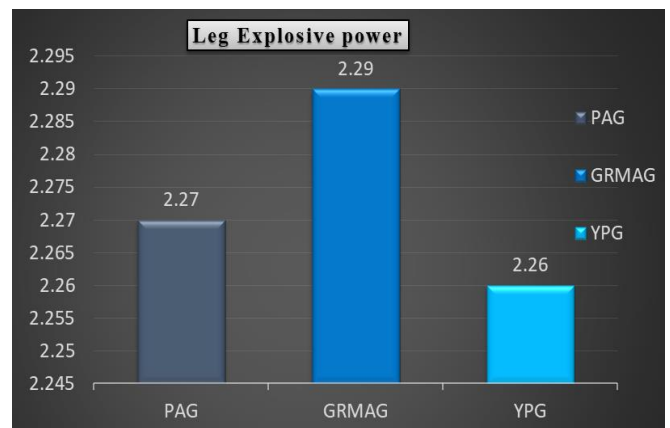


Fig 3: Mean values of physical activity, gym or modern activity and yogic practices groups for leg explosive power

Table 10: The summary of mean difference pre, post-test and adjusted post on flexibility physical activity, gym or modern activity and yogic practices groups

Test	PAG	GRMAG	YPG
Per Test Mean	15.50	15.58	15.66
Post Test Mean	19.58	17.5	21.58
Adjusted Post	19.62	17.28	21.50

PAG - Physical activity group, GRMAG - Gym or modern activity group, YPG - Yoga practices group

Table-10 shows that the flexibility of pre-test means physical activity, gym or modern activity and yogic practices groups were 15.50, 15.58 and 15.66 respectively. Shows that the post-test means physical activity, gym or modern activity and yogic practices groups were 19.58, 17.5 and 21.58 respectively. Shows that the adjusted post means physical activity, gym or modern activity and yogic practices groups were 19.62, 17.28 and 21.50 respectively.

Table 11: Analysis of covariance of the data of flexibility of adjusted post test scores on physical activity, gym or modern activity and yogic practices groups

Source of variance	Sum of square	DF	Mean square	'f' ratio
Between	107.34	2	53.67	8.69*
Within	197.71	32	6.18	

*Significant at 0.05 level of confidence.

PAG - Physical activity group, GRMAG - Gym or modern activity group, YPG - Yoga practices group

Table-11 shows that the flexibility of adjusted post-test between, within of physical activity, gym or modern activity and yogic practices groups was 53.67 and 6.18 respectively. The obtained 'f' ratio of 8.69 for adjusted post-test means was greater than the table value of 3.22 for df 2 and 42 required significant at 0.05 level of confidence on flexibility.

Table 12: The summary of mean post-test Scheffe's test on flexibility of adjusted post test scores on physical activity, gym or modern activity and yogic practices groups

PAG	GRMAG	YPG	MD	CI
19.62	17.28		2.33*	2.59
19.62		2.33	1.88	
	17.28	2.33	4.22*	

*Significant at 0.05 level of confidence.

PAG - Physical activity group, GRMAG - Gym or modern activity group, YPG - Yoga practices group, MD - Mean difference, CI - Confidence interval

Table-12 shows that the flexibility of mean difference between physical activity group and gym or modern activity group, gym or modern activity group and yogic practices group was significant at the level of confidence interval 2.59. But the mean difference between physical activity group and yogic practices group was not significant at the level of confidence interval 2.59. The result of the study indicated that there was a significant difference between the groups the yogic practices group was given a better result than the physical activity group & gym or modern activity group for flexibility. The bar diagram show the mean values of physical activity, gym or modern activity and yogic practices groups for flexibility in figure-4.

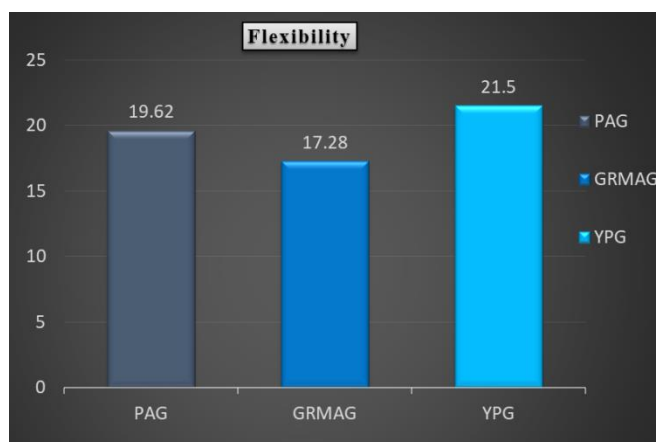


Fig 4: Mean values of physical activity, gym or modern activity and yogic practices groups for flexibility

Conclusions

1. Physical Activity, Gym or Modern Activity and Yogic Practices methods had contributed significantly towards

Volleyball playing ability on court perform of Jumping, passing and attacking among the college level Volleyball players.

2. It was concluded that the while performed physical activity (speed) was improved, when performed gym or modern activity (strength and leg explosive) was improved, in yogic practice (flexibility) was improved of intercollegiate men volleyball players.
3. It was further concluded that the gym or modern activity shown greater improvement than the physical activity and yogic practice of intercollegiate men volleyball players.

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