ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 11| November 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

IMPACT OF VARIED TRAINING METHODS ON SELECTED PHYSICAL FITNESS VARIABLES AMONG WOMEN KABADDI PLAYERS

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ABSTRACT

Most games are played worldwide. Traditional games are not played by all countries. An increasingly popular game in all realms of man hood. Most Indian games are traditional. India and other countries play them. Kabaddi is a traditional Indian game practiced in all states. In India, many open matches are crowd games, which are interesting throughout.Sports are now competitive like other fields. Our ancient ancestors were athletic. It's now fully professional. No matter their age, humans play sports for fun or competitiveness. Victory requires more than involvement. This study examined varied training methods on selected physical fitness variables among women kabaddi players . 45 kabaddi players from the Tirupati area of Andhra Pradesh worked hard to make this happen. The people were split into three groups at random, with fifteen players in each. Aqua aerobics training was done with Ex Group I. Ex Group II trained as a battalion for 12 weeks, while CG III did no training at all. Before and after the experiment, Dependent's test and Analysis of correlation were used to look at data from the experiment and the CG. When the "F" ratio for the adjusted post-test means was significant, Scheffe's Post hoc test revealed the discrepancies. There was 0.05 confidence in every case. The findings of the study clearly demonstrate that both aqua aerobics training and battalion training significantly improved leg explosive power among women kabaddi players, whereas the control group showed no meaningful changes.

KEY WORDS : *Aqua Aerobics Training, Battalion Training and Leg Explosive Power.*

INTRODUCTION

Games and sports have been an integral part of human society since ancient times. While many games today are played globally, several traditional games remain unique to specific cultures and regions. India, with its rich heritage, has preserved numerous indigenous sports, among which kabaddi holds a prominent place. Kabaddi is widely practiced across all Indian states and is recognized internationally for its blend of agility, strength, strategy, and teamwork. Over the years, traditional games like kabaddi have gained increasing recognition, contributing to national and international sports platforms.Sports have evolved from recreational pastimes to highly competitive and professionally organized activities. Modern athletes undergo scientific and systematic training in order to enhance their physical fitness, performance, and skills. Physical fitness, in particular, plays a crucial role in determining success in kabaddi, as the game demands high levels of strength, endurance, flexibility, coordination, and speed.

Training methods

Despite the growing interest in such training methods, limited research has examined their impact on women kabaddi players, especially in local competitive groups. Therefore, the present study aims to investigate the effects of different training methods on selected physical fitness variables among women kabaddi players from the Tirupati region of Andhra Pradesh. This research contributes to understanding how modern training techniques can improve performance in a traditional Indian sport. Recent years have witnessed the adoption of diverse and innovative training methods aimed at improving athletic performance. Among these, aqua aerobics has emerged as a low-impact yet highly effective form of exercise that enhances strength, endurance, and cardiovascular fitness. Similarly, battalion-style training—characterized by structured, intensive physical drills—has gained popularity for building strength and discipline among athletes.

Training Programme

The training programme lasted for 12 weeks and was designed to improve the physical fitness of women kabaddi players through two different methods. Experimental Group I performed aqua aerobics training, which included water-based exercises aimed at enhancing strength, endurance, and flexibility with minimal impact. Experimental Group II followed a battalion training schedule involving structured drills, conditioning routines, and high-intensity physical activities to build power and stamina. The Control Group did not take part in any special training and continued their normal routines throughout the study.

Statistical Technique

The data collected from the pre-test and post-test measurements were analyzed using appropriate statistical techniques to determine the effectiveness of the training programmes. Dependent t-tests were applied within each group to compare

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the changes from pre-test to post-test. To assess differences among the three groups after adjusting for initial variations, Analysis of Covariance (ANCOVA) was employed. When the ANCOVA revealed significant differences in the adjusted post-test means, Scheffé's post hoc test was used to identify which specific groups differed from each other. All statistical analyses were carried out at the 0.05 level of significance.

TABLE-1
SIGNIFICANCE OF MEAN GAINS / LOSSES BETWEEN PRE TEST AND POST TEST OF LEG EXPLOSIVE POWER EX GROUP AND CG

S.No	Variables	Pre test Mean (± SD)	Post test Mean (± SD)	DM	σDM	't' ratio
AAT GROUP						
1	Leg explosive power	1.84 ± 0.15	2.06 ± 0.10	2.13	0.05	4.14*
BT GROUP						
2	Leg explosive power	1.85 ± 0.23	2.05 ± 0.15	2.00	0.05	3.74*
CG						
3	Leg explosive power	1.87 ± 0.22	1.88 ± 0.21	0.00	0.04	0.13

**significant at 0.05 level ('t' value 2.14) with df 14*

The analysis of leg explosive power revealed notable improvements in both experimental groups, while no meaningful change was observed in the control group. The Aqua Aerobics Training (AAT) group showed an increase in mean leg explosive power from 1.84 ± 0.15 in the pre-test to 2.06 ± 0.10 in the post-test, with a difference in mean (DM) of 2.13 and a 't' ratio of 4.14, which was statistically significant. Similarly, the Battalion Training (BT) group demonstrated improvement from a pre-test mean of 1.85 ± 0.23 to a post-test mean of 2.05 ± 0.15, with a DM of 2.00 and a significant 't' ratio of 3.74. In contrast, the Control Group (CG) showed virtually no change, with pre-test and post-test means of 1.87 ± 0.22 and 1.88 ± 0.21 respectively, resulting in a DM of 0.00 and a non-significant 't' ratio of 0.13. These findings indicate that both training methods were effective in improving leg explosive power, while the absence of training led to no measurable improvement.

TABLE - 2
ANALYSIS OF COVARIANCE ON LEG EXPLOSIVE POWER AAT GROUP BT GROUP AND CG

Test	AAT Group	BT Group	CG	Source of variance	Sum of squares	Df	Mean squares	'F' ratio
Pre-test	1.84	1.85	1.87	Between groups	.006	2	.003	.06
	0.15	0.23	0.22	Within groups	1.824	42	.043	
Post-test	2.06	2.05	1.88	Between groups	.312	2	.156	5.87*
	0.10	0.15	0.21	Within groups	1.117	42	.027	
Adjusted post-test	2.04	2.05	1.87	Between groups	.342	2	.171	7.89*
				Within groups	.888	41	.022	

* Significant at 0.05 level of confidence.

The analysis of variance for leg explosive power showed that there was no significant difference among the three groups during the pre-test, as indicated by a very low F-ratio of 0.06, confirming that all groups started at a comparable performance level. However, the post-test results revealed a significant difference between the groups, with a between-group sum of squares of 0.312 and an F-ratio of 5.87, indicating that the training interventions produced measurable effects. Further analysis using adjusted post-test means through ANCOVA also demonstrated a statistically significant difference among the groups, with an F-ratio of 7.89, showing that the improvements remained significant even after controlling for initial differences. These results confirm that both aqua aerobics training and battalion training were effective in enhancing leg explosive power compared to the control group, which showed minimal improvement.

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FIGURE – I
BAR DIAGRAM SHOWING THE PRE TEST AND POST TEST MEAN VALUES OF LEG EXPLOSIVE POWER AAT GROUP BT GROUP AND CG



TABLE-3
SCHEFFE'S TEST FOR THE DIFFERENCE BETWEEN THE ADJUSTED POST-TEST PAIRED MEANS OF LEG EXPLOSIVE POWER

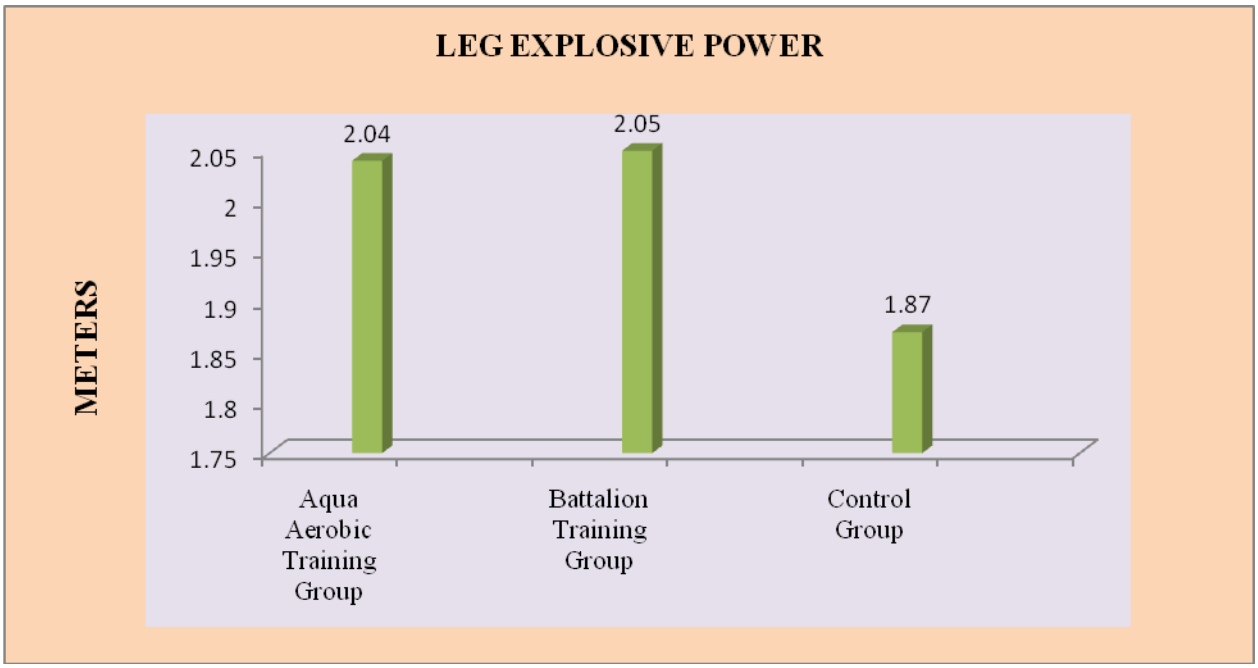
Adjusted Post-test Means				Confidence Interval
AAT Group	BT Group	CG	Mean Differences	
2.04	2.05	-	0.01	0.09
2.04	-	1.87	0.17*	
	2.05	1.87	0.18*	

* Significant at 0.05 level of confidence

The comparison of adjusted post-test means for leg explosive power showed clear differences between the experimental groups and the control group. The Aqua Aerobics Training (AAT) group and the Battalion Training (BT) group recorded adjusted post-test means of 2.04 and 2.05 respectively, whereas the Control Group (CG) showed a much lower mean of 1.87. The mean difference between the AAT and BT groups was minimal (0.01) and not statistically significant, indicating similar effectiveness between the two training methods. However, both experimental groups showed significantly higher mean differences when compared with the control group, with AAT vs. CG showing a difference of 0.17 and BT vs. CG showing a difference of 0.18, both marked as statistically significant. These results confirm that both training programmes substantially improved leg explosive power compared to no training.

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FIGURE – II
THE ADJUSTED POST MEAN VALUES OF LEG EXPLOSIVE POWER AAT GROUP BT GROUP AND CG



CONCLUSION

The findings of the study clearly demonstrate that both aqua aerobics training and battalion training significantly improved leg explosive power among women kabaddi players, whereas the control group showed no meaningful change. The statistical analyses, including t-tests, ANOVA, and ANCOVA, confirm that the training interventions were effective in enhancing performance-related fitness. Although both experimental groups showed similar levels of improvement, their gains were significantly greater than those of the control group. Overall, the study establishes that systematic and scientifically structured training methods can play a vital role in improving the physical fitness components essential for kabaddi performance. These results highlight the importance of incorporating specialized training programmes in the preparation of women kabaddi players to enhance their competitive abilities.

Recommendations

Based on the findings of the study, the following recommendations are suggested:

1. Incorporate Aqua Aerobics and Battalion Training into regular training schedules for women kabaddi players, as both methods significantly improve leg explosive power and overall fitness.
2. Coaches and trainers should design structured 12-week programmes using these training methods to enhance player performance, especially during pre-competition phases.
3. Aqua aerobics may be recommended for beginners or players recovering from injury, as it provides low-impact training while still improving strength and explosive power.
4. Battalion-style training can be used for advanced players who require higher intensity workouts to further develop power, stamina, and discipline.
5. Future research should include a larger sample size and additional fitness variables to better understand the broader benefits of these training methods.
6. Longer training durations and follow-up studies are recommended to determine the long-term effects and retention of gains achieved through these programmes.

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