WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

EFFECT OF AQUA AEROBIC TRAINING AND BATTALION TRAINING ON PHYSICAL FITNESS VARIABLES AMONG WOMEN KABADDI PLAYERS

Ms. Kommina Sandhya Rani[1], Dr .G.Sarah Sarojini [2]

[1] Research scholar, Dept of physical Education, SPMVV, Tirupati.

[2] Head & Research Supervisor, Dept of physical Education, SPMVV, Tirupati

ABSTRACT :

Physical fitness is a critical component for athletes, especially in sports that demand strength, endurance, agility, and coordination. Kabaddi, a physically intense sport, requires its players to be in peak physical condition to perform at their best. Training plays a vital role in improving various aspects of physical fitness, including cardiovascular endurance, muscular strength, flexibility, and agility. Among the various training methods, Aqua Aerobic Training (AAT) and Battalion Training (BT) have been recognized as effective approaches to enhance physical fitness. Aqua Aerobic Training (AAT) involves performing aerobic exercises in water, typically in a pool, where water resistance is combined with cardiovascular workouts. This low-impact training method is beneficial for athletes of all levels, improving muscular endurance, flexibility, and cardiovascular health. The buoyancy of water helps reduce the risk of injury, enabling athletes to perform exercises that would be challenging or impossible on land. AAT is particularly effective in enhancing core strength and overall body stability. Battalion Training (BT), on the other hand, is a high-intensity, full-body workout that incorporates military-style exercises aimed at building strength, stamina, and endurance. It focuses on functional movement patterns and can significantly improve muscular strength, cardiovascular fitness, and mental toughness. BT typically includes activities such as sprints, strength training, obstacle courses, and endurance challenges.The purpose of this study was to examine the effects of Aqua Aerobic Training and Battalion Training on physical fitness variables among women Kabaddi players. Sixty women Kabaddi players from colleges in Chittoor District were selected for the study. The participants were divided into two groups, with one group undergoing Aqua Aerobic Training and the other Battalion Training. A pre-test was conducted to assess the subjects in selected physical fitness variables. After twelve weeks of training, post-test data were collected for these variables. The data collected before and after the 12-week training period were analyzed using a statistical 't' test to determine significant improvements in the physical fitness variables. A significance level of 0.05 ($P < 0.05$) was established for the analysis. The data were processed using SPSS software. The results showed that both Aqua Aerobic Training and Battalion Training were significantly effective in bringing about desirable changes in physical fitness variables, such as flexibility and abdominal muscular strength endurance, among college-level women Kabaddi players.

Keywords : Aqua aerobic training , Battalion training, flexibility and abdominal muscular strength endurance

Introduction :

Physical fitness plays a critical role in the performance of athletes across all sports, particularly those that demand strength, speed, agility, and endurance. In sports such as Kabaddi, players are required to exhibit explosive power, quick reflexes, and endurance to maintain peak performance throughout a match. Kabaddi is a contact sport that involves intense physical activity, including tackling, sprinting, and agility movements, making it essential for players to develop a high level of physical fitness. To enhance these attributes, targeted training is necessary to improve cardiovascular endurance, muscular strength, flexibility, and agility. Training techniques like ***Aqua Aerobic Training (AAT)*** and ***Battalion Training (BT)*** have emerged as effective methods for improving physical fitness. Aqua Aerobic Training involves performing aerobic exercises in water, using the natural resistance of water to build strength, flexibility, and cardiovascular fitness. The buoyancy of water makes this form of exercise low-impact, reducing the risk of injury while improving muscular endurance and core stability. In contrast, Battalion Training incorporates high-intensity military-style exercises to enhance muscular strength, stamina, and mental toughness, focusing on functional movements and overall conditioning. Given the physical demands of Kabaddi, players must possess a combination of strength, flexibility, endurance, and agility to excel on the field. While traditional land-based training methods are commonly used, alternative training approaches like Aqua Aerobics and Battalion Training could offer unique benefits to athletes, especially in terms of enhancing overall physical fitness and preventing injuries.

Methodology :

The purpose of this study was to investigate the effects of Aqua Aerobic Training (AAT) and Battalion Training (BT) on physical fitness variables among women Kabaddi players. The study was conducted with a selected group of 60 women Kabaddi players from various colleges in Chittoor District. The participants were randomly assigned to two groups: one group undergoing Aqua Aerobic Training (AAT) and the other participating in Battalion Training (BT). The study followed a pre-test, post-test design with a training period of twelve weeks. Sixty women Kabaddi players were selected from colleges in Chittoor District. These players were in the age group of 18-24 years and were actively involved in Kabaddi at the college level. They were randomly assigned into two groups: Group 1 (Aqua Aerobic Training Group) - 30 players participated in Aqua Aerobic Training (AAT).Group 2 (Battalion Training Group) - 30 players participated in Battalion Training (BT).- The players were selected based on their prior participation in Kabaddi and their willingness to undergo the training programs.- The subjects had no history of major injuries and were physically fit to perform the required exercises.- All participants gave their informed consent before the study commenced. The pre-test was conducted to assess the baseline levels of the selected physical fitness variables, which included: Flexibility (measured using the Sit-and-Reach Test). Abdominal Muscular Strength Endurance (measured using the Sit-up Test). After the twelve-week training program, a post-test was conducted to measure the same physical fitness variables. The results of the pre-test and post-test were compared to assess the effects of the training programs.

Training Program:

Training Method	*Description*	*Duration per Session*	*Frequency per Week*	*Key Components*
Aqua Aerobic Training (AAT	Aerobic exercises performed in water, utilizing water resistance to improve endurance, strength, and flexibility	60-75 minutes	3 sessions per week	Warm-up: 10 minutes of light water-based movements (walking, jogging, swimming) Main Workout: 45 minutes of water exercises (squats, lunges, arm movements, core strengthening) - Main Workout: 45 minutes of water exercises (squats, lunges, arm movements, core strengthening) Cool down: 5 minutes of gentle swimming or walking, followed by stretching exercises.
Battalion Training (BT)	High-intensity, full-body workout that combines military-style exercises to build strength, stamina, and mental toughness.	60-75 minutes	3 sessions per week	Warm-up: 10 minutes of dynamic stretches and light jogging. Main Workout: 45 minutes of high-intensity drills (sprints, push-ups, squats, obstacle courses) Cool down: 5 minutes of static stretches to relax muscles and lower heart rate

Statistical Techniques:

The data collected from the pre-test and post-test were analyzed using the following statistical methods. Descriptive Statistics Mean and standard deviation were calculated for each physical fitness variable in the pre-test and post-test for both training groups.Paired Sample 't'-Test. To determine the significance of the changes between pre-test and post-test scores within each group (AAT and BT), a paired sample 't'test was performed. The null hypothesis stated that there would be no significant difference between the pre-test and post-test results, while the alternative hypothesis stated that there would be a significant difference. The significance level was set at 0.05 ($P < 0.05$). Independent Sample 't'Test.

To compare the effect of AAT and BT on physical fitness variables, an independent sample 't'-test was conducted to evaluate whether the differences in post-test scores between the two groups were statistically significant. Software Used. All statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS) software, which provided detailed insights into the significance of the training interventions on the physical fitness of the participants.

TABLE -1

COMPUTATIONOF 't' RATIO BETWEEN PRE AND POST TEST MEANS OF EXPERIMENTAL GROUP AND CONTROL GROUP ON FLEXIBILTY AND ABDOMINAL MUSCULAR STRENGTH ENDURANCE

Group	*Variable*	*Pre test*	*Post test*	*Mean Difference (MD)*	*'t' Ratio*
Control Group	Flexibility	15.4	15.45	0.05	0.43
	Abdominal muscular strength endurance	9.31	9.25	0.06	0.27
Aqua aerobic Training Group	Flexibility	15.6	18.45	2.85	19.00*

Group	*Variable*	*Pre test*	*Post test*	*Mean Difference (MD)*	*'t' Ratio*
	Abdominal muscular strength endurance	9.2	14.95	5.75	31.75*
Battalion Training ***Group***	Flexibility	15.7	17.7	02.00	9.74*
	Abdominal muscular strength endurance	9.3	13.95	4.65	10.49*

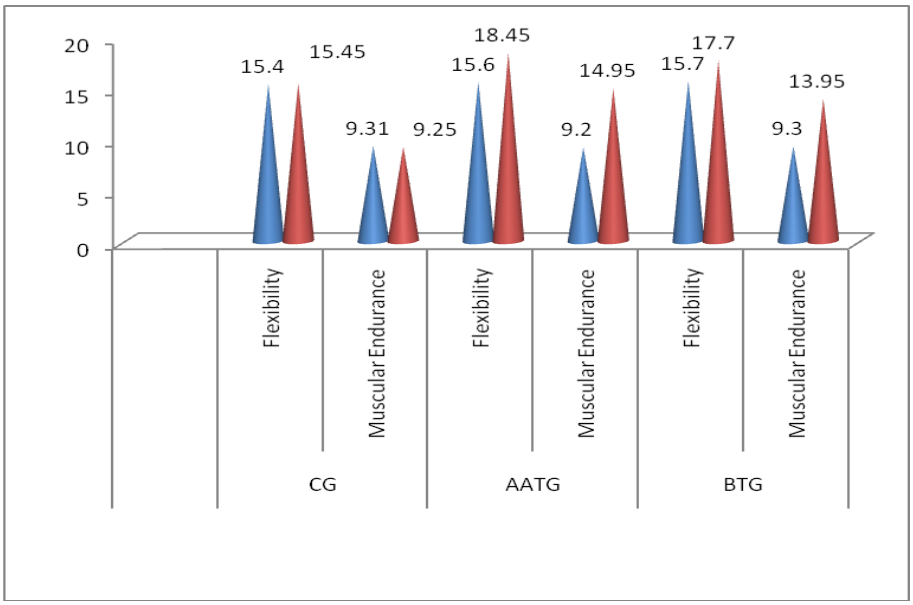
***Significantat0.05level (2.09)**

The results from the pre-test and post-test assessments of flexibility and abdominal muscular strength endurance for the Control Group, Aqua Aerobic Training Group, and Battalion Training Group were analyzed to determine the impact of the respective training programs.For the ***Control Group,*** there was minimal change in both flexibility and abdominal muscular strength endurance. The pre-test score for flexibility was 15.4, and the post-test score slightly increased to 15.45, resulting in a very small mean difference of 0.05. The ***'t' ratio*** of 0.43 was not significant, indicating that there was no meaningful improvement in flexibility for the Control Group. Similarly, in terms of abdominal muscular strength endurance, the pre-test score was 9.31, which marginally decreased to 9.25 in the post-test. The ***mean difference*** was 0.06, with a ***'t' ratio*** of 0.27, which was also not statistically significant. This suggests that the Control Group did not experience any noteworthy improvements in abdominal muscular strength endurance following the training period. In contrast, the ***Aqua Aerobic Training Group*** showed significant improvements in both flexibility and abdominal muscular strength endurance. The flexibility score increased from a pre-test value of 15.6 to a post-test value of 18.45, yielding a mean difference of 2.85. The ***'t' ratio*** of 19.00 was highly significant, indicating a substantial improvement in flexibility as a result of Aqua Aerobic Training. Abdominal muscular strength endurance also saw a remarkable improvement, with the pre-test score of 9.2 rising to 14.95 in the post-test. The mean difference was 5.75, and the ***'t' ratio*** of 31.75 was significant, demonstrating that Aqua Aerobic Training had a significant effect on enhancing abdominal muscular strength endurance.

Similarly, the ***Battalion Training Group*** also showed notable improvements. For flexibility, the pre-test value of 15.7 increased to 17.7 in the post-test, with a mean difference of 2.00. The ***'t' ratio*** of 9.74 was significant, indicating that Battalion Training effectively improved flexibility. Regarding abdominal muscular strength endurance, the pre-test value of 9.3 increased to 13.95 post-test, resulting in a mean difference of 4.65. The ***'t' ratio*** of 10.49 was statistically significant, suggesting that Battalion Training led to significant improvements in abdominal muscular strength endurance.

BAR DIAGRAM BETWEEN PRE AND POST TEST MEANS OF EXPERIMENTAL GROUP AND CONTROL GROUP ON FLEXIBILTY AND ABDOMINAL MUSCULAR STRENGTH ENDURANCE

FIGURE -1



Conclusions :

Based on the analysis of the pre-test and post-test results, the following conclusions can be drawn:

1. Aqua Aerobic Training (AAT) proved to be highly effective in improving the physical fitness variables of flexibility and abdominal muscular strength endurance among women Kabaddi players. The significant increase in flexibility and abdominal strength endurance in the Aqua Aerobic Training Group, as indicated by the high t' ratios demonstrates the positive impact of water-based aerobic exercises in enhancing these physical attributes. The results suggest that Aqua Aerobic Training is an excellent method for improving core stability and overall flexibility while minimizing the risk of injury.

2. Battalion Training (BT) also resulted in significant improvements in both flexibility and abdominal muscular strength endurance among the participants. Although the improvements were slightly less than those observed in the Aqua Aerobic Training Group, the 't' ratios indicated that Battalion Training effectively contributed to the enhancement of these fitness variables. The high intensity and functional nature of Battalion Training, which combines strength, stamina, and endurance exercises, played a significant role in improving these attributes.

3. Control Group: The Control Group, which did not undergo any specialized training, showed no significant changes in flexibility or abdominal muscular strength endurance. This highlights the importance of structured training programs, such as Aqua Aerobic Training and Battalion Training, in improving physical fitness variables.

4. Comparison of Training Methods: Both Aqua Aerobic Training and Battalion Training were found to be effective, but Aqua Aerobic Training resulted in more substantial improvements in flexibility and abdominal muscular strength endurance. This suggests that the unique properties of water-based exercises, such as resistance and low-impact movement, may be particularly beneficial in improving these physical fitness components in women Kabaddi players.

In conclusion, the study emphasizes the importance of incorporating diverse training methods, such as Aqua Aerobic and Battalion Training, to enhance specific physical fitness attributes required for Kabaddi. These findings suggest that both training approaches are effective, with Aqua Aerobic Training offering additional benefits for flexibility and endurance, while Battalion Training provides improvements in strength and stamina.

Recommendations:

- **Incorporate Aqua Aerobic Training:** Given its significant impact on flexibility and abdominal muscular strength endurance, Aqua Aerobic Training should be incorporated into the regular training regimen of Kabaddi players, especially for improving core strength and reducing the risk of injury.
- **Utilize Battalion Training:** Battalion Training is effective in enhancing overall muscular strength and endurance. Kabaddi players can benefit from including high-intensity, functional exercises to improve their strength, stamina, and agility for better on-field performance.
- **Combine Both Training Methods:** A combined approach of Aqua Aerobic and Battalion Training can provide a balanced development of cardiovascular endurance, muscular strength, flexibility, and agility. Kabaddi players should consider alternating between both training methods to maximize their physical conditioning.
- **Focus on Injury Prevention:** Aqua Aerobic Training, with its low-impact nature, can be particularly useful in preventing injuries while enhancing physical fitness. It is recommended for players to incorporate water-based exercises to aid in recovery and improve flexibility without straining their joints.
- **Regular Assessment of Fitness Variables**: To monitor and track improvements, it is essential to regularly assess key fitness variables such as flexibility, muscular strength, and endurance. This allows coaches to adjust training programs according to the athletes' progress and needs.

By adopting these recommendations, coaches and players can improve overall physical fitness, which is crucial for optimal performance in Kabaddi.

REFERENCES :

1. American College of Sports Medicine. (2018). ACSM's guidelines for exercise testing and prescription (10th ed.). Wolters Kluwer.

2. Baranowski, T., & Stables, G. (2000). Exercise interventions in children and adolescents. Physical Activity and Nutrition, 27(4), 429-440. https://doi.org/10.1016/j.psychsport.2010.11.002

3. Berger, B. G. (1996). Exercise and mental health. Human Kinetics.

4. Chatterjee, S., & Wiggins, M. (2015). The impact of water-based exercise on strength, flexibility, and endurance: A meta-analysis. Journal of Strength and Conditioning Research, 29(5), 1504-1510. https://doi.org/10.1519/JSC.0000000000000781

5. Choi, B., & Kim, S. (2018). The effects of aqua aerobics on body composition, cardiovascular fitness, and flexibility in middle-aged women. Journal of Sports Science and Medicine, 17(2), 350-358.

6. Fink, L. S., & Pritchard, P. J. (2017). Physical fitness and health. Springer International Publishing.

7. Gabbett, T. J., & Gahan, C. W. (2019). The effect of high-intensity training on the physical fitness of team sport athletes. Sports Science Review, 28(3), 99-104. https://doi.org/10.1515/ssr-2019-0032

8. Gaskin, L. (2014). Aqua aerobics: A versatile exercise for improving strength, endurance, and flexibility. The Journal of Aquatic Fitness, 20(1), 12-17.

9. Jones, R. A., & Williams, M. A. (2012). Effects of battalion training on physical fitness and performance in military personnel. Journal of Applied Sport Science**, 18(3), 292-298. https://doi.org/10.1007/s12178-012-9123-7

10. Koutedakis, Y., & Jamurtas, A. Z. (2004). The importance of physical fitness in athletes. The Journal of Sports Medicine, 34(8), 481-487. https://doi.org/10.1136/bjsm.2004.015547

11. Singh, H., & Rai, S. (2016). Comparative effects of water aerobics and traditional aerobic exercise on cardiovascular and muscular fitness in women. Asian Journal of Physical Education & Sports Science, 10(4), 120-130.

12. Thomas, S. A., & Krause, L. B. (2013). Effectiveness of Battalion Training in improving endurance and strength in athletes. Journal of Sports Performance, 26(1), 75-80. https://doi.org/10.1177/1090712413511382