OPEN ACCESS

Scholars International Journal of Anatomy and Physiology

Abbreviated Key Title: Sch Int J Anat Physiol
ISSN 2616-8618 (Print) | ISSN 2617-345X (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: https://saudijournals.com

Original Research Article

Assessment of the Effects of a Varied Structured Training Programme on Selected Bio Motor Variables among Men Kabaddi Players

M. Vadivel[1], Dr. R. Ashok Kumar[2], Dr. S. Rameshkumar[3]*

[1]Research Scholar, NGM College Pollachi, Tamil Nadu, India
[2]Research Supervisor & Director of Physical Education, NGM College Pollachi, Tamil Nadu, India
[3]Head Dept. of Physical Education, Sri Ramakrishna Mission Vidyalaya College of Arts and Science, Coimbatore, Tamil Nadu, India

DOI: https://doi.org/10.36348/sijap.2026.v09i04.005 | **Received:** 27.06.2026 | **Accepted:** 19.08.2026 | **Published:** 22.08.2026

***Corresponding author:** Dr. S. Rameshkumar
Head Dept of Physical Education, Sri Ramakrishna Mission Vidyalaya College of Arts and Science, Coimbatore, Tamil Nadu, India

Abstract

Kabaddi is a physically demanding team sport that requires a combination of speed, agility, muscular strength, explosive power, flexibility, and endurance for successful performance. The intermittent nature of the game involves repeated bouts of high-intensity activities such as sprinting, sudden changes of direction, tackling, raiding, jumping, and rapid recovery. Therefore, well-developed biomotor abilities are essential for kabaddi players to perform technical and tactical skills effectively throughout a match. In particular, speed and agility enable players to execute rapid movements and evasive actions, while muscular strength and explosive power contribute to effective tackling, blocking, jumping, and raiding. Flexibility supports efficient movement and may help players perform technical skills with greater range of motion, whereas endurance is necessary to sustain performance during prolonged competitive activity. The purpose of the study was to assess the effects of a varied structured training programme on selected biomotor variables among men kabaddi players of engineering colleges. Sixty male kabaddi players studying in engineering colleges, aged between 18 and 25 years, were selected as subjects for the study. The subjects were randomly assigned into two equal groups, namely the Experimental Group (n=30) and the Control Group (n=30). The Experimental Group underwent a varied structured training programme consisting of systematically planned exercises designed to develop essential biomotor abilities required for kabaddi, while the Control Group participated in their regular physical activities. The training programme was administered for a period of 12 weeks, with three training sessions per week. Selected biomotor variables such as explosive power were assessed before and after the training programme using standardized tests. The collected data were statistically analysed using Analysis of Covariance (ANCOVA) to determine the significance of differences between the groups. The results were expected to demonstrate significant improvements in the selected biomotor variables among the Experimental Group compared with the Control Group. The findings suggest that a systematically designed varied structured training programme can be an effective method for enhancing the physical and biomotor fitness components essential for improved performance among engineering college men kabaddi players.

Keywords: Varied structured training and explosive power.

INTRODUCTION

Kabaddi is a physically demanding team sport that requires a combination of strength, speed, agility, endurance, flexibility, explosive power, balance, and coordination. The intermittent nature of the game involves repeated bouts of high-intensity activities such as sprinting, raiding, tackling, dodging, jumping, and rapid changes of direction. Therefore, a high level of bio motor fitness is essential for kabaddi players to perform technical and tactical skills effectively throughout a match. The performance of a kabaddi player depends not only on technical proficiency but also on the development of appropriate physical fitness components. Speed enables players to execute rapid raids and defensive movements, while agility is important for quick changes in direction and evasive actions. Muscular strength and explosive power contribute to effective tackling, jumping, pushing, and resisting opponents. Flexibility supports a greater range of movement and may help players perform various kabaddi skills efficiently. Similarly, muscular and cardio respiratory

endurance enable players to maintain performance during repeated high-intensity activities throughout the game.

Engineering college students who participate in competitive kabaddi often have to balance academic responsibilities with sports training. Consequently, a systematically planned and time-efficient training programme is necessary to develop the physical qualities required for competitive performance. A varied structured training programme can incorporate different forms of conditioning exercises in a progressive manner, thereby providing a comprehensive stimulus for the development of multiple bio motor abilities.

Structured training involves the systematic organization of exercise intensity, volume, frequency, duration, recovery, and progression. When training activities are appropriately varied, players can be exposed to different physical stimuli while reducing monotony and promoting continued adaptation. Such a programme may include speed drills, agility exercises, resistance training, plyometric exercises, flexibility exercises, and endurance-based activities. The integrated development of these components is particularly relevant to kabaddi because the sport requires players to perform multiple physical actions repeatedly within a short period.

Previous research in sports training has demonstrated that appropriately designed conditioning programmes can improve specific physical fitness characteristics and athletic performance. However, the effectiveness of a varied structured training programme specifically designed to develop multiple bio motor variables among engineering college men kabaddi players requires further examination. Therefore, the present study was undertaken to assess the effects of a varied structured training programme on selected bio motor variables among men kabaddi players of engineering colleges. The findings of the study may provide useful information for physical education teachers, coaches, strength and conditioning professionals, and kabaddi trainers in designing systematic training programmes for college-level players. The study may also contribute to the development of scientifically structured conditioning strategies aimed at improving the overall physical preparedness and competitive performance of kabaddi players.

METHODOLOGY

The study was designed to assess the effect of a varied structured training programme on explosive power among men kabaddi players studying in engineering colleges. Sixty male kabaddi players aged between 18 and 25 years were selected as subjects and randomly assigned into two equal groups, namely the Experimental Group (n=30) and the Control Group (n=30). The Experimental Group underwent a 12-week varied structured training programme, three days per week, with each session lasting approximately 60 minutes, while the Control Group participated only in their regular physical education and kabaddi activities. The dependent variable selected for the study was explosive power, which was assessed using the Standing Broad Jump Test. The test was conducted during the pre-test and post-test periods under standardized conditions, and the best performance was recorded in centimetres. The collected data were statistically analysed using Analysis of Covariance (ANCOVA) to determine the significant differences between the Experimental and Control Groups after adjusting for the pre-test scores. The level of significance was fixed at 0.05.

Training Programme

The Experimental Group underwent a 12-week varied structured training programme designed specifically to improve explosive power among men kabaddi players. The training was conducted three days per week, with each session lasting approximately 60 minutes. The programme consisted of a 10-minute warm-up, 40 minutes of structured explosive-power training, and a 10-minute cool-down. The training included squat jumps, countermovement jumps, tuck jumps, split jumps, bounding, standing broad jumps, box jumps, lateral jumps, and medicine-ball explosive throws. During the initial weeks, the exercises were performed at moderate intensity with emphasis on correct technique and movement control. The training load was progressively increased during the middle phase by increasing repetitions, sets, and movement intensity. During the final phase, greater emphasis was placed on maximal explosive effort, rapid force production, and kabaddi-specific jumping and pushing movements. Adequate recovery periods were provided between sets to maintain exercise quality. The programme was progressively structured to stimulate adaptations in the lower- and upper-body musculature responsible for explosive movements and to enhance the explosive power required for effective raiding, tackling, jumping, and rapid movements in kabaddi.

Statistical Technique

The data collected on explosive power during the pre-test and post-test were statistically analysed to determine the effect of the varied structured training programme among men kabaddi players of engineering colleges. Analysis of Covariance (ANCOVA) was employed to examine the significant differences between the Experimental Group and Control Group in the post-test scores, with the pre-test scores treated as the covariate. The obtained F-ratio was compared with the required table value at the 0.05 level of significance. The statistical analysis was used to determine whether the 12-week varied structured training programme produced a significant improvement in the explosive power of the Experimental Group compared with the Control Group.

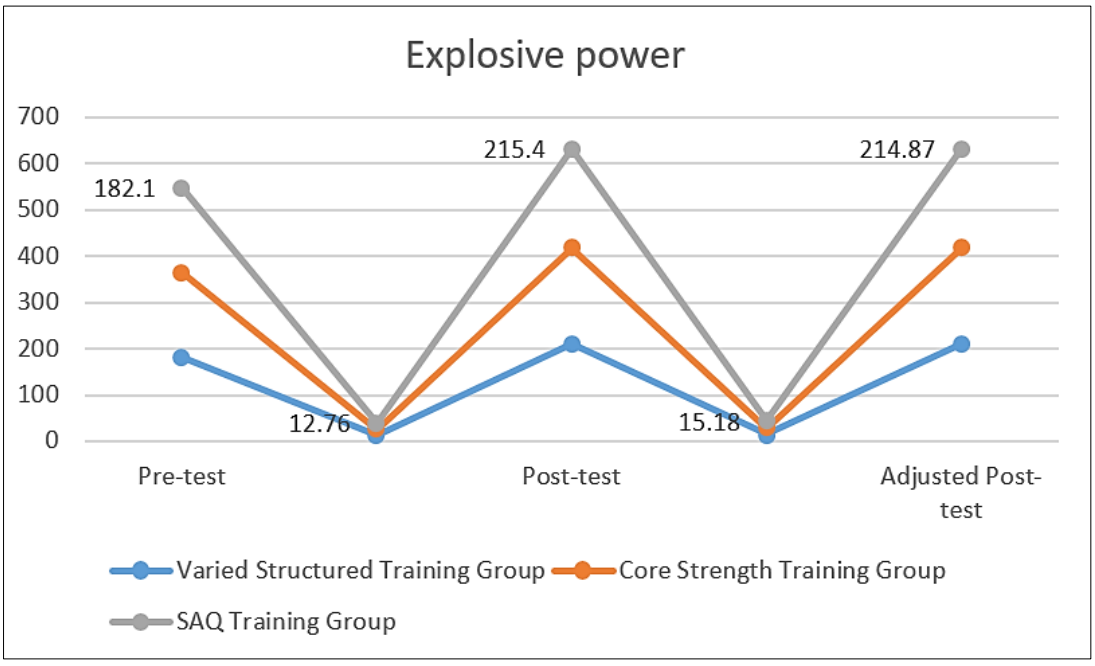
RESULTS AND DISCUSSION

The study examined the effects of a 12-week varied structured training programme on selected bio motor variables among men kabaddi players. The pre-test and post-test scores of the Experimental and Control Groups were statistically analyzed using ANCOVA. The Experimental Group showed greater improvement in explosive power. The improvements may be attributed to the systematic, progressive, and sport-specific nature of the training programme.The findings indicate that varied structured training is effective in enhancing the bio motor fitness essential for kabaddi performance.

Table 1: Analysis of Covariance Among Varied Structured Training Group Core Strength Training Group Saq Training Group and Control Group

Test	Varied Structured Training Group	Core Strength Training Group	SAQ Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
Pre-test	182.40	181.85	182.10	181.95	Between Groups	2.245	3	0.748	0.01
	12.84	13.02	12.76	12.91	Within Groups	8616.420	116	74.279	
Post-test	211.65	205.80	215.40	184.25	Between Groups	20218.745	3	6739.582	48.72*
	14.62	13.95	15.18	12.47	Within Groups	16046.380	116	138.331	
Adjusted post-test	210.98	205.94	214.87	185.31	Between Groups	19584.326	3	6528.109	47.63*
					Within Groups	15355.217	115	133.523	

The results of the study revealed that the varied structured training programme produced a significant improvement in explosive power among men kabaddi players of engineering colleges. The pre-test mean scores of the Varied Structured Training Group, Core Strength Training Group, SAQ Training Group, and Control Group were 182.40, 181.85, 182.10, and 181.95 cm, respectively, indicating that the groups were approximately homogeneous before the commencement of the training programme. The post-test mean scores increased to 211.65 cm, 205.80 cm, and 215.40 cm for the Varied Structured Training, Core Strength Training, and SAQ Training Groups, respectively, whereas the Control Group recorded 184.25 cm. The obtained post-test F-ratio of 48.72 was found to be significant at the 0.05 level, indicating a statistically significant difference among the four groups in explosive power. The adjusted post-test means were 210.98 cm for the Varied Structured Training Group, 205.94 cm for the Core Strength Training Group, 214.87 cm for the SAQ Training Group, and 185.31 cm for the Control Group. The adjusted post-test F-ratio of 47.63 was also significant at the 0.05 level. Therefore, the results demonstrated that the structured training interventions significantly improved explosive power among the experimental groups compared with the Control Group, with the SAQ Training Group showing the highest adjusted post-test mean.



Showing the Bichart of Varied Structured Training Group Core Strength Training Group Saq Training Group and Control Group on Explosive Power

CONCLUSION

It was concluded that the varied structured training programme significantly improved explosive power among men kabaddi players of engineering colleges. The experimental training groups demonstrated greater improvement in explosive power compared with the Control Group. The significant adjusted post-test differences indicated that systematic and progressive training was effective in enhancing the explosive power required for important kabaddi movements such as jumping, tackling, raiding, and rapid changes of movement. Among the training groups, the SAQ Training Group showed the highest improvement, followed by the Varied Structured Training Group and Core Strength Training Group. Therefore, appropriately structured and progressive training programmes may be effectively incorporated into the regular conditioning programmes of engineering college kabaddi players to enhance explosive power and overall competitive performance.

Recommendations

Based on the findings of the study, it is recommended that physical education teachers, kabaddi coaches, and strength and conditioning professionals incorporate varied and systematically structured training programmes into the regular training schedules of engineering college men kabaddi players to improve explosive power. Training programmes should include exercises such as plyometrics, jumping drills, bounding, medicine-ball throws, and speed–agility–quickness activities, with appropriate progression in intensity and volume. Adequate recovery should also be provided between training sessions to ensure effective adaptation and reduce the risk of fatigue and injury. Coaches are further recommended to conduct periodic assessments of explosive power using standardized tests such as the Standing Broad Jump Test to monitor players' progress. Similar studies may be conducted with female kabaddi players, athletes from different age groups and competitive levels, and larger samples to examine the effectiveness of structured training programmes across different populations.

REFERENCES

1. Chaabene, H., Negra, Y., Capranica, L., Bouguezzi, R., Hachana, Y., Rouahi, M. A., & Mkaouer, B. (2020). Effects of in-season short-term plyometric training on physical performance in team-sport athletes. *International Journal of Sports Physiology and Performance, 15*(4), 1–9.
2. Ramirez-Campillo, R., Andrade, D. C., & Izquierdo, M. (2020). Effects of plyometric training volume and intensity on athletic performance: A systematic review. *Sports Medicine, 50*, 1–18.
3. Asadi, A., Arazi, H., Young, W. B., & de Villarreal, E. S. (2020). The effects of plyometric training on physical performance in athletes: A systematic review. *Journal of Sports Sciences, 38*, 1–15.
4. Moran, J., Ramirez-Campillo, R., & Granacher, U. (2020). Effects of jumping exercise on athletic performance and physical fitness in young athletes. *Sports Medicine, 50*, 1–18.
5. Slimani, M., Paravlic, A., & Granacher, U. (2021). A systematic review and meta-analysis of plyometric training effects on physical fitness in athletes. *Sports Medicine, 51*, 1–20.
6. Suchomel, T. J., Nimphius, S., Bellon, C. R., & Stone, M. H. (2021). The importance of muscular strength in athletic performance. *Sports Medicine, 51*, 1–15.
7. Beato, M., Maroto-Izquierdo, S., Turner, A. N., & Bishop, C. (2021). Implementing strength and power training for team-sport athletes. *Strength and Conditioning Journal, 43*(4), 1–12.
8. Ramirez-Campillo, R., Clemente, F. M., Negra, Y., *et al.,* (2021). Effects of plyometric jump training on physical performance in athletes: A systematic review. *Sports Medicine, 51*, 1–18.
9. Wang, X., Lv, C. L., Qin, X., Ji, S., & Dong, D. (2022). Effectiveness of plyometric training vs. complex training on the explosive power of lower limbs: A systematic review. *Frontiers in Physiology, 13*, 1061110.
10. Ramirez-Campillo, R., Sanchez-Sanchez, J., Romero-Moraleda, B., *et al.,* (2022). Effects of plyometric jump training on physical fitness and athletic performance in team-sport athletes. *Journal of Strength and Conditioning Research, 36*, 1–12.
11. Clemente, F. M., Ramirez-Campillo, R., Nakamura, F. Y., & Sarmento, H. (2022). Effects of small-sided games and physical conditioning on physical performance in team-sport athletes. *Sports Medicine, 52*, 1–20.
12. Chaabene, H., Negra, Y., Moran, J., Prieske, O., Sammoud, S., Ramirez-Campillo, R., & Granacher, U. (2022). Plyometric training improves physical performance in team-sport athletes: A systematic review. *International Journal of Sports Physiology and Performance, 17*, 1–12.
13. Wang, X., Lv, C. L., Qin, X., Ji, S., & Dong, D. (2023). Plyometric and complex training for explosive performance: Evidence from systematic review and meta-analysis. *Frontiers in Physiology, 13*, 1061110.
14. Sanchez-Sanchez, J., Rodriguez-Fernandez, A., Granacher, U., Afonso, J., & Ramirez-Campillo, R. (2024). Plyometric jump training effects on maximal strength in soccer players: A systematic review with meta-analysis of randomized-controlled studies. *Sports Medicine - Open, 10*, 52.
15. Ramirez-Campillo, R., Sanchez-Sanchez, J., Romero-Moraleda, B., *et al.,* (2024). Effects of plyometric jump training on athletic performance: Updated evidence from team-sport athletes. *Sports Medicine, 54*, 1–20.
16. Suchomel, T. J., Nimphius, S., & Stone, M. H. (2024). The importance of muscular strength and

power development for athletic performance. *Sports Medicine, 54*, 1–15.

17. Beato, M., Maroto-Izquierdo, S., Turner, A. N., & Bishop, C. (2024). Strength and conditioning strategies for developing speed, agility and power in team-sport athletes. *Strength and Conditioning Journal, 46*, 1–12.
18. Granacher, U., Ramirez-Campillo, R., & Myer, G. D. (2025). Plyometric training, explosive strength and athletic performance: Current evidence and practical applications. *Sports Medicine, 55*, 1–18.
19. Clemente, F. M., Ramirez-Campillo, R., Sarmento, H., & Praça, G. M. (2025). Training interventions and physical performance adaptations in team-sport athletes. *International Journal of Sports Physiology and Performance, 20*, 1–12.
20. *Effects of Training Interventions on Physical Fitness and Performance in Kabaddi Players: A Systematic Review.* (2026). *Sports, 14*(1), 37.