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Effects of complex training on bio motor components and psychological variable of men kabaddi players

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Abstract
The objective of this study was to examine the effects of complex training on bio motor components and psychological variable of men kabaddi players. To achieve the purpose of the study, thirty kabaddi players (N = 30) were selected from the Department of Physical Education, Bharathiar University, Coimbatore, Tamil Nadu, India. The age of the selected kabaddi players ranged between 21 and 25 years. The selected subjects were divided into two groups: Group I, designated as the Complex Training Group (CTG), and Group II, designated as the Control Group (CG). Each group consisted of fifteen kabaddi players (n = 15). Prior to the intervention, a pre-test was administered to record the baseline values of the selected variables. The bio-motor components selected were speed and agility, and the selected psychological variable was stress. Following the pre-test, the complex Training Group (CTG) underwent a structured Complex training programme for a period of eight weeks, while the Control Group (CG) continued with their regular physical activities without any exposure to the specific training protocol. Upon completion of the eight-week training period, a post-test was administered to both groups. Data collected from both groups before and after the training period were statistically examined for significant improvement using the dependent 't' test. The level of significance was set at $p \leq 0.05$. The results revealed that the complex Training Group (SBTG) demonstrated statistically significant improvements in all selected bio-motor components and psychological variables when compared to the Control Group (CG) at the $p \leq 0.05$ level of significance. The findings of the present study conclude that the eight-week complex training programme had a significant positive effect on the selected bio-motor components and psychological variables of men kabaddi players.

Keywords: Bio motor components, psychological variables and kabaddi players

Introduction

Kabaddi is a traditional Indian team sport that combines physical strength, agility, and strategic thinking. It originated in ancient India and is now played at national and international levels. The game involves two teams, where a “raider” enters the opponent’s half to tag players and return safely while chanting “kabaddi” continuously. According to A. Chakraborty (2002), Kabaddi is not only a rural pastime but has evolved into a scientifically structured competitive sport with standardized rules and global recognition.

Kabaddi performance largely depends on well-developed bio-motor components such as strength, speed, endurance, flexibility, and agility. Strength is essential for tackling and resisting opponents, while speed helps raiders quickly enter and escape from the opponent’s court. Agility enables rapid changes in direction, and endurance is crucial for sustaining performance throughout the match. Flexibility aids in executing advanced techniques like dodges and kicks. According to T. R. Baechle and R. W. Earle (2008), bio-motor abilities are fundamental for optimal sports performance, particularly in high-intensity intermittent games like Kabaddi.

Psychological stress is a significant factor affecting kabaddi players, especially during high-pressure competitions. Players often experience anxiety, fear of failure, and performance pressure, which can influence decision-making and overall performance. According to R. S. Weinberg and D. Gould (2019), stress in sports can be both facilitative and debilitative depending on how athletes perceive and manage it. In kabaddi, maintaining mental toughness, focus, and emotional control is crucial for executing skills effectively under pressure. Techniques such as relaxation training, visualization, and goal setting are commonly used to manage stress and enhance performance.

Strength training and plyometric training are both effective measures for increasing athletic performance independent of each other, but a true program designed for power-based athletes needs to incorporate both disciplines. A study done in 2000 in the NSCA's Journal of Strength and Conditioning Research measured three different training protocols: strength training, plyometric training, and a combination of both. The group that used combined methods was the only group that showed significant increases in BOTH strength and power. Fatouros, *et al*., (2000).

Methods and Measures

To achieve the purpose of the study, thirty kabaddi players (N = 30) were selected from the Department of Physical Education, Bharathiar University, Coimbatore, Tamil Nadu, India. The age of the selected kabaddi players ranged between 21 and 25 years. The selected subjects were divided into two groups: Group I, designated as the Complex Training Group (CTG), and Group II, designated as the Control Group (CG). Each group consisted of fifteen kabaddi players (n = 15). Prior to the intervention, a pre-test was administered to record the baseline values of the selected variables. The bio-motor components selected were speed and agility, and the selected psychological variable was stress. Following the pre-test, the complex Training Group (CTG) underwent a structured Complex training

programme for a period of eight weeks, while the Control Group (CG) continued with their regular physical activities without any exposure to the specific training protocol. Upon completion of the eight-week training period, a post-test was administered to both groups. Data collected from both groups before and after the training period were statistically examined for significant improvement using the dependent 't' test. The level of significance was set at $p \leq 0.05$.

Criterion Measures: It is evaluate Speed, Agility and Depression variables where chosen as the criterion measures to this study for testing.

Table 1: Criterion Measures

S.No	Criterion Variables	Test Items	Unit of Measurements
Bio Motor Components			
1	Speed	50 mts dash	In Seconds
2	Agility	4x10 mts Shuttle run	In Seconds
Psychological Variable			
3	Stress	Lovibond, S.H. & Lovibond, P.F. (1995). Manual for the Depression Anxiety & Stress Scales.	DASS-21 (2nd Ed) Questionnaire

Table 2: the t- ratio of complex training group and control group on selected bio motor components and Psychological variable of men kabaddi players

No	Variables	Groups	Pre-Mean	Post-Mean	SD	t-Ratio
1.	Speed	CTG	7.74	7.65	0.22	18.10*
		CG	7.85	7.53	0.13	1.03
2.	Agility	CTG	12.20	12.08	1.21	22.10*
		CG	12.25	12.20	1.03	1.02
3.	Stress	CTG	15.70	10.65	0.05	10.10*
		CG	15.805	15.802	1.06	1.05

(* Significant at $p \leq 0.05$ | CTG = Complex Training Group (n = 15) | CG = Control Group (n = 15) | Table of t at 0.05 level (df = 14) = 2.145)

The mean, standard deviation, and t-values calculated for each outcome measure are presented in Table I. With regard to bio-motor components, Speed improved from a pre-test mean of 7.74 to a post-test mean of 7.65 (t = 18.10*), and Agility improved from 12.20 to 12.08 (t = 22.10*) in the Complex Training Group (CTG), both of which were statistically significant at the $p \leq 0.05$ level (df = 14) = 2.145). Furthermore, the psychological variable of Stress also demonstrated significant improvement in the CTG, with the pre-test mean of 15.70 reducing to a post-test mean of 10.65 (t = 10.10*), indicating a meaningful reduction in depression levels following the eight-week complex training programme of which were statistically significant at the $p \leq 0.05$ level (df = 14) = 2.145).

In contrast, the Control Group (CG) showed no statistically significant changes in any of the selected variables during the same period, with Speed recording pre- and post-test means of 12.25 and 12.20 (t = 1.03), Agility recording pre- and post-test means of 12.25 and 12.20 (t = 1.02), and Depression recording pre- and post-test means of 15.80 and 10.85 (t = 1.05), none of which attained the required critical value at the $p \leq 0.05$ level (df = 14; critical t = 2.145), collectively indicating that the absence of a complex training protocol resulted in no meaningful improvement across any of the measured bio-motor components or psychological variables in the Control Group.

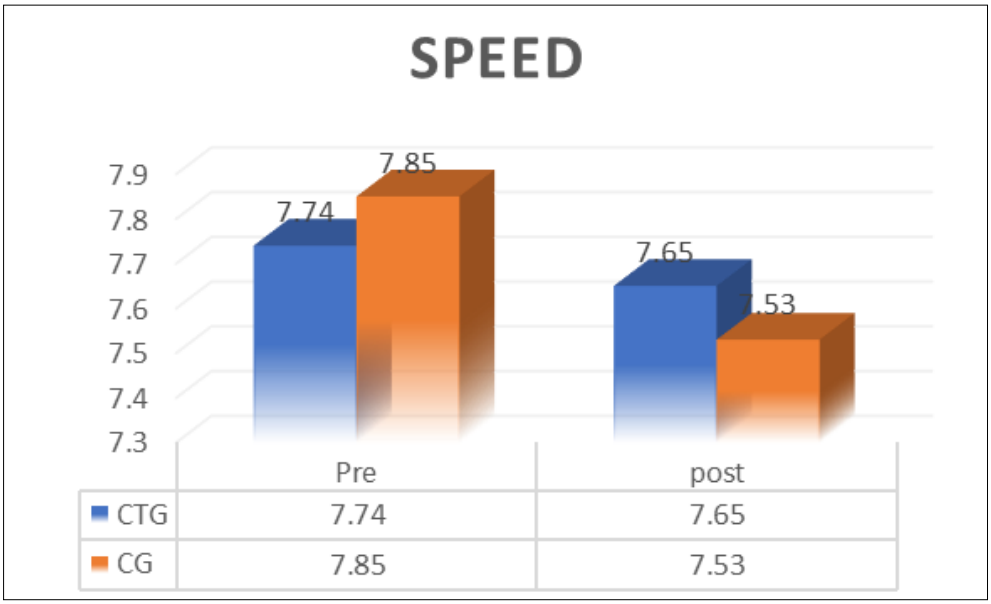

Fig 1: Show The Pre and Post Mean Values of Speed

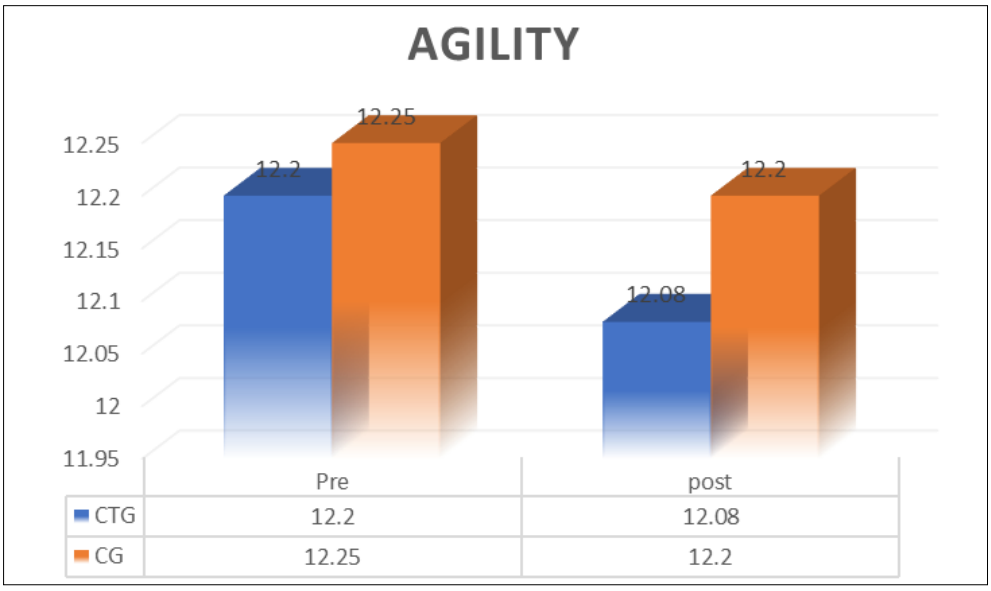

Fig 2: Show The Pre and Post Mean Values of Agility

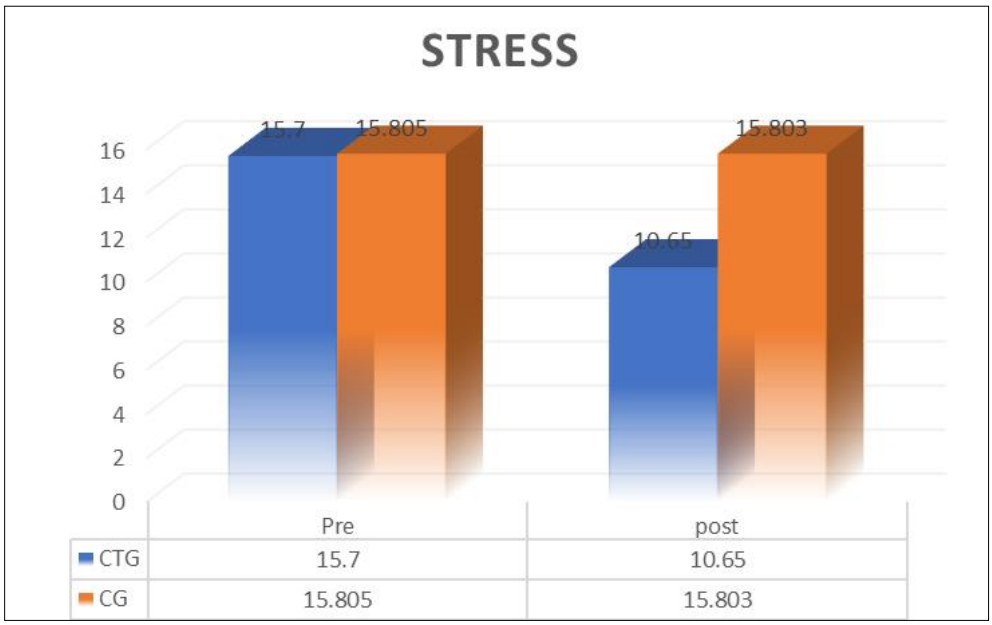

Fig 3: Show The Pre and Post Mean Values of Stress

Discussion on Findings

The findings of the present study show that the Complex training group, which underwent complex training, showed significant improvement in speed, agility, and a reduction in stress levels when compared to the control group.

The findings of the present study clearly indicate that the complex training group showed significant improvement in bio-motor variables such as speed and agility, along with a notable reduction in psychological stress levels when compared to the control group. Complex training, which integrates strength and plyometric exercises, enhances neuromuscular coordination and explosive power, thereby improving movement efficiency. According to Donald A. Chu (1998), plyometric-based training methods significantly improve speed and agility by increasing the rate of force development. Similarly, Tudor Bompa (2012) emphasized that combined training methods are highly effective in developing bio-motor abilities, particularly in sports requiring quick directional changes and rapid acceleration, such as kabaddi.

The observed improvement in speed among the experimental group may be attributed to enhanced muscle fiber recruitment and improved coordination between the nervous and muscular systems. Michael H. Stone (2007) [11] reported that complex training leads to post-activation potentiation, which improves sprint performance and explosive movements. Likewise, agility improvements can be linked to better proprioception and dynamic balance, as supported by Young W. B. (2006), who found that agility performance improves significantly when strength and plyometric exercises are combined.

In addition to physical gains, the study also revealed a reduction in psychological stress levels among the complex training group. This may be due to the physiological and psychological benefits of structured exercise, including improved mood, confidence, and mental resilience. According to R. S. Weinberg and D. Gould (2019), regular physical training helps athletes manage stress by enhancing self-efficacy and reducing anxiety levels. Furthermore, Hans Selye (1976) explained through the General Adaptation

Syndrome that the body adapts positively to controlled stressors such as exercise, leading to improved resistance to psychological stress.

In contrast, the control group did not exhibit meaningful improvements in the selected variables, likely due to the absence of complex training stimulus. This further confirms the effectiveness of complex training in enhancing both physical and psychological variables.

conclusion

The present study concludes that complex training has a significant positive effect on selected bio-motor components and psychological variables of men kabaddi players. The experimental group, which underwent complex training, showed marked improvements in speed and agility, along with a noticeable reduction in psychological stress when compared to the control group. These improvements can be attributed to the combined effect of strength and plyometric exercises, which enhance neuromuscular efficiency and overall physical performance. In addition, the reduction in stress levels indicates that structured training not only develops physical abilities but also contributes to better mental health and emotional stability. Therefore, it is evident that complex training is an effective and scientifically supported method for improving both physical and psychological performance in kabaddi players, and it can be recommended as an essential component in training programs for achieving higher levels of competitive performance.

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