



STRENGTH TRAINING INDUCED CHANGES ON EXPLOSIVE POWER OF KABADDI PLAYERS

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Abstract:

The purpose of the present study was to determine the effect of strength training on explosive power among kabaddi players. Thirty (N = 30) male kabaddi players from Nandha Engineering College, Erode, Tamil Nadu, India, were randomly selected as subjects for this study. The age of the participants ranged from 18 to 25 years. The subjects were divided at random into two equal groups of fifteen (n = 15) each. The study followed a random group design involving a pre-test and post-test with a control group. Before the commencement of the experimental treatment, all participants were tested on explosive power, which constituted their pre-test scores. The experimental group participated in a 12-week strength training program, while the control group maintained their normal daily schedules without additional training. After the experimental period, a post-test was conducted on both groups using the same testing procedures as in the pre-test. The results of this study clearly show those twelve weeks of strength training significantly affects explosive power.

Key Words: Strength training, Kabaddi, Explosive Power.

Introduction:

Kabaddi is a high-intensity combative team sport that requires players to perform repeated bursts of explosive movements such as sprinting, dodging, lunging, kicking, and powerful defensive tackles. These movements demand exceptional levels of lower-body power, muscular strength, agility, and anaerobic capacity. Among these qualities, explosive power plays a crucial role in determining a player's ability to execute fast raids, perform quick directional changes, and apply forceful defensive blocks within a short interval of time (Singh & Narwal, 2011). Strength training has been widely recognized as an effective method to enhance muscular force production, neuromuscular coordination, and overall athletic performance. When applied systematically, strength-based exercises stimulate physiological adaptations such as increased motor unit recruitment, improved rate of force development, and enhanced muscle fiber efficiency (Kraemer & Ratamess, 2004). These adaptations directly contribute to improvements in explosive power, which is essential for kabaddi players to excel in both offensive and defensive actions (Gopalakrishnan, 2014).

In recent years, the competitive nature of kabaddi at state, national, and league levels has intensified, placing greater emphasis on scientific training methods and structured conditioning programs (Rajkumar & Arumugam, 2018). Despite this, limited research has specifically examined the effects of strength training interventions on the explosive power of kabaddi athletes. Understanding these training-induced adaptations is vital for coaches and trainers aiming to develop evidence-based performance strategies and minimize injury risks.

Review of Literature:

Research specific to kabaddi also shows consistent improvements following structured strength or power-training programs. Gopalakrishnan (2014) reported significant gains in vertical jump performance among kabaddi players after a targeted strength-training intervention. Similar findings are reflected in studies that applied plyometric, circuit, or combined strength-plyometric programs, showing improved leg power, agility, and tackling efficiency among university-level kabaddi athletes (Rajkumar & Arumugam, 2018).

Beyond kabaddi, general sport-science literature strongly supports the use of plyometric and complex training as effective modalities for improving explosive power. Plyometric training increases stretch-shortening cycle efficiency and elastic energy reutilization, enhancing explosive jump performance (Markovic & Mikulic, 2010). Complex or contrast training combining heavy resistance exercises with plyometric or ballistic activities has been shown to elicit superior gains in power due to post-activation potentiation and improved neural drive (Suchomel et al., 2016).

Biomechanical and neuromuscular reviews also emphasize that explosive power adapts best when training programs combine maximal strength phases with speed-power phases (Cormie et al., 2011a, 2011b). This structured progression helps athletes convert raw strength gains into functional power relevant to sport-specific movements. For kabaddi players, this may transfer to quicker raids, stronger tackles, and more efficient evasion maneuvers. Despite promising findings, limitations remain in existing kabaddi studies. Many investigations rely on small sample sizes, short intervention durations, and inconsistent testing protocols. Furthermore, variations in training intensity, frequency, and exercise selection complicate the comparison of outcomes across studies. As noted by Turner and Jeffreys (2010), sport-specific movement patterns must guide training design to maximize transferability to competition skills an area still underdeveloped in kabaddi literature.

Purpose of the Study:

The purpose of the present study was to determine the effect of strength training on explosive power among kabaddi players. The study aimed to assess whether a 12-week strength training program would produce significant changes on explosive power compared to a control group that continued with regular activities.

Selection of Subjects:

Thirty (N = 30) male kabaddi players from Nandha Engineering College, Erode, Tamil Nadu, India, were randomly selected as subjects for this study. The age of the participants ranged from 18 to 25 years. The subjects were divided at random into two equal groups of fifteen (n = 15) each.

- Group I (Experimental Group): Underwent a structured strength training program.
- Group II (Control Group): Did not participate in any experimental training and continued with their regular routine activities.

Selection of Variables:

The following variables are measured through Sargent jump:

- Explosive Power

Experimental Design:

The study followed a random group design involving a pre-test and post-test with a control group. Before the commencement of the experimental treatment, all participants were tested on explosive power, which constituted their pre-test scores. The experimental group participated in a 12-week strength training program, while the control group maintained their normal daily schedules without additional training. After the experimental period, a post-test was conducted on both groups using the same testing procedures as in the pre-test.

Training Program:

The training schedule consisted of various resistance exercises targeting major muscle groups, performed three days per week for twelve weeks. Each session lasted approximately 60-75 minutes, including warm-up and cool-down periods.

Collection of Data:

Before the commencement of the experiment, all participants were familiarized with the testing procedures. Pre-test data were obtained prior to the commencement of the strength training program, and post-test data were collected at the end of the 12-week training period.

Statistical Technique:

The collected data were statistically analyzed using Analysis of Covariance (ANCOVA) to determine the significance of mean differences between the experimental and control groups. The level of significance was set at 0.05 to test the hypotheses.

Results:

Table 1: Computation of Analysis of Covariance of Mean of Strength Training and Control Groups on Explosive Power

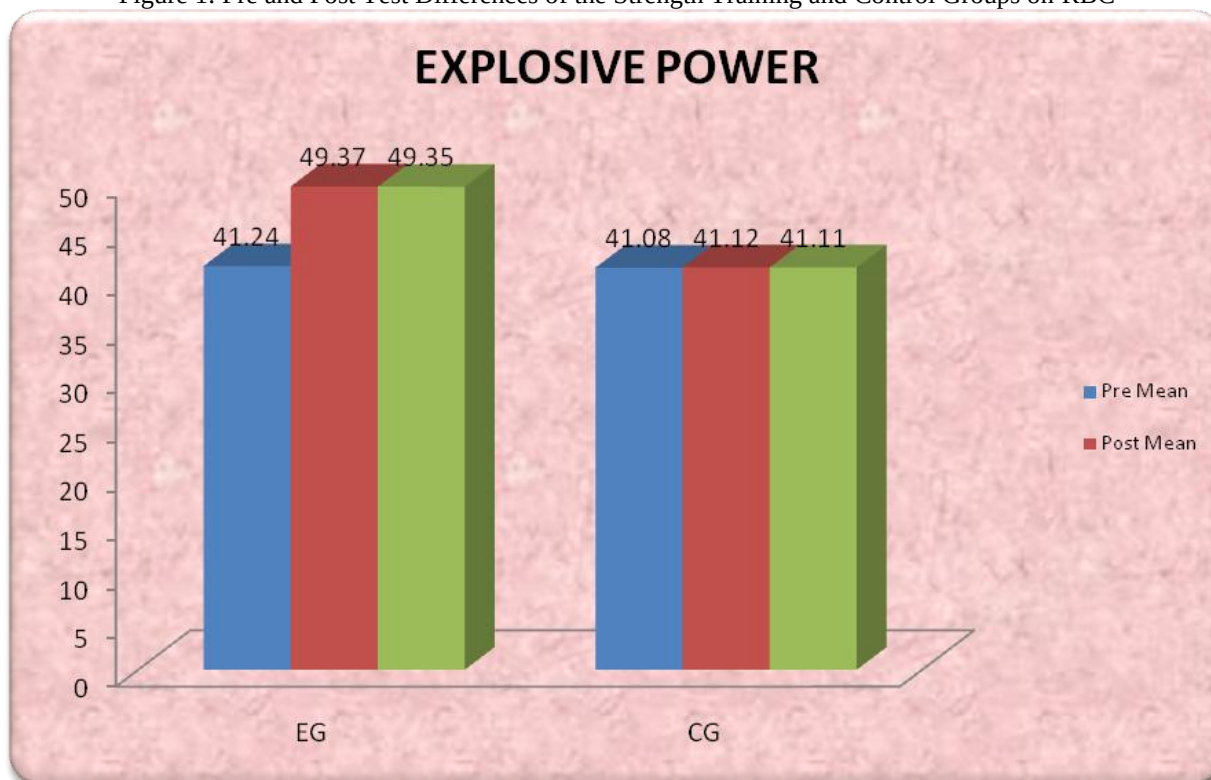
	Strength Training	Control Group	Source of Variance	Sum of Squares	df	Means Squares	F-Ratio
Pre-Test Means	41.24	41.08	BG	0.09	1	0.09	1.10
			WG	2.29	28	0.08	
Post-Test Means	49.37	41.12	BG	6.63	1	6.63	131.65*
			WG	1.41	28	0.05	
Adjusted Post-Test Means	49.35	41.11	BG	6.74	1	6.74	147.95*
			WG	1.23	27	0.04	

(Table Value for 0.05 Level for df 1 & 28 = 4.19), df- Degrees of Freedom

(Table Value for 0.05 Levels for df 1 & 27 = 4.21)

An examination of table 1 indicated that the pretest means of strength training and control groups were 41.24 and 41.08 respectively. The obtained F-ratio for the pre-test was 1.10 and the table F-ratio was 4.19. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 1 and 28. The post-test means of the strength training and control groups were 49.37 and 41.12 respectively. The obtained F-ratio for the post-test was 131.65 and the table F-ratio was 4.19. Hence the pre-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 1 and 28. The adjusted post-test means of the strength training and control groups were 49.35 and 41.11 respectively. The obtained F-ratio for the adjusted post-test means was 147.95 and the table F-ratio was 4.21. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 1 and 27. The pre, post and adjusted post test mean values of strength training and control groups, on explosive power are graphically represented in the figure 1.

Figure 1: Pre and Post Test Differences of the Strength Training and Control Groups on RBC



Discussion on Findings:

The findings of this study showed a clear and significant improvement in the explosive power of kabaddi players who underwent the strength training programme. The increase in Sargent Jump scores indicates that the training effectively enhanced lower-limb force production and neuromuscular coordination. These improvements support existing research showing that strength training increases power output through better motor-unit recruitment and rate of force development (Kraemer & Ratamess, 2004; Cormie et al., 2011). The results also agree with earlier studies on kabaddi players, where strength or plyometric training produced notable gains in vertical jump and overall power performance (Gopalakrishnan, 2014). The control group, however, showed little to no improvement, suggesting that regular practice alone is not sufficient to enhance explosive power.

Conclusion:

The study concluded that strength training promotes explosive power adaptations beneficial for performance in Kabaddi. The results of this study clearly show that twelve weeks of strength training significantly affects explosive power. As a result, the previously established hypothesis was accepted.

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