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EFFICACY OF TRAINING WITH GADGETS ON SHOULDER AND LEG EXPLOSIVE POWERS OF MEN TENNIS PLAYERS

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ABSTRACT

The purpose of this study was to investigate the efficacy of training with gadgets on selected motor fitness variables in male tennis players. Thirty male tennis players from Sri Ramakrishna Mission Vidyalaya Maruthi College of Physical Education and Ramakrishna Mission Vivekananda Educational and Research Institute, Periyanaickenpalayam, Coimbatore, Tamil Nadu, were randomly assigned to two equal groups: the Training with Gadgets Group (TWGG) and the Control Group (CG), with fifteen participants in each group. The experimental group participated in a 12-week training programme incorporating gadgets, while the control group continued their regular routine without any specialized intervention. The selected dependent variables for the study were Shoulder Explosive Power and Leg Explosive Power. The independent variable was the training with gadgets. A paired t-test was used to analyze the pre- and post-test results, with a significance level set at 0.05. The results indicated a significant improvement in both Shoulder Explosive Power and Leg Explosive Power for the experimental group, suggesting that training with gadgets effectively enhanced these motor fitness variables in male tennis players

Keywords: Training with gadgets, Shoulder Explosive Power and Leg Explosive Power.

1. INTRODUCTION

Tennis is a dynamic and physically demanding sport that requires a combination of technical skills, tactical awareness, and superior physical fitness. The sport is characterized by explosive movements, quick reflexes, and sustained endurance, which place high demands on an athlete's strength, power, agility, and coordination. To excel in tennis, players must develop a range of motor fitness variables, such as explosive power, agility, speed, and endurance, to perform at their peak during both singles and doubles matches. Explosive power, particularly in the shoulder and legs, is crucial in tennis, as it directly influences a player's ability to execute powerful serves, groundstrokes, and quick movements across the court. Shoulder explosive power allows for effective serving and overhead shots, while leg explosive power is essential for rapid court coverage and sudden directional changes. Given the importance of these motor fitness components, training methodologies that target these attributes are integral to the overall performance of a tennis player.

In recent years, there has been increasing interest in integrating modern training technologies and gadgets to enhance athletic performance. Devices such as resistance bands, power meters, smart wearables, and motion sensors are

becoming popular tools for monitoring and improving physical attributes critical to tennis. These gadgets provide real-time data and feedback that can help athletes and coaches fine-tune training techniques and track progress over time. However, the efficacy of such gadget-based training methods in improving specific motor fitness variables, such as shoulder and leg explosive power, remains an area of ongoing research.

This study aims to explore the impact of training with gadgets on the selected motor fitness variables of male tennis players, specifically focusing on shoulder explosive power and leg explosive power. By examining the effects of gadget-based training, this research seeks to contribute valuable insights into the effectiveness of modern training tools in enhancing key physical attributes for tennis players. Training plays a pivotal role in the development of athletes, particularly in sports like tennis, which demand high levels of physical fitness and skill. In tennis, players need a combination of endurance, agility, strength, and explosive power to perform effectively. Motor fitness variables such as shoulder explosive power and leg explosive power are crucial in enabling players to execute rapid, powerful movements during serves, groundstrokes, and quick court coverage. These physical attributes directly influence a player's overall performance, especially in high-intensity matches. Shoulder explosive power allows for powerful serves and overhead shots, while leg explosive power is essential for quick acceleration, lateral movements, and sudden changes in direction on the court. Both variables are critical in improving a tennis player's speed, efficiency, and strength during gameplay.

Modern training techniques increasingly incorporate gadgets and technology to enhance training outcomes. Devices such as resistance bands, smart sensors, and motion-tracking tools offer precise data on performance and allow for targeted improvement of specific motor fitness components. These gadgets have the potential to optimize training by providing real-time feedback and individualized assessments, leading to more effective conditioning programs. This research aims to assess the efficacy of training with gadgets on improving shoulder and leg explosive power in male tennis players. By exploring the impact of gadget-based training, this study will provide valuable insights into the role of modern technology in enhancing key motor fitness variables critical to tennis performance.

2. METHODOLOGY

The present study aimed to evaluate the efficacy of training with gadgets on shoulder and leg explosive powers in male tennis players. A total of thirty (30) male tennis players were selected from Sri Ramakrishna Mission Vidyalaya Maruthi College of Physical Education and Ramakrishna Mission Vivekananda Educational and Research Institute, Periyanaickenpalayam, Coimbatore. The participants were randomly assigned to two groups: the Training with Gadgets Group (TWGG) and the Control Group (CG), with each group consisting of fifteen (15) players. The experimental group (TWGG) underwent a specialized training programme incorporating gadgets over a period of twelve (12) weeks. In contrast, the control group (CG) continued with their regular training routine without any additional intervention. The study focused on two variables namely shoulder explosive power and leg explosive power, which were measured as the dependent variables. The independent variable was the training with gadgets. To assess the effect of the intervention, pre- and post-test measurements were taken for both groups. The statistical procedure used to determine significant differences between the pre- and post-test scores was the paired t-test. The level of significance was set at 0.05 for the selected variables.

3. RESULTS AND DISCUSSION OF 't' RATIO

The results of the significant difference between the pre and post tests were analyzed using 't' ratio and the results are presented.

TABLE-I

COMPARISON OF PRE-TEST AND POST-TEST 'T'-RATIO ON SHOULDER EXPLOSIVE POWER IN EXPERIMENTAL AND CONTROL GROUPS

Group	Test	M	SD	σ DM	DM	t-ratio	'p' value
Experimental	Pre-Test	4.24	0.47	0.26	1.42	5.39*	0.01
	Post Test	5.66	1.11				

Control	**Pre-Test**	4.36	0.48	0.01	0.01	1.04	0.32
	Post Test	4.35	0.47				

*** Significance at 0.05 level.**

Table I presents the comparison of pre-test and post-test results on shoulder explosive power between the pre and post-tests of experimental and control groups. The findings indicate a significant improvement in the shoulder explosive power of the experimental group following training with gadgets. The obtained t-ratio (5.39) showed a statistically significant difference, as the p-value (0.01) was lower than the 0.05 level of significance. In contrast, the control group did not exhibit any significant improvement. These results suggest that the observed enhancement in shoulder explosive power can be attributed specifically to the experimental training involving gadgets.

FIGURE- I
MEAN DIFFERENCE OF PRE-TEST AND POST-TEST SCORES ON SHOULDER EXPLOSIVE POWER IN EXPERIMENTAL AND CONTROL GROUPS

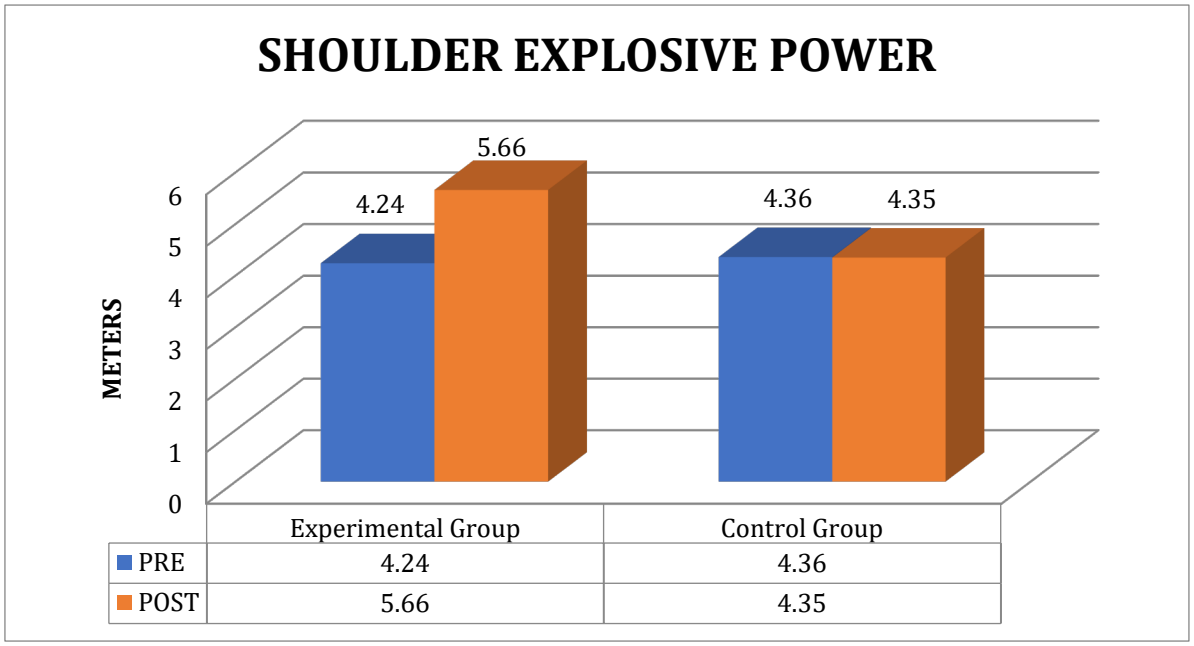


Table II
COMPARISON OF PRE-TEST AND POST-TEST 'T'-RATIO ON LEG EXPLOSIVE POWER IN EXPERIMENTAL AND CONTROL GROUPS

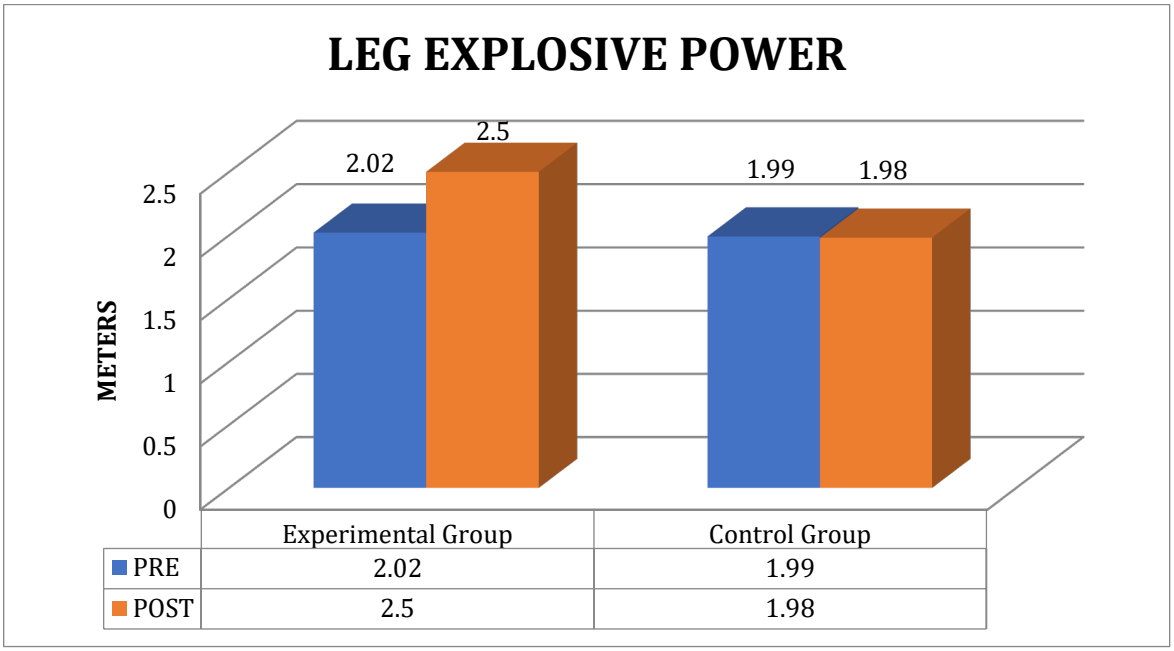
Group	Test	M	SD	σ DM	DM	t-ratio	'p' value
Experimental	**Pre-Test**	2.02	0.24	0.04	0.48	13.45*	0.01
	Post Test	2.50	0.26				
Control	**Pre-Test**	1.99	0.13	0.01	0.01	1.48	0.16
	Post Test	1.98	0.13				

*** Significance at 0.05 level.**

Table II presents the comparison of pre-test and post-test results on leg explosive power between the experimental and control groups. The findings indicate a significant improvement in the leg explosive power of the experimental group following training with gadgets. The obtained t-ratio (13.45) demonstrated a statistically significant difference, as the p-value (0.01) was lower than the 0.05 level of significance. In contrast, the control group did not show any significant

improvement. These results suggest that the observed enhancement in leg explosive power can be attributed exclusively to the experimental training with gadgets.

FIGURE- II
MEAN DIFFERENCE OF PRE-TEST AND POST-TEST SCORES ON LEG EXPLOSIVE POWER IN EXPERIMENTAL AND CONTROL GROUPS



4. DISCUSSION ON FINDINGS

The findings of this study provide strong evidence supporting the effectiveness of a twelve-week training programme with gadgets in enhancing shoulder explosive power. The results demonstrate a statistically significant improvement in the experimental group, as indicated by the obtained t-ratio (5.39). Furthermore, the p-value (0.01), which is well below the 0.05 level of significance, confirms that this improvement is not a result of chance but rather a direct outcome of the structured training regimen. The significant enhancement in shoulder explosive power observed between the pre-test and post-test measurements in the experimental group highlights the efficacy of training with gadgets. This training approach, which integrates varied exercise modalities, appears to effectively target shoulder explosive power development, likely by facilitating neuromuscular adaptations and enhancing muscular strength and endurance. In contrast, the control group, which did not undergo gadget-based training, exhibited no significant improvement, reinforcing the effectiveness of the experimental intervention.

The clear disparity in outcomes between the two groups underscores the role of specific training interventions in improving shoulder explosive power. The observed changes in the experimental group can be attributed exclusively to the training with gadgets programme, further validating its impact. These findings have practical implications for sportsmen, particularly tennis players, as shoulder explosive power plays a crucial role in optimizing performance in the sport. Tennis professionals and coaches can utilize training with gadgets as an effective method for enhancing key fitness components relevant to the game. Additionally, the results of this study align with previous research conducted by Miller & Gabbard (2013), Miller & Gabbard (1988), and Douvis (2005), which also emphasized the effectiveness of targeted training interventions in improving explosive power. The consistency between the present findings and prior studies further strengthens the credibility of training with gadgets as a valuable performance enhancement strategy. The findings of this study highlight the effectiveness of a twelve-week training programme with gadgets in significantly enhancing leg explosive power. The results indicate a statistically significant improvement in the experimental group, as demonstrated by the obtained t-ratio (13.45). Furthermore, the p-value (0.01), which is well below the 0.05 level of significance, confirms that this enhancement is not due to random variation but rather a direct outcome of the structured

training intervention.

Leg explosive power is a crucial fitness component, particularly for sportsmen, due to its strong correlation with muscular strength, agility, and performance efficiency. The substantial improvement observed in the experimental group suggests that the training with gadgets programme effectively targeted and enhanced leg explosive power, likely through a combination of neuromuscular adaptations, improved metabolic efficiency, and increased fat oxidation. In contrast, the control group, which did not undergo gadget-based training, exhibited no significant change, reinforcing the effectiveness of the experimental training regimen. The distinct difference in outcomes between the two groups underscores the role of structured and targeted training interventions in developing leg explosive power. The observed improvements in the experimental group can be attributed exclusively to the training with gadgets programme, further validating its potential as an effective training strategy.

These findings are particularly relevant in the context of tennis performance and overall athletic fitness, as leg explosive power is critical for speed, agility, and quick directional changes—key attributes for success in the sport. Moreover, enhancing leg explosive power contributes to overall physical health, reducing the risk of metabolic disorders. The study suggests that training with gadgets, which integrates diverse exercise modalities, can be an efficient approach for athletes and individuals seeking to improve leg explosive power and overall fitness levels. Furthermore, the results of this study align with previous research conducted by Miller & Gabbard (2013), Miller & Gabbard (1988), and Douvis (2005), which also highlighted the effectiveness of targeted training programmes in improving explosive power. The consistency between these findings and prior studies strengthens the credibility of training with gadgets as a practical and scientifically supported method for performance enhancement and fitness development.

5. CONCLUSIONS

The findings of this study conclude that training with gadgets is an effective and scientifically supported method for enhancing both shoulder explosive power and leg explosive power. The significant improvements observed in the experimental group demonstrate the efficacy of this training approach in developing key physical attributes essential for sportsmen performance. By integrating structured and targeted exercises, training with gadgets has proven to be a valuable tool for improving explosive power, ultimately contributing to overall fitness and performance enhancement. These results provide important insights for athletes, coaches, and fitness professionals, emphasizing the necessity of incorporating diverse and specialized training methodologies into conditioning programs.

CONFLICT OF INTERESTS

None.

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None.

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