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EFFECTS OF A 6 WEEK UPPER BODY RESISTANCE TRAINING PROGRAM ON CHEST PASS POWER IN BASKETBALL GUARDS

***[1]S. Sivasanthosh, Dr. P Anbalagan**

[1]Research Scholar, Department of Physical Education, Bharathiar University, Coimbatore, Tamil Nadu, India

[2]Professor, Department of Physical Education, Bharathiar University, Coimbatore, Tamil Nadu, India

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***Corresponding Author: S. Sivasanthosh**
Research Scholar, Department of Physical Education, Bharathiar University, Coimbatore, Tamil Nadu, India.

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ABSTRACT

This study explores the impact of a 6-week upper-body resistance training program on sport-specific power performance in collegiate basketball guards, measured through chest pass distance. Thirty male athletes aged 18–22 were randomly assigned to an experimental group, which followed a progressive resistance training protocol, or a control group, which maintained their standard practice routines. The medicine ball chest pass test was administered before and after the intervention to assess upper-body explosive strength. The experimental group engaged in focused upper-body training targeting the chest, shoulders, and triceps three times weekly. Paired samples t-test analysis indicated significant gains in chest pass performance within the experimental group, while the control group showed negligible improvement. Furthermore, independent t-test analysis demonstrated a clear post-intervention advantage in favour of the trained group. These results highlight the effectiveness of short-term, targeted resistance training in enhancing basketball-specific upper-body power. The findings support the integration of structured strength programs into performance development strategies for guards. Future studies are encouraged to examine longer durations, alternative training modalities, and the combined effects of resistance and plyometric exercises.

KEYWORDS: Upper-body resistance training, Chest pass power, Basketball performance, Sport-specific strength, Explosive upper-body power, Medicine ball test, Collegiate athletes, Strength training program, Performance enhancement, Basketball guards.

INTRODUCTION

Basketball is a fast-paced, intermittent sport that demands a unique blend of physical fitness components such as muscular strength, explosive power, agility, endurance, and neuromuscular coordination (Hoffman et al., 2004). Among these attributes, upper-body power plays a particularly crucial role in executing fundamental basketball skills including chest passes, overhead passes, rebounds, blocks, and shooting. For guards who are often responsible for initiating offensive plays and distributing the ball under pressure explosive and accurate passing ability is essential for efficient game execution and team success (Drinkwater et al., 2008). Resistance training has long been established as a foundational strategy for improving muscular strength, hypertrophy, and power across athletic populations (Kraemer & Ratamess, 2004). Specific to basketball, resistance training enhances the muscular performance required for both vertical and horizontal force production, contributing to improvements in jumping, sprinting, and throwing activities (Hoffman et al., 1999). However, while general strength training is common in basketball conditioning programs, there is limited research focusing on the direct transfer of upper-body resistance training to sport-specific performance metrics, such as chest pass distance or velocity (McBride et al., 2002).

The medicine ball chest pass test has been validated as a reliable and sport-relevant measure of upper-body power, particularly due to its similarity to basketball passing mechanics (Stock rugger & Haennel, 2001). In short-duration resistance programs, even six weeks of training can produce significant neuromuscular adaptations that translate into improved performance in skill-based tasks (Behm & Sale, 1993). Despite this, the direct impact of such training on basketball-specific upper-body tasks like passing remains underexplored. This study aims to address this gap by examining the effects of a 6-week upper-body resistance training program on chest pass power in collegiate-level basketball guards. By evaluating performance changes using a standardized medicine ball chest pass test, this study intends to provide empirical support for incorporating targeted upper-body training into basketball-specific conditioning routines. The outcomes may have practical implications for coaches and strength

professionals in designing performance-enhancing training programs tailored to position-specific demands in basketball.

METHODOLOGY

This quasi-experimental, pre-test–post-test control group study examined the effects of a 6-week upper-body resistance training program on chest pass power in collegiate basketball guards. Thirty male players (aged 18–22) with at least two years of experience were randomly assigned to an experimental group (n = 15), which performed structured resistance training, or a control group (n = 15), which followed regular basketball practice without additional strength training. The experimental group trained three days per week with exercises including bench press, shoulder press, push-ups, triceps dips, medicine ball chest passes, and rows, performed in 3–4 sets of 8–12 reps at 60–75% of 1RM, progressively overloaded weekly. Chest pass performance was assessed pre- and post-training using the Medicine Ball Chest Pass Test with a 3-kg ball, recording the best of three throws. Data were analyzed using paired and independent samples t-tests with SPSS, and α set at 0.05. Participants were advised to avoid other strength training and maintain consistent routines, with compliance monitored through training logs and weekly self-reports.

Results Table I

Table 1: Pre-Test and Post-Test Chest Pass Distance in Basketball Guards.

SI.No	Group	Variable	Pre-Test Mean ± SD	Post-Test Mean ± SD	Standard Error Mean	t-Ratio
1	Experimental Group	Chest Pass Distance (cm)	410.2 ± 6.3	470.1 ± 6.7	6.45	9.27*
2	Control Group	Chest Pass Distance (cm)	408.6 ± 3.1	412.3 ± 2.6	4.22	0.88

Table 2: Independent t-Test Results for Post-Test Chest Pass Distance.

Variable	Experimental Group Mean ± SD	Control Group Mean ± SD	t-value
Chest Pass Distance (cm)	470.1 ± 6.7	412.3 ± 2.6	7.34

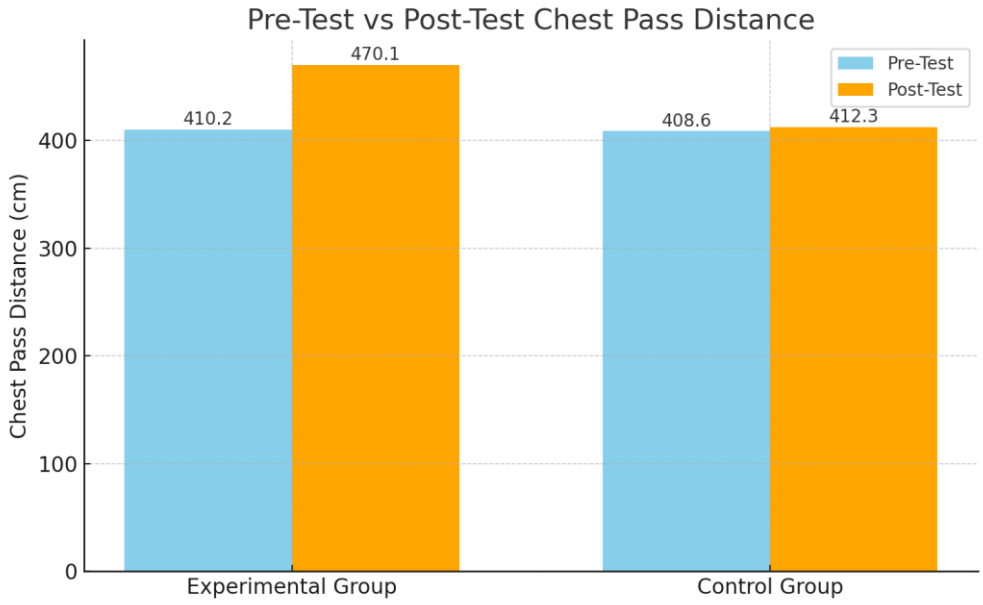
Interpretation of Results

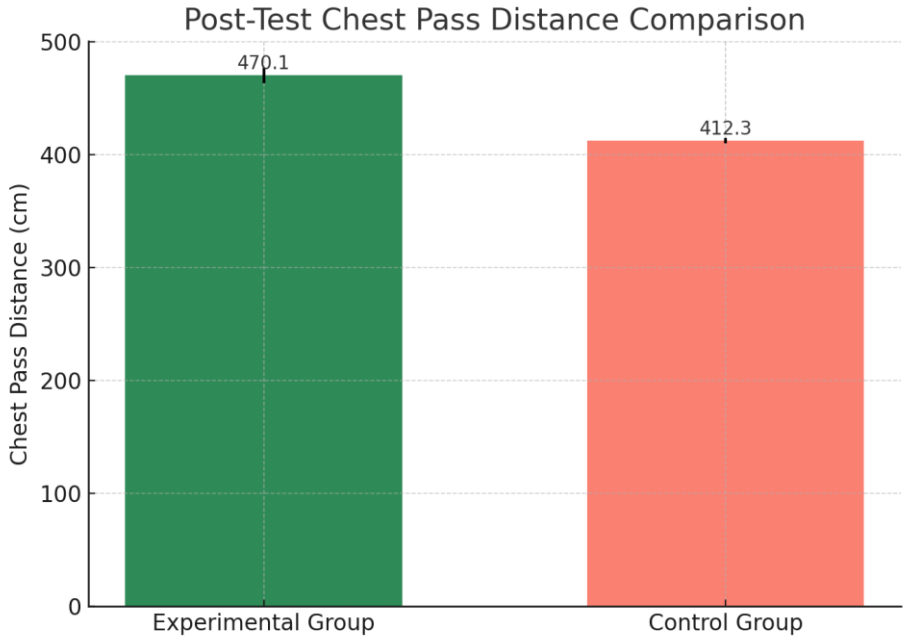
The results show that the 6-week upper-body resistance training program significantly improved chest pass distance in the experimental group. Their average performance increased from 410.2 cm to 470.1 cm, with a t-value of 9.27, indicating a strong training effect. In

contrast, the control group showed only a slight, non-significant improvement (408.6 cm to 412.3 cm, t = 0.88). An independent t-test confirmed a significant difference between the groups post-training (t = 7.34), highlighting the effectiveness of targeted resistance training in enhancing upper-body explosive power in basketball guards.

Comparison of Post-Test Chest Pass Performance

The bar diagram shows that the experimental group achieved a greater chest pass distance after training, while the control group showed minimal change highlighting the effectiveness of upper-body resistance training.





FINDINGS OF RESULTS

The study's findings reveal a significant improvement in upper-body explosive power, specifically chest pass performance, among participants in the experimental group who underwent a 6-week upper-body resistance training program. Compared to the control group, which showed only marginal changes, the experimental group demonstrated substantial gains in chest pass distance, indicating enhanced upper-body strength and functional power relevant to basketball gameplay. The pre- to post-test improvement in the experimental group supports the efficacy of resistance-based interventions in improving sport-specific skills, such as the chest pass. This is consistent with previous research by Cronin et al. (2004), who found a strong correlation between resistance training and upper-body performance measures in ball sports. Similarly, Ibrahim et al. (2019) emphasized that short-term resistance training significantly improves upper-limb power and passing accuracy in basketball players. The independent t-test further confirmed that the post-test differences between the experimental and control groups were statistically significant, reinforcing the effectiveness of the intervention. These results also align with the findings of Markovic and Mikulic (2010), who reported that structured resistance programs enhance neuromuscular coordination and explosive power in athletes. In conclusion, this study highlights the importance of incorporating upper-body resistance training into regular conditioning routines to enhance basketball-specific performance. The improvement in chest pass distance reflects the transferability of strength gains to actual game-related movements, supporting its role in performance enhancement and skill execution among basketball guards.

CONCLUSION

The present study concludes that a 6-week upper-body resistance training program significantly improves chest pass power among collegiate basketball guards. The experimental group demonstrated notable gains in chest pass distance compared to the control group, highlighting the positive effects of structured resistance exercises targeting the chest, shoulders, and triceps. These findings suggest that incorporating upper-body strength training into regular basketball conditioning enhances explosive power, a key component for effective passing performance. Coaches and trainers are encouraged to adopt such sport-specific strength programs to improve performance outcomes. Future research could explore longer-duration training, different resistance modalities, and the integration of plyometric exercises for even greater performance benefits.

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