



Effect of Game-Specific Training and Plyometric Exercises on selected physical fitness variables of school-level male Handball Players

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Abstract

The purpose of this study was to investigate the effect of game-specific training and plyometric training on specific physical fitness variables of school –level male handball players. To accomplish this objective, 30 subjects were randomly selected from Coimbatore football players, with ages ranging from 15 to 18 years. These selected subjects were then randomly divided into two groups, each consisting of 15 participants: an experimental group and a control group. The experimental group underwent a regimen of game-specific training and plyometric exercises, while the control group did not participate in any experimental activities. The physical fitness variables under examination in this study were agility and leg explosive power. The research design followed a true random group design, encompassing both a pre-test and a post-test. All 30 subjects were evenly assigned to either the experimental group (comprising game-specific training and plyometric exercises) or the control group. Prior to the six-week experimental period, pre-tests were administered to assess the selected physiological variables in all 30 subjects. Subsequently, post-tests were conducted at the conclusion of the experimental period, and the scores were meticulously recorded. Statistical analysis was performed with a predetermined level of significance set at 0.05 confidences. The findings of this study revealed a significant improvement in agility and leg explosive power among participants in the game-specific training and plyometric training group.

Keywords: Game-specific training, plyometric training, agility, leg explosive power & handball players

Introduction

Sport-specific training enhances and hones the essential skills required to excel in any sport. Your young athlete will gain increased confidence in their agility, speed, and hand-eye coordination. The Sport-Specific Skill Training offers a year-round, high-level, sport-specific training experience. It places a strong emphasis on developing the physical, technical, tactical, and psychological aspects of the sport. This training program is an integral part of the Athletic Performance Ranch's mission to cultivate character, knowledge, and leadership. Sport-Specific Training introduces and sharpens the fundamental skills necessary for success in any sport. Your young athlete will experience heightened confidence in their agility, speed, and hand-eye coordination. Both group and individual training options are available. It's important to note that strength training is a crucial component of overall fitness for athletes. Resistance exercises do not lead to unnecessary bulk; instead, they play a vital role in enhancing athletes' ability to execute skills and perform at their best. Incorporating strength training and conditioning is essential for improving athletic performance, even in endurance Plyometric training, often referred to as "plyo" or "jump training," is a form of exercise that focuses on explosive, rapid movements to develop power, strength, agility, and speed. It involves quick and forceful contractions of muscles, typically preceded by a rapid stretching (eccentric) phase. The primary goal of plyometric

training is to improve an individual's ability to generate maximum force in a short amount of time.

Plyometric exercises typically involve jumping, hopping, and bounding movements, and they are commonly used in sports conditioning, rehabilitation, and general fitness programs. The training typically includes exercises such as: Box Jumps: Jumping onto and off of a platform or box to improve vertical leap and lower-body power. Depth Jumps: Dropping from an elevated surface and immediately jumping as high as possible upon landing to enhance reactive strength. Bounding: A series of powerful, exaggerated running steps that promote speed and explosiveness. Medicine Ball Throws: Explosive throws and catches of medicine balls to enhance upper body power. Jump Squats: Performing squats with an explosive jump at the top to increase lower body strength and power. Plyometric Push-Ups: Pushing off the ground with enough force to lift the hands off the ground during each repetition to improve upper body power. Plyometric training is often integrated into sports-specific training programs to enhance an athlete's performance, especially in sports that require rapid and explosive movements like handball, basketball, volleyball, and sprinting. It can also be used for general fitness to improve strength, speed, and overall athleticism. However, it's important to note that plyometric training should be approached with caution and proper technique, as it can be high-impact and carries a risk of injury if not

performed correctly. Individuals looking to incorporate plyometrics into their fitness routines should consult with a qualified trainer or coach to ensure safe and effective implementation Events.

Methodology

The researcher employed a randomized design, which included both pretests and post-tests. A total of 30 male handball players (N=30) were assigned randomly into two equal groups, each consisting of 15 participants. These groups were designated as the experimental group and the control group. Before the commencement of any training, a pre-test was administered to assess selected physical fitness variables, specifically agility and leg explosive power, for all 30 football players. Subsequently, the experimental

group underwent a six-week regimen involving game-specific training and plyometric exercises, while the control group did not partake in any training activities. After the completion of the six-week training period, post-tests were conducted to measure the same dependent variables. The data obtained from these tests were subjected to statistical analysis using the dependent t-test to determine if any statistically significant improvements were observed. It is noteworthy that a level of significance was set at 0.05, ensuring a 95% confidence level for all analyses.

Test I

Mean and Dependant ‘T’ – ratio for the Pre And Post Tests on specific Training and plyometric training Group and control Group on agility

Group	Test	Mean	Standard deviation	Standard error mean	t- ratio
Experimental group	Pre-test	20.20	4.36	0.18	17.98*
	Post test	23.46	4.20		
Control group	Pre-test	20.06	4.46	0.19	1.43
	Post test	20.40	4.22		

*Significant level 0.05 level degree of freedom (2.14, 1 and 14)

Table I displays the computation of the 't' ratio comparing the means of pre-test and post-test agility scores for college-level football players. The mean agility values for the experimental group were 20.20 before training and 23.46 after, while the control group had means of 20.06 and 20.40 for the respective tests. The calculated 't' ratio of 17.98 exceeded the critical table value of 2.14, indicating statistical significance for 1 degree of freedom and 14 participants at a 0.05 level of confidence. This finding strongly suggests that the agility of the experimental group significantly improved due to the influence of in-and-outs game-specific strength training and plyometric exercises. Conversely, the computed 't' ratio of 1.43 fell short of the critical table value of 2.14, rendering it statistically non-significant for 1 degree of freedom and 14 participants at a 0.05 level of confidence. This result clearly demonstrates that the agility of the control group did not exhibit significant improvement following the intervention. The bar diagram shows the mean values of pre-test on agility of control group and experimental group.

Bar diagram



Test II

Mean and Dependant ‘T’ – ratio for the Pre And Post Tests on specific Training and plyometric training Group and control Group on leg explosive power

Group	Test	Mean	Standard deviation	Standard error mean	t- ratio
Experimental group	Pre-test	1.50	0.03	0.45	26.00*
	Post test	1.61	0.04		
Control group	Pre-test	1.51	0.04	0.06	1.37
	Post test	1.52	0.04		

*Significant level 0.05 level degree of freedom (2.14, 1 and 14)

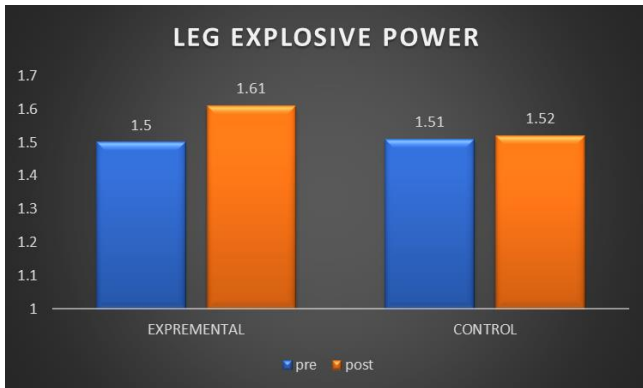
Table I presents the computation of the 't' ratio comparing the means of pre-test and post-test leg explosive power scores among school-level handball players. The mean values for the experimental group were 1.50 before training and 1.61 after, while the control group had means of 1.51 and 1.52 for the respective tests. The calculated 't' ratio of 26.00 exceeded the critical table value of 2.14, indicating statistical significance for 1 degree of freedom and 14

participants at a 0.05 level of confidence. This outcome strongly suggests that the leg explosive power of the experimental group significantly improved due to the influence of in-and-outs game-specific training and plyometric exercises. Conversely, the computed 't' ratio of 1.37 fell short of the critical table value of 2.14, rendering it statistically non-significant for 1 degree of freedom and 14 participants at a 0.05 level of confidence. This result clearly

demonstrates that the leg explosive power of the control group did not exhibit significant improvement following the intervention.

The bar diagram shows the mean values of pre-test on leg explosive power of control group and experimental group.

Bar diagram



Discussion on Finding

The study's findings reveal a significant improvement in the selected variables, namely agility and leg explosive power, within the experimental group, which consisted of individuals undergoing game-specific training and plyometric exercises, in comparison to the control group. Furthermore, the study indicates that the enhancements achieved by the game-specific training and plyometric training group are notably superior to those observed in the control group. In conclusion, the study's results underscore the positive impact of game-specific training and plyometric exercises on agility and leg explosive power, emphasizing their effectiveness in enhancing athletic performance.

Conclusions

From the analysis of the data the following conclusions are

1. The experimental group comprised of individuals who underwent game-specific training and plyometric exercises, achieved a notably significant improvement in physical fitness variables, specifically agility and leg explosive power, among school-level handball players.
2. In contrast, the control group exhibited insignificant improvement in physical fitness variables, including agility and leg explosive power, among school-level handball players.

Referenece

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