Research Paper Physical Education

Comparison of Speed and Explosive Power Among Different Levels of Handball Players

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ABSTRACT

The purpose of our study is to analyse speed and explosive power among differenent levels of handball players. Sixty (60) male handball players were selected as subjects from AGM Higher secondary school, Thuraiyur. These players were classified into three groups namely junior (20), senior (20) and super senior (20). These players were tested on speed and explosive power which was selected as criterion variables and measured by 50 yards dash and standing broad jump. Analysis of variance (ANOVA) was computed and revealed a significant difference on speed ($F = 8.82$, $p < 0.05$) and explosive power ($F = 5.95$, $p < 0.05$). We concluded that speed and explosive power significantly differ among different level male handball players in school may be due to experience and physiological changes.

KEYWORDS Speed, explosive power, 50 yards dash, standing broad jump, handball, players

Introduction

Handball is a fast body contact game, characterised by incredible athletic performances by athletes. In fact, modern handball players are able to perform many different moves, jumps, running, change of directions and technical movements in very short time and with an order determined by the tactical situation. During the game players run with and without the ball, in line and with different paths, jumping, throwing, passing and receiving in motion or during flight represent the technical characteristics of a modern top handball player (Ziv and Lidor 2009).

Modern team handball is a dynamic sports characterized by highly developed motor skills such as speed, agility, reaction speed, explosive power, endurance and strength as well as coordination (Hatzimanouil & Oxizoglou, 2004). The role of sprint and explosive power plays a vital role during a game. They perform sprints for fast break and falls back for defence, similarly players require greater explosive power to perform jump shot to score goal by avoiding the defensive hands from block. Sprint and explosive power were reported to be similar between elite and amateur handball players by Gorostiaga *et al*. (2005), and no differences in sprint performance were observed in elite players throughout one season (Gorostiaga *et al*. 2006). According to the authors of the latter study, the low-intensity aerobic-type training used during the season may have inhibited sprint performance. It was suggested that more high-intensity endurance running and leg strength training should be incorporated to improve sprinting performance, whereas low-intensity endurance running should receive less attention (Gorostiaga *et al*. 2006).

Today handball requires greater refinement in all dimensions, particularly in young handball players who are trained and groomed into a player. The capacity of school level handball players to perform speed and explosive power are vital, which assist them during their handball game. The players in schools at different level tend to possess difference in level maturity. Maturation has been described as the process of being mature, or progress toward the mature state (Malina *et al*. 2004). The changes in the physical fitness, morphological and physiological parameters also changes with growth and maturation. Therefore, variations in growth and maturation of a child can have profound effects upon aspects of physical activity, physical fitness and physical performance. Therefore the purpose of the study is to analyse the speed and explosive power among different levels of handball players.

Methods

Subjects

Sixty (60) male handball players were selected as subjects from AGM Higher secondary school, Thuraiyur. These players were classified into three groups namely junior (20), senior (20) and super senior (20). The subjects age range between 10 to 17 years were selected.

Variables and tests

These players were tested on speed and explosive power which was selected as criterion variables and measured by 50 yards dash and standing broad jump. They were tested after providing sufficient warm up and finished with proper warm down.

Statistical technique

Analysis of variance (ANOVA) test was used to compare the mean differences between the three groups. When *F* is found to be significant Scheffé S post hoc test was applied. The level of significance was fixed at 0.05. This was considered to be adequate for the purpose of this study.

Results

The mean and standard deviation of speed and explosive power of junior, senior and super senior boys are presented in Table 1. Table 1 also revealed a significant difference on speed ($F = 8.82$, $p < 0.05$) and explosive power ($F = 5.95$, $p < 0.05$). The mean value clearly show that super senior boys found to be faster and produce greater power than junior and senior level handball players. The Scheffé S post hoc test showed that super senior boys show difference with junior and senior boys and junior – super senior showed significant difference on explosive power (Table 1).

Table 1: Descriptive statistics and ANOVA on speed and explosive power of handball players

Variables	Mean ± SD	F	Scheffé S post hoc test				
			Junior	Senior	Super Senior	MD	CD
Speed (seconds)	6.69 ± 0.42	8.86*	6.69	6.67		0.02	0.21
	6.67 ± 0.51		6.69		6.44	0.25*	0.21
	6.44 ± 0.48			6.67	6.44	0.23*	0.21
Explosive power (metre)	1.48 ± 0.68	5.95*	1.48	1.70		0.22	0.42
	1.70 ± 0.55		1.48		1.95	0.47*	0.42
	1.95 ± 0.60			1.70	1.95	0.25	0.42

***Significant at 0.05**

Discussion

The present study showed that speed and explosive power differed significantly among junior, senior and super senior handball players in schools. The post hoc comparison elicited significant difference of 3.74% between junior – super senior and 3.45% between senior - super senior on speed but explosive power showed difference between junior and super senior players. Noutsos and his colleagues (2008) observed that sprint times showed no difference among junior (age 15.590.4 years) handball players (4.4 s), similar results are obtained in the present study. The findings of Gorostiaga *et al*., (2005) suggest that power and strength in a contact sport such as handball are essential for achievement at the highest level of sport performance.

The reason for the difference may be because of luteinizing hormone secretion induces the secretion of testosterone by the testes. This hormone has anabolic effect which increases the muscle mass and size which leads to increase in muscle strength. The muscle strength and speed has a significant relationship as a result the super senior boys has better performance in speed than others. The result may also indicate some influence of training especially on the more complex motor tasks before puberty. The fitness package given was not even since age and growth was kept in mind. This might have also influenced so this difference was found among these handball players (Bencke, *et al*. 2002).

Conclusion

We conclude that before prescribing training the maturation level of the boys has to be considered. The training should not be of equal for all the students. This study clearly showed that speed and explosive power varies among junior, senior and super senior boys.

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