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## Transformation on selected morphophysiological parameters of RDT hockey academy players

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### Abstract

This study was intended to assess the transformation on selected Morphophysiological parameters of RDT hockey academy players with a yearlong adaptation to supervised systematic training in the academy. For this purpose a group of 27 male hockey player from RDT hockey academy volunteered to participate in the study. The percent body fat, lean body mass and aerobic capacity was measured as criterion variables. The testing of selected variables took place at the beginning of competitive phases of training during two periodized training year, with a span of one-year between initial and final data collection. The bicycle ergometer, weighing machine and skinfold caliper were used to measure criterion variables adopting standardized procedures. The data thus collected on selected criterion variables was subjected to statistical analysis. The analysis of data revealed that the aerobic capacity of RDT hockey academy players significantly improves ( $p < 0.05$ ), however percent body fat and lean body mass found to be unchanged considerably.

**Keywords:** Morphophysiological parameters, RDT hockey academy players, aerobic capacity, bicycle ergometer, weighing machine and skinfold caliper

### Introduction

It has been assumed that the main motor property for field hockey players is speed endurance. This is the ability of maintaining very high running speeds in conditions of growing weariness. It is possible to estimate this ability by means of tests, which are established in accordance with the competition conditions (Strzelczyk, *et al.*, 2001) [3].

It is very important as a coach of young players to be aware of the players' development stage and understand how the youth players can be trained not to impair their development. (Bangsbo, 1994). Children are not small adults and should definitely not to be trained in the same way as adults. (Bangsbo, 1994) [1], with this kind design of training process, we can solve two tasks (*motor and functional ability*) simultaneously during the same training. The maintenance of fitness during a season is a key target for every team (Koutedakis, 1995) [2] but this is a complex process reflecting the diverse physical demands of the game. The purpose of this study was to assess the transformation on selected Morphophysiological parameters of RDT hockey academy players with a yearlong adaptation to supervised systematic training in the academy.

### Methods

#### Subjects

The subjects considered in the present study were twenty seven male hockey players from the RDT Hockey Academy, Anantapur, Andhra Pradesh (Mean  $\pm$  SD: Age  $14.84 \pm 2.02$  and  $15.41 \pm 2.46$  years, Height  $158.66 \pm 8.13$  and  $158.68 \pm 7.92$  cm, Body Mass  $43.68 \pm 6.73$  and  $43.72 \pm 7.34$  kg) preparing for the 2008-09 and 2009-10 district and state championship. All the players had been part of the team for a minimum of 2 years. In this study players provided written, informed consent to participate.

#### Testing Procedure

The testing of selected criterion variables took place at the beginning of competitive phases of training during two periodized training year, with a span of one-year between initial and final data collection. The study was confined to the criterion variables namely: percent body fat, lean body mass and aerobic capacity.

### Statistical Analysis

Descriptive statistics were calculated for all variables. A paired *t* test was utilized to determine significant differences for each variable between the testing years. Significance level was set at  $P \leq 0.05$ . All statistical analyses were conducted using SPSS 11.5 version.

### Results

The RDT academy hockey player's percent body fat; lean body mass and aerobic capacity was assessed and presented in table 1. The *t* test indicated significant differences between testing years for aerobic capacity ( $t=6.145$ ,  $p < 0.05$ ) and no changes is elicited on percent body fat and lean body mass (Table 1).

**Table 1:** Paired Samples T test

Variables	Testing Years	Mean	Standard deviation	<i>t</i>
Percent body fat (%)	2008-09	6.75	1.75	1.36
	2009-10	6.66	1.92	
Lean body mass (Kg)	2008-09	41.08	6.58	1.26
	2009-10	42.12	5.81	
Aerobic capacity (ml/kg/min)	2008-09	56.68	3.21	6.145*
	2009-10	60.21	2.85	

\*Significant at 0.05 level of confidence

### Discussion

Aerobic capacity certainly plays an important role in field hockey and has a major influence on performance. An increase aerobic capacity in RDT academy hockey players during two years before competitive phase of training year ( $56.68 \pm 3.21$  &  $60.21 \pm 2.85$  ml/kg/min,  $p < 0.05$ ). The increase in  $VO_2$ max after training may be due to an increase in the systemic a-v  $O_2$  difference and stroke volume, when compared to senior players (McArdle, Katch & Katch, 2006)<sup>[4]</sup>; Wilmore & Costill, 2005)<sup>[5]</sup>. Moreover, these changes may be the result of increased volume of endurance training in preparatory phase (McArdle, Katch & Katch, 2006; Wilmore & Costill, 2005). The aerobic endurance training enhances the activity of the cardiovascular system as well as developed oxidative capacity of the skeletal muscles which leads to an increase in the delivery of oxygen to working muscles (McArdle, Katch & Katch, 2006; Wilmore & Costill, 2005). It shows that  $VO_2$ max of the field hockey players may improve with training and monitoring of  $VO_2$ max is essential during the training phases, which helps the coaches for selection of players for competition.

### Conclusion

It shows that  $VO_2$ max of the field hockey players may improve with training and monitoring of  $VO_2$ max is essential during the training phases, which helps the coaches to identify the weakness of hockey players and sets a platform for selection of players for competition.

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