

# Study on the Influence of the Development of Coordinative Abilities on the Forehand and Backhand Shots in Table Tennis for Juniors IV

Petronel Cristian Moisescu<sup>a,b</sup>, Mircea Mocanu<sup>a,b</sup>

<sup>a</sup>“Dunarea de Jos” University of Galati, Gării street no.63-65, Galați 800003, Romania

<sup>b</sup> Human Performance Research Center, Faculty of Physical Education and Sport, Galati, Romania

---

## Abstract

In order to achieve high performance in today's table tennis, it is necessary to identify and use predominantly the most efficient means of training adapted to the age of the athletes subject to motor education, able to optimize the learning, fixing, consolidating and improving process for the execution of the technical-tactical elements in attack and defence, an aspect aimed at increasing performance. The present study was performed on 15 athletes aged 8-10 over a period of 6 months. The aim of this paper is to identify the opportunity to develop coordinative abilities in regard to increasing the efficiency of certain shots in this sport discipline. The objective of this research is to create a program able to optimize coordinative abilities, adapted to this discipline and age group, in order to fixate the counter game executed by forehand and backhand, by using the non-specific action systems in developing these motor skills. Premise: it is considered that at the present time there is no clear opinion on the direction mentioned above and our experimental research may improve performance and supplement the existing specialized literature. Methods used: pedagogical observation, the statistic-mathematical method, audio-video recording, the computerized graphical method. Discussion and conclusions: as a result of the experimental research, it was found that, in point of the values resulting from the statistic-mathematical analysis, as well as from pedagogical observation, the game of the athletes pertaining to the experimental group has improved during training sessions and competitions, thus proving that the direction proposed is a sure way to performance.

*Keywords: coordinative abilities, sport performance, sense of touch, optimization*

---

## Introduction

The combination between effect and speed, the possibility to guide the ball towards any area of the game table in order to put the opponent in a difficult position, and the numerous technical-tactical elements and procedures specific to this sport discipline require good genetic features in point of coordinative abilities in speed regime, which forces coaches to work with both non-specific and specific means in order to develop these coordinative abilities to the end of optimizing the young athletes' expression ability at the game table. During competitions, table tennis players need to apply several physical skills such as speed, strength, cardiovascular endurance, agility, perceptive and decision-taking skills, as a consequence of the continuous and changing situations of this dynamic game (Pradas, 2012, p. 19). The modern table tennis game demands very good motor abilities such as: speed, strength, endurance, agility, balance and good reflexes and sense of touch (Kondric, 2007). During the training lesson in table tennis, one of the objectives when dealing with 8-10-year olds is the development of specific motor skills able to support the improvement of the morpho-functional parameters and sports performance. Due to the development of the body on multiple levels, especially the increased plasticity of the cortex and the mobility of nervous processes, the improvement potential of coordinative abilities increases, an action leading to a positive effect, in our opinion, upon the execution of the hits specific to this discipline. Coordination abilities are essential in order to develop and perform optimal Table Tennis Strokes (forehand and backhand) and the movement techniques (Rana, 2004, p. 1468).

It is considered that coordination abilities are basic elements for an athletic skill. Practicing those abilities with specific exercises has a better result at improving the technique of those skills (Rana, 2004, p. 1468).

We consider the age group addressed in this paper as optimal for the development of coordinative abilities by taking into account that the sports field operates with the saying what little Petey has not learnt, Peter will never be able to learn which is quite relevant for motor capacities (Moisescu, 2011, p. 286).

Given the aspects mentioned above, the **objective** of the present research is to create a program of optimization of coordinative abilities adapted to this discipline and age group, able to optimize the counter game performed by forehand and backhand using the non-specific action systems of development of coordinative abilities'.

### **Materials and methods**

The aim of this paper is to facilitate the fixation of technical-tactical procedures such as counter forehand and backhand by using the non-specific action systems in order to develop coordinative abilities

#### **Tasks:**

- identifying the level of coordinative abilities by using non-specific tests;
- identifying the level of expression at the game table the counter forehand and backhand by specific technical-tactical tests;
- devising a training program aimed at developing coordinative abilities.

**Hypothesis** – optimizing the coordinative abilities of 8-10 year-old children, they will better settle the execution technique of technical-tactical elements and procedures in the mid-court ball game without effect directed by forehand and backhand.

The materials used in the experimental research were bats and tennis table balls 40mm in diameter, jumping ropes, landmarks, chalk and tennis tables certified by the specialized international federation. In order to develop the coordinative abilities, we used multidirectional running types, various types of leaps and rope jumping exercises, mirror games, decreasing the size of the game space and playing with the other hand, two-ball game. The training microcycle aimed at improving the abilities included 2 training sessions, the action systems being used in the first ten minutes of the fundamental part, the structure being 3 exercises during 4 training sessions, out of which we keep 2 and then add a new one during the next 4 lessons.

The experimental group consisted of 8 athletes, and the control group of 7 athletes.

In order to be more precise about the manner of devising and implementing the optimisation program of coordinative abilities, here is a model used for a one-month training middle-cycle:

A+B+C

A- rope jumping on two legs, executed at 50% of the maximum speed each player may develop; 4 series of 30 repetitions with a break of 30secs-1min.

B- on a 5-metre distance we place 10 landmarks 50 cm apart, the first being 10 metres away from the start line. When signalled (whistle), the child moves in double step at maximum speed, goes through the landmarks running, after which he sprints back and hands in the baton to the next team mate at the start line by touching the latter's palm. Each child executes the circuit 3 times.

C- the athlete placed 2.5-3m away from a wall in the training hall uses the racket to hit the ball so that to touch the wall and the floor once before the next similar execution. The exercise lasts 4 minutes.

B+C+D

D- rope jumps on one leg performed as follows: 5 left-foot jumps with displacement to the left, 5 with displacement to the right, repeated 30-40 times in 3 series.

The research performed in order to determine the influence of coordinative abilities on the middle game of the ball without effects (counters), we used a set of specific and non-specific tests aimed at evincing the value of the indices in the technical-tactical and coordinative registers. Thus, to assess the coordinative abilities we used non-specific tests such as:

-“Obstacle Hexagon” - Necessary materials: a hexagon measuring 66 cm on each side, drawn on the ground, timer. Three complete circuits of leaps are executed on two legs in a pre-established order, followed by two tests with a 5-minute break, recording the arithmetic average of the values registered by each athlete.

-“Throwing the ball to the target while facing opposite”- Necessary materials: 6 tennis balls; measuring tape; gym circle; 1 kilo gym ball and one mattress. The balls are thrown overhead to the target which is 2 meters away behind the athlete; he gets points according to the area where the ball lands.

For the specific area:

-“Butterfly”- Necessary materials: racket, ball, net, table and 2 players. The ball is hit by the player undergoing assessment by means of the forehand, followed by backhand in the areas of the table pertaining to the two shot types, being sent diagonally or cross. Two attempts are allowed, out of which the best is recorded, presupposing the highest number of successful shots.

-“Forehand on the racket”- Necessary materials: racket and tennis ball. The ball is hit on the side of the able hand (forehand) so that to bounce up approximately 20 cm, trying to perform as many such actions as possible without the ball touching the support area of the player or other surfaces or objects (wall, ceiling, etc.).

-“Backhand on the racket”- Necessary materials: the same as in the case of the forehand exercise. Instead of the forehand, the entire exercise is switched to the backhand.

- “At the wall”- Necessary materials: racket, table tennis ball and a wall. From 2 meters away from the wall the player hits the ball by forehand and backhand so that the ball does not touch the support area. Two attempts are allowed and the better of the two is recorded.

- “Cross forehand counter”- necessary materials: racket, table tennis ball, net, table, 2 players. the ball is sent to the forehand of the player under evaluation by the technical-tactical procedure of countering or effectless ball mid-play. The maximum number of successful shots is recorded.

-“Diagonal backhand counter” – the same materials and assessment methods as above, but the player under evaluation hits the ball by backhand.

In order to understand our direction of research, and to benefit from the most efficient assessment methods and obtain and interpret the value data, we used the following methods:

- the method of bibliographic study
- the method of pedagogical observation
- the statistic – mathematical method
- the computerized graphic method
- testing coordinative abilities and technical-tactical procedures

The tests were used for the assessment of both the experimental and the control group at the beginning and at the end of the training process.

### Results

In order to identify the progress made and the comparisons between the two groups—the experimental and the control groups—we performed calculations by means the Excel program, the arithmetic mean ( $\bar{X}$ ), the standard deviation ( $\pm m$ ) and the variability coefficient ( $Cv$ ).

As a result of the present experimental research we found that the performance of the players during the training sessions improved, according to the statistic-mathematical analysis and the pedagogical observation method.

In point of the evolution of the technical-tactical expression, greater progress is seen in the experimental group for all the 5 tests used, and the improvements have the following values:

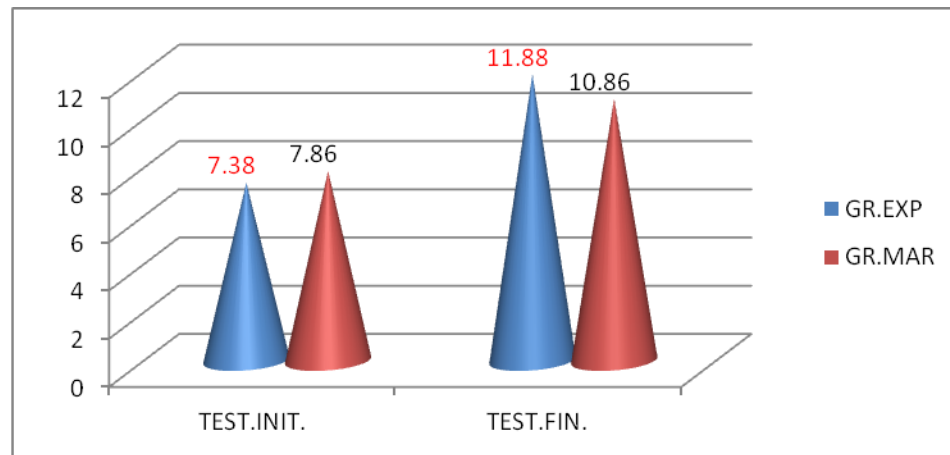


Figure 1. Comparative graph of the “At the wall” test between the control and the experimental groups

The analysis of the evolution of the group average lead to the observation that in the experimental group it increased by 60.97 i.e. 7.38 in absolute value, as compared to the increase in the control group which was 30.15 and an absolute value of 2.4.

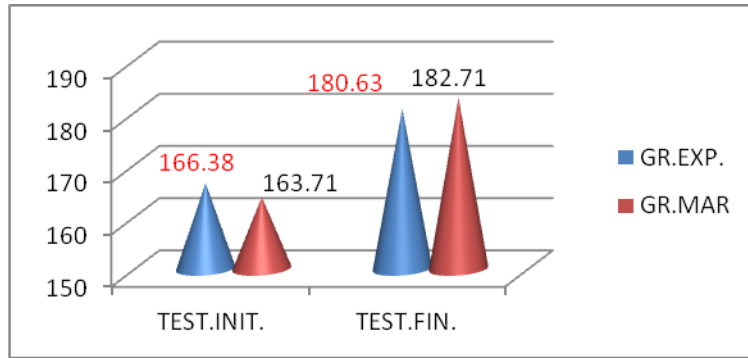


Figure 2. Comparative graph of the “Forehand on the racket” test between the control and the experimental groups

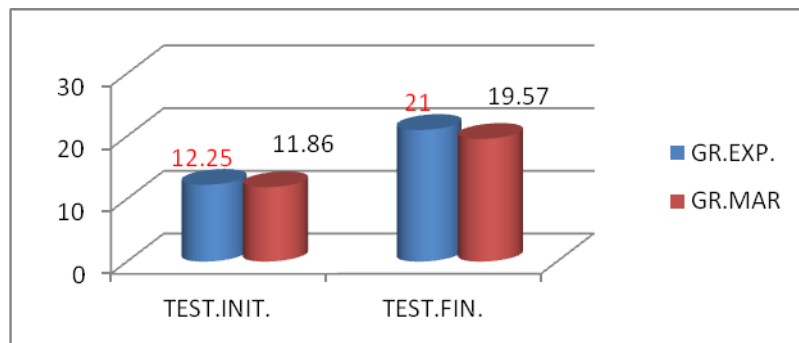


Figure 3. Comparative graph of the “Counter forhand in cross” test between the control and the experimental groups

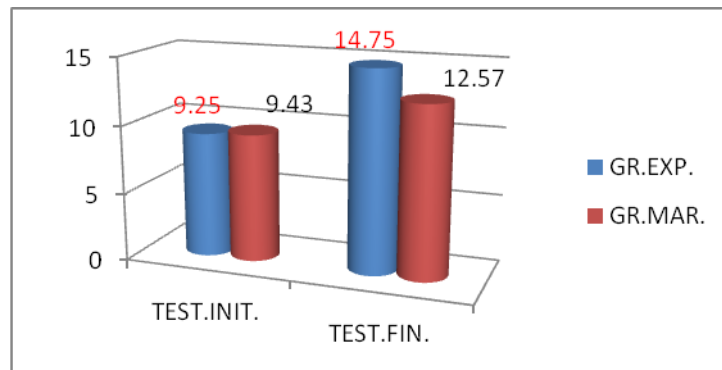


Figure 4. Comparative graph of the “Butterfly” test between the control and the experimental groups

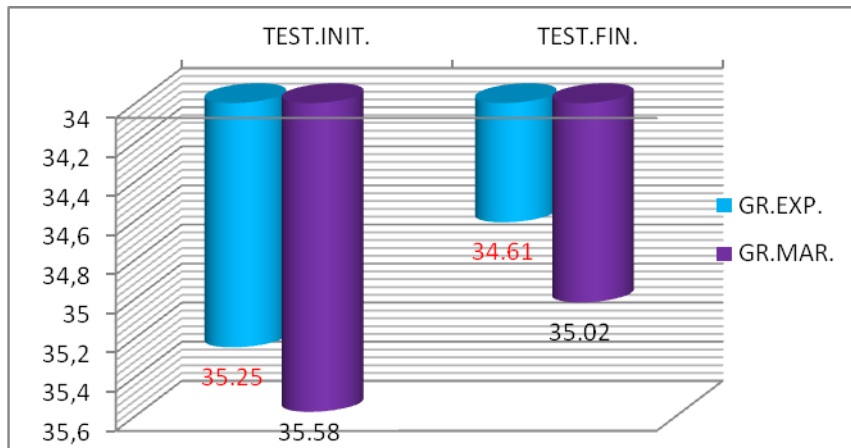


Figure 5. Comparative graph of the “Obstacle hexagon” test between the control and the experimental groups

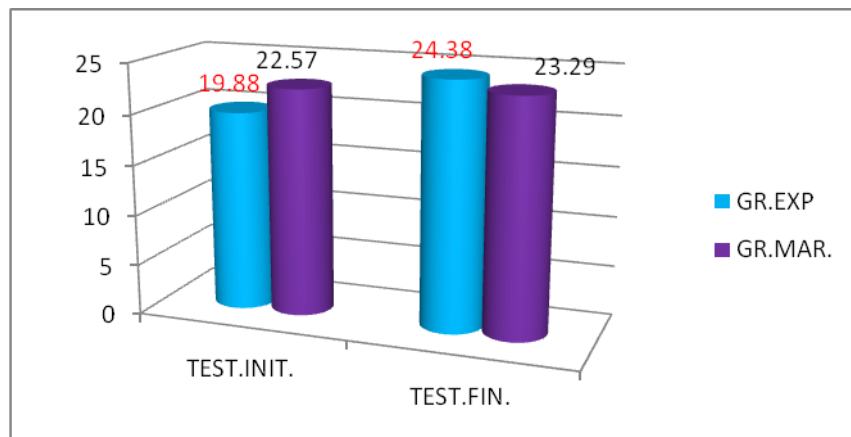


Figure 6. Comparative graph of the “Throwing the ball to the target while facing opposite” test between the control and the experimental groups

The analysis of the evolution of the group average lead to the observation that in the experimental group it increased by 60.97 i.e. 7.38 in absolute value, as compared to the increase in the control group which was 30.15 and an absolute value of 2.4.

- 5.5 extra shots in the Butterfly test as compared to 3.14 in the control group;
- 8.75 shots in the diagonal forehand counters as compared to the control group 7.71;
- 5.5 in the diagonal backhand counter versus 4.42.

When testing coordinative abilities by means of non-specific assessment techniques, the experimental group registered the following values in comparison to the control group:

#### Hexagon Obstacle

- The group average improved by 1.79 % in absolute value, i.e. 0.64 secs. as compared to 0.56 secs.
- The progress of the control group had a growth rate of 1.57%.

#### Ball throwing to the target

- In the experimental group the growth rate was 2.26, i.e. in absolute value 4.5 as compared to 3.19 with an absolute value of 0.72.

### Discussion

As a result of the experimental research conducted, it was found that the game of these athletes is improved during the training sessions in point of the values recorded by the statistic-mathematical analysis and by pedagogical observation.

We consider that in the field of action systems aimed at increasing coordinative abilities each coach may leave his intellectual mark on creating as many exercises, also being a must for the optimization of these motor skills. As stated in the introduction, according to the experts in the field, agility is a “must have” for table tennis players, and it is counterproductive if the athlete is poorly gifted from a genetic point of view or does not hone his abilities. Training in order to improve these skills by specific and non-specific means is also an efficient means of avoiding the monotony that may occur in some cases during the training sessions, and the “investment” will be reflected in the technical-tactical and motor behavior during the game and the higher performance in older age groups. It may be concluded that these coordinative abilities may be a selection criterion and at the same time a progress instrument when training young athletes pertaining to junior IV category, the speed and effects impressed on the ball during the games requiring creativity and highly trained technical expression possibilities, i.e. high motor skills.

### **Acknowledgements**

The authors have no conflicts of interests that are directly relevant to the content of this study.

### **References**

- Kondrič, M., Milić, R., & Furjan-Mandić, G. (2007). *Physiological anaerobic characteristics of Slovenian elite table tennis players*. Acta Universitatis Palackianae Olomucensis, Gymnica, 37(3), 69-78
- Pradas, F., Rapún, M., Martínez, P., Castellar, C., Bataller, V., & Carrasco, L. (2012). *An analysis of jumping force manifestation profile in table tennis*. International Journal of Table Tennis Sciences, 7, 19-23.
- Petronel, M. (2011). *COORDINATION CAPACITIES IN PRIMARY SCHOOL*. Annals of the University Dunarea de Jos of Galati: Fascicle XV: Physical Education & Sport Management, (1).
- Rana, M. S., & Rajpoot, Y. S. (2004). *Impact and Role of Selected Coordinative Abilities in Racket Sports*. International Journal of Science and Research, 4(2), 28-32.

## **Ethical Challenges in Sport Management**

Daniela Pîrvulescu Popa<sup>a</sup>

*<sup>a</sup>"Transilvania" University of Braşov, Faculty of Physical Education and Mountain Sports*

---

### **Abstract**

In this chapter we establish the need for the study of Ethics in sport management. We also present the existentialist philosophy of the leadership in sport management. We begin by defining and discussing the concept of Ethics, both personally and professionally. A major feature of this discussion is the effect they have on managers' values in sport and how they address the responsibilities.

*Keywords: value: moral, social, professional, ethical, authenticity, existentialism, sport management*

---

Follows the process of determining the value of an individual and putting into discussion of a hierarchy of values and commitment. Then, we introduce the concept of leadership that includes existentialist concepts of freedom, responsibility, fear and authenticity. The chapter ends with the important step of translating values into action and of faith.

**EXISTENTIALISM:** a philosophy based on desire and responsibility of free action.

**Value:** shares and things that are important to us.