



## Structure and Dynamics of Table Tennis Players Competitive Activity at the Stages of Long-Term Athlete Development\*

Mocrousov ELENA<sup>1†</sup>

<sup>1</sup> Head of Department of Theory and Methodology of Sport Games, University of Physical Education and Sports of The Republic of Moldova

### Abstract

The problem of developing the theoretical and methodological foundations for long-term young athletes' development is closely linked with the problem of improving the training process as a whole and it is one of the main problems in the modern science of physical education and sports training. In different years Ozolin (1970), Matveev (1995), Filin (1995), Platono (1997) and other specialists developed a wide range of issues concerning the sports reserve preparation. Establishing of the strict correlation between the system of the long-term athlete development management and specific requirements of the competitive activity in the specific sports disciplines is proposed as one of the main directions of further improvement of the modern sports training methods, which implies a comprehensive study of the multi-year structure and dynamics of competitive activity and athletes' proficiency. In sport games, the solution of this problem is particularly difficult, on the one hand, due to the lack of an objectively measurable result, and on the other hand, due to dependence of the latter on a whole range of factors of different nature, with an uneven degree of compensability and interdependency at various stages of long-term athlete development. The scientific novelty of the study is determined by solving one of the most important problems of sports theory and methodology associated with identifying and studying the patterns of age-related changes in the structure of competitive team activity and athletes' proficiency in table tennis, which make it possible to significantly improve the management of the long-term development of sports reserve due to the development and introduction into practice of a scientifically based model of building the long-term athlete development and the system of the young athletes' prospects projection in table tennis.

### Original Article

#### Article Info

Received: 05.12.2017

Accepted: 26.12.2017

Online Published: 29.12.2017

DOI:10.25307/jssr.362606

#### Keywords:

*long-term development,  
table tennis,  
competitive activity,  
development stages, learning  
and training process*

\*This study was presented as Oral Presentation in " World Congress of Sport Sciences Researches" congress held in Manisa/ Turkey between 23rd-26th November, 2017.

†Correspondance Author: Mocrousov Elena, Doctor of Pedagogical Sciences, Associate Professor, State University of Physical Education and Sports of the Republic of Moldova, Head of Department of Theory and Methodology of Sport Games, Emeritus Master of the Republic of Moldova at table tennis

E-mail: miss\_sport\_tabletennis@yahoo.co.uk

## **INTRODUCTION**

Modern trends in the development of high-performance sport require systematic improvement of the scientific, theoretical and technological foundations of long-term athlete development (Matytsyn, 1996).

Despite the fact that various aspects of athlete development in team sports are widely covered in modern scientific and methodical literature, many important issues concerning the structure and system of long-term athlete development of players have been little explored. In particular, it is important to solve the following issues, which are reflected in the article submitted for publication: the structure of table tennis players performance and the main tendencies of its age-qualitative changes, the dynamics of athletes' preparedness in the context of their long-term athlete development success rate, the structure of the competitive activities and the interrelation of its main components with different parameters of preparedness at different stages of long-term athlete development, the possibility of reliable long-term forecasting of the success sports performance and the choice of criteria for such success in team sports, on the example of table tennis. The main factors stimulating the high rate of improvement of the long-term athletes development systems include (Airapet'ianz, 1991; Amalin & Shilov, 1980; Barchukova & Voronov, 1997):

- globalization of the high performance sports importance for the advancement of the world and national physical culture and its increasing role in the life of civilized nations;
- enhancement of the professionalism of the coaches, specialists in scientific accompaniment of reserve and national team training, physical culture and sports managers;
- developing trend of Olympic and professional sport integration and the growing popularity of the latter as a promising sector of employment;
- rapidly growing competitiveness in the Olympic sports, like table tennis (Matytsyn, 1996; Platonov, 1997).

The goal of the research is to reveal the patterns of changes in the leading factors and structure of athletes proficiency and competitive activity at various stages of their sporting skills development as the basis for effective programming of the long-term development process and reliable long-term projection of the successful development of the table tennis players based on

theoretical and experimental studies from the standpoint of a holistic system approach.

## **MATERIAL and METHODS**

### **Research Model**

Research anticipation - it was assumed that the identification of specific features of the competitive and training activities of athletes specializing in table tennis in the Republic of Moldova and the comprehensive study of the dynamics of structural changes in their competitive team activity and proficiency at all stages of sporting ontogeny can serve as the basis for rational programming of the long-term development process, its structure and main content. In addition, based on the data obtained, a methodology for the long-term projection of the successful long-term development can be developed, as identification of a measure of compliance of the combination of athletes' individual qualities and attributes with the requirements of the competitive activity of the selected sport.

The target of this research is the system of long-term athlete development in table tennis in the Republic of Moldova. The research subject is the structure of table tennis players competitive activity and sport proficiency at different stages of long-term development, dynamics of structural changes in the athletes' proficiency in the process of their long-term development and their correlation with sports results.

The scientific novelty of the study is determined by solving one of the most important problems of sports theory and methodology associated with identifying and studying the patterns of age-related changes in the structure of competitive team activity and athletes proficiency in the Republic of Moldova in table tennis, which make it possible to significantly improve the management of the long-term development of sports reserve due to the development and introduction into practice of a scientifically based model of building the long-term athlete development and the system of the young athletes' prospects projection in table tennis. Based on the data obtained, the main trends in the age and qualification changes in the content and structure of the athletes' competitive activities will be determined. The multifactoriness and variability of the proficiency structure and its main components in the process of long-term development of the table tennis

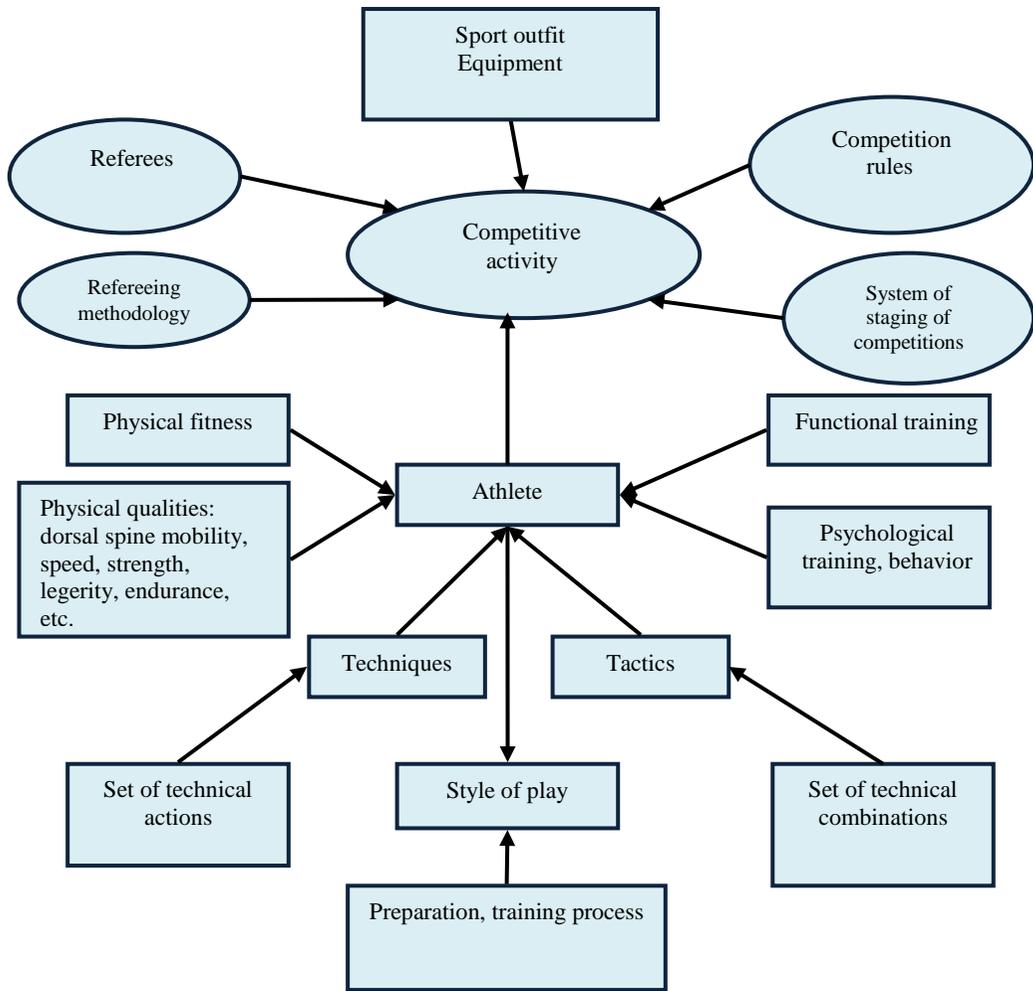
players will be also determined, and the main tendencies of long-term changes in the structure of the young athletes long-term development at the stages of long-term training will be revealed. A conceptual approach to the long-term projection of the successful long-term athlete development in table tennis will be determined based on the revealed peculiarities of the competitive activity and regularities of enhancing the table players in the Republic of Moldova proficiency.

## **RESULTS**

The theoretical importance of the research is determined by a number of the results obtained, which make it possible to make fundamental generalizations connected with the improvement of the process of table tennis players long-term athlete development. As a result of theoretical analysis and generalization of the data obtained, the patterns of changes in the competitive activity and athletes' proficiency at various stages of sport skills development have been revealed, which are characterized not only by a quantitative change in their components, but also by their structural rearrangements. A conceptual approach to the long-term projection of the successful long-term table tennis players' athlete development has been suggested.

Competitive activity in table tennis has its own specific features. It can be represented in the form of blocks that form it and influence on it. The competitive activity of an athlete is influenced by the methodology of his learning and training, but to a greater and greater extent - his individual characteristics. His morpho-functional and psychological peculiarities largely determine the style of his playing and, correspondingly, his playing and competitive activity (Figure 1).

The modern level of sports development and mainly the high performance sport development is characterized by equalization of athletes tactical and technical and physical preparedness. In table tennis, this is expressed in the significant dynamics of score ratio during the game, emotional and mental tension, the highly uncompromising nature of the game, where until the end of the draw, each of the competitors has the opportunity to radically change the direction and content of the contest.



**Figure 1.** Structure of competitive activity in table tennis

These conditions place serious demands on the emotional stability of the athlete, the ability to maintain high performance, prompt reception, analysis of information, the adoption and implementation of the decision, which together determine the reliability of the activity (Demetrovic, 1975; Dick, 1980; Matytsyn, 1996; Platonov, 1997).

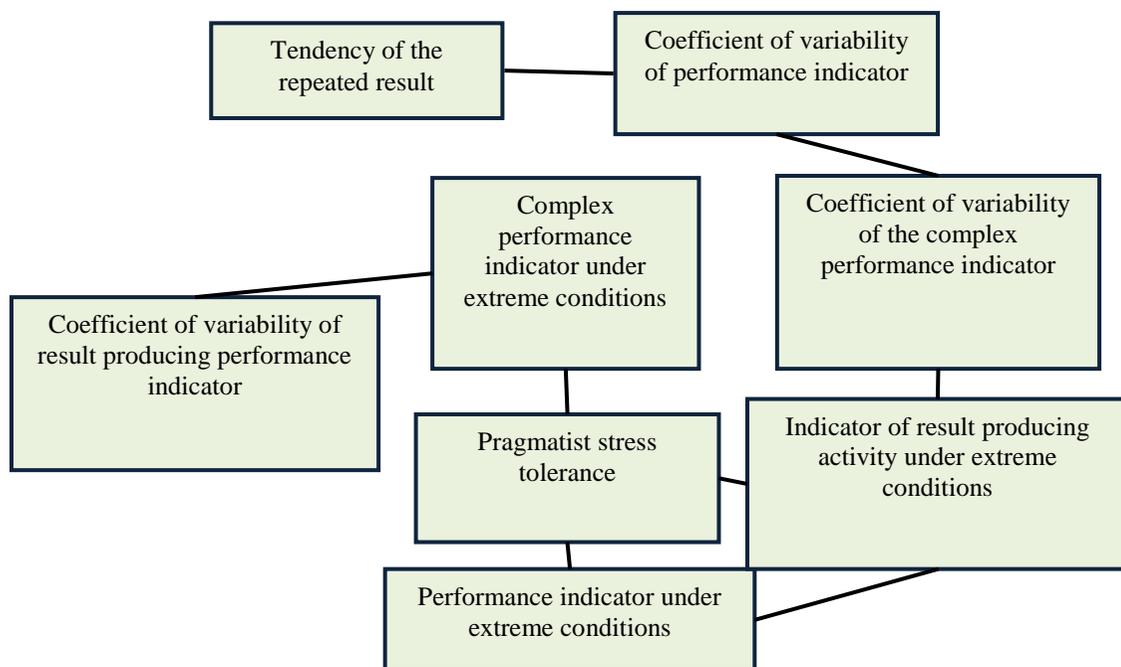
Reliability is a complicated complex ability, depending on the level of all kinds of athletic preparedness, various personal characteristics where emotional-volitional resistance to the influence of external and internal confounding factors play the leading role (Aleksandrova , 1983; Barchukova &Voronov, 1997; Matytsyn, 1996). Reliability is characterized by a high

level of performance during the whole game, a multi-day tournament, even during a long cycle of competitions, in conditions of increased importance and mental tension. With respect to table tennis - it is the ability to retain or even enhance the individual high performance of competitive activities, to retain or increase performance during the game, in confrontation with the competitors with different styles of playing.

Reliability is determined according to the dynamics of the competitive activity efficiency under the influence of the factors that can reduce this efficiency, if the dynamics is positive, then the activity efficiency is high, consequently it is characterized by reliability (Airapet'ianz, 1991; Akilov, 1992; Aleksandrova, 1983).

Comparing the data obtained in the course of research on the tennis players' performance during the game and in its final phase, as the level of emotional and mental tension increases, it is possible to fairly objectively represent the athletes activity in accordance with the requirements of reliability. The performance indicators of almost all athletes increase or remain at the same, high enough level upon the increase of importance of the decision making and implementation in the final phase of the game (Belits-Geiman, 1986; Demetrovic, 1975; Dick, 1980).

In the situation when the balance of strength is objectively expressed, and when the fate of the game is decided by rally of one or two points (10:10) and the stress level reaches its maximum, most athletes perform technical and tactical tasks effectively and solve the tactical tasks. An important characteristic of reliability is the variability of the performance indicators during the game and the competition, as it reflects the stability and rational organization of the athlete's action structure in response to changes in the conditions of sport contest, tactical orientation, style of playing and qualification of the opponents (Figure. 2).



**Figure 2.** Indicators of the reliability of competitive activities in table tennis

Competitive activity as a whole is assessed by a complex performance indicator that integrates the effectiveness of each individual action or direction of actions. The magnitude of the complex performance indicator gives an idea about ratio of the opponents' strength and the quality of the particular athlete playing. Achieving the magnitude of model performance characteristics guarantees the tennis player a victory in the game and potentially determines his capabilities in terms of effective performance in modern competitive conditions (Akilov, 1992; Aleshkov & Nevmyanov, 1990; Amalin & Shilov, 1980; Platonov, 1997).

## **DISCUSSION and CONCLUSION**

Based on the analysis of the competitive activity of highly skilled table tennis athletes in the Republic of Moldova and guided by the promising trends in the development of this sport discipline, the following conclusions can be drawn that will contribute to improving the quality of the training process and the efficiency of competitive activities:

- Planning and organization of training and competitive activities requires, as a prerequisite, the setting of a goal, the choice of means and methods on the way to its achievement. In connection with this, the model characteristics of competitive activity serve as an integral component of an effective system of sports training.
- Analysis of the competitive activities efficiency of highly qualified athletes has shown that they have not yet reached the required level of sportsmanship and in many respects lag behind the requirements of model characteristics. This confirms the need for measures to improve the competitive activity.  
They envisage:
  - the steady target orientation of coaches and athletes to master and use the advanced models of competitive activity;
  - improving the training system, aimed at fostering the properties and qualities that allow athletes to master these models;
- The basic course of modern table tennis development is to give the process of sport contest an active, aggressive dynamic character, which makes it necessary to improve training to activate the direction of technical and tactical actions, improve their accuracy and stability in the face of extreme situations in the game.
- Due to the game universalization and the wide use of different types of technical and tactical actions, their complex harmony and comprehensive universal activity became the main factors of victory; they are based on the use of active attack and counterattack tactics in combination with short-term defense - an auxiliary mean of achieving success.
- Currently, competitive activity is characterized by growing importance of aggressive tactics of serving and the use of counterattacking serve return under certain conditions.
- Identification of the structure of athletic preparedness features at the stages of long-term development and the age-qualification dynamics of its individual components (athletes' physical, technical, tactical, mental proficiency).
- Identification of the content and structure of the competitive activity and the factors determining its efficiency occupies the central place in the

management system of long-term athlete development, which gives priority to the analysis of the main trends in the dynamics of the competitive performance of table tennis athletes during sportive ontogeny.

As a result of the studies carried out in this direction, it was revealed that, in the process of formation of sporting skills, along with reliable changes in playing efficiency and motor activity of athletes, significant structural changes in the competitive activity were observed. The data obtained form the basis for the development of recommendations for the programming of long-term physical, technical and tactical training, the selection and standardization of specialized training facilities for table tennis athletes.

## REFERENCES

- Abramova, T.F., Ozolin, N.N., Geselevich, V.A. et al. (1993). Current theories on scientific basis of sport training of women. *60<sup>th</sup> Anniversary of All-Russian Scientific Research Institute of Physical Culture and Sports.*
- Airapet'ianz, L.P. (1991). *Pedagogical bases of planning and control of competitive activity in sports games*: Synopsis of EdD's thesis. Moscow National Institute of Physical Education.
- Akilov, M.V. (1992). Analysis of athletes' competitive activity from the standpoint of the psychological and pedagogical theory of activity: collection of scientific articles. *Kazakh Institute of Physical Culture Sport Faculty.*
- Aleksandrova, G.V. (1983). *Model characteristics of qualified athletes' special proficiency*, Synopsis of EdD's thesis, Kiev.
- Aleshkov, I.A., Nevmyanov, A.M. (1990). On the principles of choice and informativeness of the indicators studied as model characteristics in sports games. Moscow: Problems of competitive activity modeling.
- Amalin, M.E., Shilov, O.S. (1980). Methods of competitive activities evaluation in sports games. *Theory and practices of physical culture*, 9, 19-22.
- Barchukova, G., & Voronov, A. (1998). Biomechanical analysis of attacking strokes as a prerequisite for the development of technical and tactical actions in table tennis. *Journal of Sport Sciences*, 16(5), 407-408.
- Belits-Geiman, S.P. (1986). *Analysis and evaluation of tennis player's competitive activities*. Moscow: Physical Culture and Sports Collection.

- Demetrovic, E. (1975). Modernizacia, riadenie a programovanie vrcholovego sportovego treningu v slolnom tenise. *Trener, 6*, 7-15.
- Dick, F. (1980). Sports training principles. London: Lepus Books.
- Filin, V.P. (1995). *Sports training as a long-term process*. Modern System of Sports Training, M: SAAM.
- Filin, V.P. (1974). *Developing physical qualities in young athletes*. Moscow: Physical Culture and Sport.
- Matveev, L.P. (1995). Notes about some innovations in opinions on the theory of sports training. *Theory and Practice of Physical Culture, 12*, 49-52.
- Matytsyn, O.V. (1996). *Preparation of highly skilled athletes in table tennis taking into account individual psychological characteristics of the individual and activity*. Synopsis of EdD's thesis. Moscow.
- Ozolin, N. G. (1970). The modern system of sport training. *Physical culture and sport, Moscow*.
- Platonov, V. I. (1997). General theory of athletes' training in Olympic sport. *Kiev: Olympic Literature*.
- Preiss, S. (1992). *Table Tennis: The Sport*. USA: W.C. Brown Publishers.