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## THEORETICAL CONCEPTS IN THE EFFICIENCY OF BALL HITTING TECHNIQUE IN THE GAME OF TENNIS

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### Abstract

*Aim.* The current game of tennis is characterized by great dynamism because the player is put in a position to think and act very quickly for the effective application of all technical-tactical means and methods in various situations of adversity. The forehand is one of the most important shots in tennis. In today's modern game, during baseline exchanges, the right kick is commonly performed by advanced players. In addition, the forehand is used in ball exchanges, performed in the back of the court, in passing the opponent past the net, as well as a preparatory kick for coming to the net.

The aim of this research is to realize and verify some methodologies for objectifying the technique of hitting the ball for the right shot in the game of tennis, as well as the analysis of the biomechanical line for the efficiency of the right shot in the game of tennis, in which to use specific modern means and equipment.

*Conclusions.* In the modern game of tennis, the success of this shot has a great significance in winning a match. Therefore, I want to present useful information related to the improvement of training methods, and the procedure for executing the forehand shot.

*Keywords:* tennis, forehand, methodologies, biomechanical, methods.

### Introduction

Tennis is a sport with a particular complexity of movements within a shot. For the full learning of the versatility of the movements, mental and functional conditioning factors are needed in the modeling of sports training that leads to the efficiency of the tennis game in competition (Teușdea, 2003).

Training is a process for optimizing, maximizing, or stabilizing the state of psycho-physical performance, in which training contents are presented according to appropriate training methods, ordered according to the principles of sports training, and oriented towards predefined training goals (Schonborn, 2011).

The technique represents the main specific way of performing a physical exercise, as well as a set of procedures that, through their form and content, ensure and facilitate movement. In addition, the technique of the current tennis game has a dynamic and complex character due to the diversity of variations and nuances imprinted on the ball by the great champions. Through its specific mechanisms, it has a strong connection with the tactical content of each phase of the game along with the motor and mental qualities of the player. Therefore, to achieve sporting success, players need a perfect technique and efficient and rational effort execution.

Proprioception is the ability of the human body to transmit information about its position, interpret the information and respond consciously or unconsciously by maintaining a correct posture or by executing the appropriate movement (Houglum, 2001).

Han, Anson, Waddington, Adams & Liu (2015) state that proprioception also includes the visual one, although in sports, the visual channel is often occupied with processing information about opponents or the flight of the ball. Thus, other proprioceptive sources are needed, such as hearing or sense of touch.

In tennis, the following senses are commonly discussed: sight, hearing and touch. However, it is not known whether each of these senses is assimilated by different cell types.

During the general training period, the coach may consider that the physical training sessions should be performed before the technical sessions, because physical training is the most important objective of the period.

During the specific training period, technical sessions can be placed before tactical or physical training sessions. In the pre-competitive period, tactical sessions could be structured before technical sessions. Sessions that demand maximum speed, power and strength should never follow high-effort days. Speed-endurance, aerobic endurance, or strength-endurance sessions should never precede technique, speed, flexibility, or maximal strength sessions (Bompa, 2003).

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### Tennis training planning

The training phases are called macrocycles or periods and are as follows:

- ✓ Preparation;
- ✓ Competitive;
- ✓ Pre-competitive;
- ✓ Transition or active rest.

The preparation phase can be divided into the following:

- ✓ General training;
- ✓ Specific training.

The transition phase can be divided into:

- ✓ Complete rest;
- ✓ Active rest (Bârcu, 2004).

The annual plan is structured over four periods (single periodization) or in two sets of four periods. The last system is called "double periodization". When double periodization is used, the preparation, pre-competition and transition phases are obviously shorter than those with single periodization (table 1).

Table 1 – The Annual plan

Main phase of the plan	Partial phases of the plan
Multiannual cycle	Annual cycle (2-8 years)
Annual cycle	Periods or macrocycles (preparation, competition, transition)
Macrocycles	Mesocycles (3-5 weeks to 1 month)
Mesocycles	Microcycles (1 week)
Microcycles	The daily cycle (7 cycles per week)
Daily cycle	Training sessions (1 to 5 per day)
Training session	Part of the session (warm-up, the main part, return)
Part of the training session	Minutes (exercises, series etc.)

Sports fitness is expressed as the ratio of demand, fatigue and recovery. The request involves efforts of various types, which attract the installation of fatigue (Dragnea, Teodorescu & Păunescu, 2008). To remove it, it is necessary to pause or decrease the efforts, in volume and intensity, which has the effect of restoring the body. This phenomenon manifests itself in the case of repeating an exercise, in the case of lessons, at the end of systems of lessons (microcycle), from one stage to another (several microcycles forming a mesocycle) and from one period to another (which constitutes a macrocycle), in other words, to any request (effort) or cumulative systems of requests (Teodorescu, 2007).

### Research methods

The technique of a sport includes all the motor actions performed ideally from the point of view of their efficiency and involves the rational realization and with a low energy consumption of a certain type of movements, specific to the sports, established according to the regulations specific to each, in order to obtain superior performance in competitive activity (Baciu, 2007).

First, technique is essential, both through the movement's low energy consumption and its effectiveness. It is largely conditioned by the other components of sports training, especially physical training.

The importance of technique in the current game of tennis can also be evaluated according to the following criteria:

- The technique is the basis of the fluency of the tennis game, which, according to experts, has a role in ensuring the content of the tactics during the game phases;
- It has an individual character, due to the individual characteristics of the players;
- The technique achieved at a higher level of mastery contributes to the dynamic unfolding of the body segments, thus increasing the speed of hitting the ball;
- The technique of the various specific basic procedures takes place differently in terms of rhythm, physical and mental effort, and the areas of the field where the frequency is high and contributes to the triggering or completion of the point in the game;
- The modern technique covers, among others, the following more important aspects: preparation, balance, effort compensation at the level of the segments, synchronization of the segments, rebalancing of the body, placement and repositioning with diversified forms of movement in the field, acceleration and deceleration of the body segments, adaptation and re-adaptation of the body when hitting the ball, thinking, imagination, anticipation and quick reaction,

motor qualities of speed-strength in resistance mode and adaptive aspects of the major organic functions;

➤ Although it is fundamental for the game, the technique is only a means of demonstrating the player's ability to perform the game phases, which must be accompanied by the player's motor and mental qualities in accordance with the game's requirements;

➤ The technique is influenced by the player's personality, playing surfaces, materials (racquet, ball, etc.), stakes and sports performance as a whole (Ciocan, 2011).

Due to the very high level of current tennis, a series of requirements are imposed regarding the training of children. The selection process at this stage must be well organized and continuous, following evolution on all levels: mental, physical, technical, and somato-functional (Cârstea, 2000). To increase the efficiency of the training process, it is necessary for the trainer to know and favorably influence the biological characteristics of age with a mention of the psychological aspects (attention, concentration, perseverance, will).

On the biological level, permanent observations regarding the evolution of somatic development, the problem of adapting the body's major functions to specific efforts (Crespo & Miley, 2002).

In the first year, the following objectives are established:

- maintaining an optimal state of health;
- strengthening health and hardening the body (through camps in the mountains and at the sea);
- harmonious physical development;
- development of the body's morphofunctional indices;
- development of motor skills (general, specific);
- development of mental qualities (general, specific);
- the acquisition of specific theoretical knowledge (rules of behavior, hygiene, nutrition, recovery, rules of the game, technique, tactics of the singles game);
- application of tests and control rules on training factors;
- conducting the medical check-up.

In the second year of activity, the aim is to:

- maintaining an optimal state of health;
- strengthening health and hardening the body (through camps in the mountains and at the sea);
- harmonious physical development
- increasing the values of the body's morphofunctional indicators;
- the development of motor, mental and theoretical qualities corresponding to the phases and content of a single game on different playing surfaces (slow, fast);
- application of tests and control rules on training factors;
- conducting the medical check-up.

The game of tennis is a game of movement in which action sometimes adapts to the unexpected. Each shot, whether offensive or defensive, can have a speed, recovery, explosive, acceleration, etc. characteristic, as well as a corresponding placement (Machar, Elliot & Crespo, 2013). A good tennis player is characterized by the way he moves on the court, and tennis performance is based on quick bursts, movements executed at speed interspersed with variations of quick lateral movements and from one side of the court to another. One of the basic qualities of a tennis player is maintaining balance, as one anticipates the opponent's shot. From a good balance, the player can run after the ball and initiate the shot (Moise & Antonescu, 2002).

The basic mental skills required for tournament play are:

- ✓ Thought control;
- ✓ Emotional control;
- ✓ Motivation;
- ✓ Concentration.

Depending on the components of sports training, there are four different periods that complement each other logically:

1. September – December (technical training predominates):

- ✓ Technical-tactical:
- ✓ Revision of basic strokes;
- ✓ Their technical improvement;
- ✓ Learning new shots;
- ✓ Consolidation of strong blows;
- ✓ Learning and applying simple tactics.

Physical:

- ✓ Accuracy and rhythm in footwork;
- ✓ Endurance, through long runs (footings) of 15, 30, 45 minutes or more (depending on age);
- ✓ Speed (short distance sprints);
- ✓ Coordination (jumping rope).

Mental:

- ✓ Exercises through which the causes of certain technical or tactical blockages can be discovered (stereotypical play, defensive play, negative attitude on the field, "original" shots).

## 2. January - April (physical training predominates):

### Technical-tactical:

- ✓ Improving the new strokes learned in the first quarter;
- ✓ Learning the effects and applying them more strongly;
- ✓ Faster, more accurate and stronger game;
- ✓ Training of certain effective game situations;
- ✓ Free game, the player imposing a plan to follow.

### Physical:

- ✓ Footwork advancing to the ball;
- ✓ Speed and endurance;
- ✓ Flexibility (stretching).

### Mental:

- ✓ Exercises that develop self-confidence.

## 3. April – July (tactical training predominates):

### Technical-tactical:

- ✓ Continuation of basic kick technical training;
- ✓ "links": play along the bottom line - attack at the net, serve - volley, return - volley, defense - attack;
- ✓ Offensive tactics, based on taking the initiative;
- ✓ Use of final shots: forehand, backhand in line, and attack with forehand on the second service ball.

### Physical:

- ✓ Agility and speed;
- ✓ Maintenance of all qualities;
- ✓ Recovery and relaxation.

### Mental:

- ✓ Exercises to develop aggression in the field.

## 4. July – August (tournament period):

- ✓ Tactical training based on the situations encountered during the match.
- ✓ Physical training, especially recovery and relaxation: stretching before and after each match, recovery jogging;
- ✓ Mental training using positive feedback and mental imagery, especially before the match or during the recovery period.

Depending on their age, they must compete during the following year:

- ✓ At 10 years old – 40 official matches (between 10-15 tournaments);
- ✓ At 11 years old – 45 official matches (between 10-15 tournaments);
- ✓ At 12 years old – 55 official matches (18-22 tournaments) (Rusu, Baciu & Șanta, 2009).

## Conclusions

The technique represents the main specific way of performing a physical exercise, as well as a set of procedures that, through their form and content, ensure and facilitate movement.

During the general training period, the coach may consider that the physical training sessions should be performed before the technical sessions, because physical training is the most important objective of the period. In the specific training period, the technical sessions may be placed before the tactical sessions or physical training, and in the pre-competitive period, the tactical sessions could be structured before the technical ones. The phases of training are called macrocycles or periods and are as follows-preparation, competition, pre-competition and transition/active rest. Given that the present study aims to model sports training in the hitting technique for the right kick in children between the ages of 10 and 12, they fall under stage 2 – the stage from learning to training.

This represents the major stage of motor skills, and one of the most important periods of motor development for children is between the ages of 9 and 12. During this period, children are developmentally ready to acquire the motor skills that form the basis of sports development. Fundamental motor skills must be practiced and perfected before introducing sport-specific skills into training. This stage must be well structured and have an entertaining part.

In conclusion, in the modern game of tennis, the success of this shot has a great significance in winning a match. Therefore, I want to present useful information related to the improvement of training methods, and the procedures for executing the forehand shot. In addition, through the present work, I aim to make a useful and relevant contribution to the existing practice regarding the benefits of the ball-striking technique for high-precision forehand kicking during matches and to realize and verify some objectification methodologies of the forehand ball-hitting technique in the game of tennis, as well as to analyze of the biomechanical chain of this technique.



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