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Original article

TECHNICAL DETAILS OF THE FOREHAND MEN'S TENNIS

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Abstract*

Aim. Studying the biomechanical as a whole, the current sport has become an overriding factor in achieving great performance. Noting that in general in all studies that are done on developments tennis players are discussed more cinematic aspects of too little bumps and kinetic aspects, underlying technical executions.

Considering kick right, an important technical element in taking the lead of the game, we wanted to do a more detailed analysis of this technique, which many of our tennis players do not realize the maximum efficiency, underlying technical executions.

As people who like sports and tennis, we would like romanian tennis players to climb as much in world tennis hierarchy.

In this regard, we conducted a study on how four of the best players in the current world, running this process.

Methods. The study was based on the following hypothesis: right coup efficiency depends on how the body segments comply biomechanical elements of detail that ensures timely control in the game.

To detect elements of detail that we considered essential in improving the blow right, we have used the videos, taken from the "You Tube", four tennis players top of whose executions have selected sequences "key" that each of them has done.

Results. As in any sporting discipline technical executions are influenced by the trajectories they return gets the ball after opponent.

While, according to these paths, tennis players have tried to perfect the technique of hitting the ball, to put opponents in difficulty.

With the improvement of sports materials, and techniques have changed by hitting balls.

Conclusions.

1. Movement of hitting the racquet arm must be carried out when the body mass legs complete translation of the back to forward.

2. Ideally completion coup to coincide with completion time pulse on foot back.

3. If you must hit the ball height that requires peeling off the ground, then shot should be done on the upward trajectory of the flight and the trajectory of the back forward.

4. The correct and efficient management of the coup will allow the takeover game.

5. The main conclusion is that whatever the sport, for technical executions to be effective it must be understood that the biomechanical principles are observed morphological do not adapt to the athlete - the pendulum law is the same for an athlete 150 cm tall and one of 200 cm in height.

Keywords: technical, forehand, tennis male.

Introduction

Technical

After Renato Manno quoted by Baciu, (1996, pag. 5), „Sports Technique is a method or combination of methods, learned through the year in order to resolve as economically, rationally and with maximum efficacy with a task-based movement (in other words, a motor problem)“.

After Leon Teodorescu "technique playing tennis is a set of motor skills specific form and content, consisting of hitting the ball with the racket

on the spot and displacement achieved in order to practice in the most efficient game of tennis, in accordance with rules game official "quoted by Moise, Moise, Doboş (1995, pag.17).

After Teuşdea, (2009, pag.13) „The tennis technique means all specific procedures used in order to practice the game with maximum efficiency“.

Forehand,

The kick is taken by right-handed right side of the body, and the left-handed left side of the body.

Consists in sending shot after ground contact

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ball over the net.

After Moise, Doboș, (1995, pag.25) „Kick right is a basic element in the game of tennis technique”.

Technical kicks attack include:

- Fundamental position;
- Outlet;
- Preparation, impact and end the coup.

After Moise, (1999, pag.25-26) "The techniques are composed of four basic points, ensuring their development:

- Preparation mechanism;

-Training mechanism for kicking the ball away;

-The mechanism of hitting the ball;
-Completion mechanism of actions of hitting the ball.

Kick right procedures are:

- stepping off place;
- shift to ball;
- lift (figure 1);
- cut (figure 2);
- flat (figure 3).



Fig.1 Spin right Kick



Fig.2 Cut right kick



Fig.3 Flat right kick

Tennis male- is a sport played between two players either (singles) or between two teams of two players (doubles).

Methods

Analysis kick right was based on a specific documentation relating to aspects which we have proposed to study

Based on our experience interdisciplinary, teachers and coaches, have chosen the way of solving the problem proposed, using our methods and means that we have under current conditions.

Using defragmenter "AVS video converter", of videos of some of the executions of four tennis players analyzed, showing the most efficient biomechanical kick right, we have achieved four each of them chinogram from 4 each sequence, that we considered essential to print the highest speed of the ball by this blow.

In fact, the plan and the height at which the ball's hitting depends on the game situation.

Therefore it is very important to teach proper hitting efficient of the ball, because then when there is time to do this to do it, to allow the player to take over the game, putting it so your opponent in difficulty to win point.

In interpreting biomechanical blows made by the four tennis players, we took into account some principles of physics, as follows:

-centers of mass of segments of a body flown act clearing center around general table, meaning that if a center of mass moving in one direction, another table of the same value moves in the opposite direction with the same speed and the same acceleration;

-taking into account that the human body is a multi-articulated body, law-abiding levers, Archimedes set and our analysis must be addressed by these laws;

-another law that we have considered in our analysis, essential new vision of art kick right to tennis, is the compensation inertia mass of bodies, flight segments.

As in any sporting discipline technical executions are influenced by the trajectories they return gets the ball after opponent.

Analyzing the executions of four of the most valuable and longest tennis players that the differences are not large.

While, according to these paths, tennis players have tried to perfect the technique of hitting the ball, to put opponents in difficulty.

With the improvement of sports materials, and techniques have changed by hitting balls.

We present below, based on chinogramelor, a biomechanical analysis of four of the most

representative tennis players who have reached first place in the ATP rankings.



Figure 4. Kick right - Ivan Lendl

Ivan Lendl, one of the chief representative of the old generation prepares rocket hit the ball by bringing besides hip forward to back up, pulling elbow back until the shoulder over the plane (fig.4.1, 4.2, 4.3.).

After the rocket plane peaks backwards begin the striking of the ball close enough to the body to the other three tennis players analyzed (fig.4.4, 4.5, 4.6.).

To increase the strength of the blow when preparing the coup, Lendl lowers the center of gravity of the body through a sharp knee flexion (fig.4.2, 4.3, 4.4.), for the onset of the print body blow in an upward trajectory back top-down forward, while right

hip forward rotation rocket arm to foster an effective whipping the racket hitting the ball (fig.4.5, 4.6.).

The hit occurs somewhere to plan ahead and only then realized the body and shoulder rotation axis.

Analyzing its three other state that, between their executions are not essential differences.

What separates them from Lendl, however, it is the way they prepare coup, executing a rotating arm with racket over her shoulder.

This technique may be considered more efficient than that of Lendl, because the inertia that accumulates until the missile hits the ball.



Figure 5. Kick right Novak Djokovic

Analyzing the kick Novak Djokovic is observed that prepares shot with a rotating arm with the racket before backward over her shoulder (fig. 5.1, 5.2, 5.3.) and simultaneously with this movement's weight goes on back foot.

This action starts the striking position of the ball by means of a translational mass in the back body, the right leg, left leg forward over (fig. 5.4, 5.5, 5.6.).

Right hip while exceeding the rocket plane (Fig. 5.3, 5.4.), to enable the maximum whipping rocket arm (fig. 5.4. 5.5 5.6.).

Kicking the ball away after the rocket occurs exceeds axis shoulders forward.



Figure 6. Roger Federer

Roger Federer (fig. 6), has as Djokovic the same approach to art striking of the ball.

In chinogramma to Federer realized the biomechanically more active engagement of body weight and arm by a general lowering high center of mass (fig. 6.1.).

From this position make a transition from the active body mass right leg back onto his left foot from before (6.2, 6.3.).

Impulse that makes it quick push hip right foot forward, beyond this rocket plane (Fig. 6.2, 6.3, 6.4).

The movement of the impactor is a continuation of the pelvis and trunk rotation movement through a continuous acceleration both arm and right leg that practically complete impulse to detach from the ground when hitting the ball (fig.6.4, 6.5, 6.6.) that occurs before the body, you certainly accumulated rocket speed.

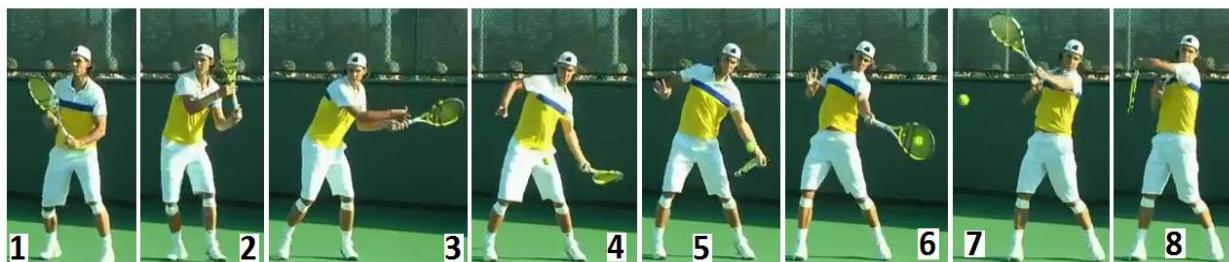


Figure 7. Rafael Nadal

Like Djokovic and Federer, Rafael Nadal (fig. 7) prepares shot by a rotating arm from before backwards over the shoulder (fig. 7.1, 7.2, 7.3.), but in this case the left side, with gripping the racket as much backwards, thus providing the possibility to act on the rocket on a trajectory longer.

When leaving the blow to overcome even more gripping the racket right foot steps forward, then activates hip rotation, trunk and shoulder axis (fig. 7.4, 7.5.), surpassing even more grip on the rocket.

These movements are continued by accelerating rocket left arm hitting the ball of the hip and a body located before (fig. 7.5, 7.6, 7.7.).

Discussion

Kick right is one of the basic procedures of exchange of blows, which attempts to take over control of the match progresses players in tennis.

Because in tennis as in other sports coaches in charge of preparing athletes are former practitioners of the subjects, which in some circumstances newest or not much going on at school, or accumulate knowledge for understanding correct elements technical sports practice.

Arriving in the position of coaches they are but what they did, or tried to imitate some executions we have seen in some athletes without understanding the true causes of those executions.

They are often confusion between - individual adaptation to the specific preparation and compliance with the laws of physics, forgetting that laws are generally valid and must be respected.

Our analysis refers only to matters strictly biomechanical efficiency is hitting the ball, without taking into account certain aspects of the personal style of each player that does not affect the basic principle of execution.



Tennis and biomechanical principles to be respected streamlining technical elements, by adapting their conduct to the requirements of the game.

From our analysis what about some aspects that allowed the four tennis players to be at the forefront of global hierarchies regardless of the periods in which they evolved.

Our discussion will cover not play tennis at all times conduct him, but at times the situation of the moment the game allows the player to take the lead for the completion point.

We can refer here to the height at which the tennis player must hit the ball to a return to the opponent's court - and in this sense we can take the example of the execution of Federer, fig. 6, to hit the ball in a fairly high point after successive done properly engaging muscle groups for maximum acceleration of the rocket, do everything possible to still have the time kick-ground on the back foot.

We are making this statement because we know that if the athlete emerges from the soil, only half of the ball's forward inertia body (levers laws, laws compensate inertia of a body flown).

It is important to teach proper hitting efficient of the ball, because then when there is time to do this to do, regardless of the horizontal or vertical at which the kicking the ball away to allow the player to take over the game for putting the opponent in difficulty to win the point .

And in tennis as in other sports streamline technical executions must respect the laws of physics with applications in biomechanics.

Conclusions

1. Movement of hitting the racquet arm must be carried out when the body mass legs complete translation of the back to forward.

2. Ideally completion coup to coincide with completion time pulse on foot back.

3. If you must hit the ball height that requires peeling off the ground, then shot should be done on the upward trajectory of the flight and the trajectory of the back forward.

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