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ANALYSIS OF THE COMPETITIVE PERFORMANCE OF JUNIOR FEMALE TENNIS PLAYERS ON DIFFERENT COURT SURFACES

Anghel Alexandru[1]
https://orcid.org/0000-0002-5663-792X
Anghel Lilia[2]
https://orcid.org/0009-0008-3259-7450
[1,2]*State University of Physical Education and Sport, Chisinau, Republic of Moldova*

Abstract. *Performance in lawn tennis is influenced by different parameters depending on the playing surface. In this sense, the issue of optimizing the training process in order to increase the efficiency of competitive activity when moving from one surface to another is relevant. To solve this task, it is necessary to identify the characteristics of the competitive activity of young tennis players when they play on different types of surface courts.*

Elite athletes and coaches need some knowledge of the playing surfaces influence on competitive performance. Thus, the purpose of this study is to provide a review of the recent results of scientific research on the physiological, biomechanical and epidemiological effects of playing surfaces, but also to help athletes and coaches to achieve high performance in tennis.

Identifying the specific characteristics of competitive activity will greatly contribute to and effectively correct the training process depending on performance in the game on different surface courts.

Keywords: *lawn tennis, junior female tennis players, competitive activity, performance, playing field, playing surfaces, hard, soft.*

In modern tennis, competitions are held on courts with different types of surfaces, depending on the height and speed of the ball's withdrawal, the *fast* and those *slow ones.* As a result, depending on the type of ground coverage, the player has the opportunity to develop certain tactics of the game, which would lead to winning the decisive point.

The main characteristic of today's tennis is imposed by competitive dynamism steps due to the tennis player's physical training almost perfect, harmonized with their individual traits. Most elite tennis players are exceptionally physically fit. The surfaces used in tennis determine the diversity of the game. On clay courts, the tempo and intensity of the game are lower, and on fast surfaces (grass, green-set, carpet, cement) they are very high and require players to play at a higher speed and move faster. Depending on the capabilities of the opponent and his/her desire to win, some matches can last from 1 to 4-5 hours, the climatic conditions in which the game is played are also different - the air temperature can vary from +7-8° C to over +40°C, the games can be played outside or indoors, all of which require a very high level of physical fitness. In other words, the physical training of a tennis player include all the basic motor qualities - speed, skill, force and resistance under all forms of their manifestation , as well as combinations in order to achieve great performances.

An analysis of the competitive activity of highly skilled tennis players showed that the game on different surfaces is distinguished by a variety of technical actions, the volume of technical actions and qualitative and quantitative movement parameters, which imposes additional requirements on the organization of the training process [1, 13, 14].

Tennis players with the highest level of performance participate in more than 20 competitions during an annual cycle. At the same time, the rest of the competitions are used as a means of training together with the

general and specific preparatory means. Participation in these tournaments helps tennis players to improve all types of training, to accumulate competitive experience, which will be implemented in the future higher rank tournaments .

The intense competitive activity of junior tennis players begins at the age of 11-12. They usually participate in 12-15 tournaments a year. Therefore, the success of competitive activity depends to a greater extent on the composition of the training process.

In many specialized institutions and sports clubs in the Republic of Moldova, during the autumn-winter period, tennis players train in sports halls, on courts with fast surfaces, while the most important competitions take place in the summer, on clay courts. Many experts note a decrease in the technical and tactical indicators of the playing activity of tennis players when moving on courts with different surfaces [5, 6, 10].

In this sense, the problem of optimizing the training process is relevant for increasing the effectiveness of the competitive activity when moving from one surface to another, the solution of which is done by identifying the characteristics of the competitive activity of junior players when it is carried out on courts with different playing surfaces .

The identification of the specific characteristics of the competitive activity will contribute to the more effective composition and correction of the training process, depending on the performance on a certain surface.

Usually, the evaluation of the competitive activity takes place 2 times during the year:

- October - April – courts with fast coverage *(hard)*;

- May - September – courts with slow coverage *(soft).*

In the training process of tennis players, the technique is one of the means of manifesting the player's capabilities and performing the phases of the game. It should also be consistent with the motor and mental qualities, meeting the requirements of the modern game and the forms of their manifestation, being influenced by the players ranking , the playing conditions, the quality of rackets and balls. The studies undertaken in the context of the topic we are researching allow us to mention that the technique has a positive aspect when the correct and quick assessment of the direction from which the ball is coming is observed, the preparation of the shot must be carried out in time, as well as the acceleration of the shot, while the ball hitting must include the efficiency factors and, of course, the correct placement of the center of gravity, the optimal positioning of the legs, trunk and arms, eyes for following the ball should not be omitted [3, 9, 14].

Currently, these indicators are used for a general assessment of competitive activity in the game of tennis: total match time, "clean" match time, number of matches played, average game duration, as well as the sum of technical actions (sum of shots in - a set, the sum of the shots in the whole game, the rhythm of the game, the motor density of the match) [14].

The game of tennis consists of a set of technical procedures and tactical actions, which are carried out on a wide range of specific moves, in accordance with the rules and principles of the game. The determining factors of the content of the tennis game are: the quality of the playing surface, the climatic conditions, the level of preparation and participation in the game of the player, the content of the game phases in attack and defense, the quality of the technical procedures, the stake, the sports form, the psychological state, the level of physical and mental preparation. In the competitive game of tennis, the level of acquisition of technical elements and procedures is manifested, against the background of the demand for motor and psychological qualities and capacities. The psychological factor is very important, because

the situations on the court change frequently during the game.

Based on the study of the scientific and methodological literature, a complex evaluation of the indicators specific to the competitive activity was developed. According to experts, the following characteristics are the most informative: percentage of first serve success, number of sets played, number of double faults when serving, forced and unforced errors, reception of the served by the opponent, active net performance with winning the point.

The clay courts *(soft)* are characterized by a long game on the back line, the absence of active net performance to volley finish , which is due to the slower tempo of the game than on a hard surface. The hard courts *(hard)* are characterized by active and fast play, during which all types of actions are used, including active and finishing shots.

Quantitative characteristics of competitive activity, both among skilled and junior tennis players, have significant individual variation. In addition, the correlation between the quantitative characteristics of the competitive activity and the type of court coverage on which the contests are held was revealed. In particular, on fast surfaces, the net time of the game is less than on clay, the number of shots made by each player during the game is also less, but they are executed at a much faster tempo.

The statements of experts Drewett J. (2009), Elliot B., Reid M., Crespo M. (2003) demonstrate that the most informative indicators for evaluating the effectiveness of competitive activity in lawn tennis are those that illustrate the technical and tactical actions of players. In their works, they emphasize that today's tennis has the main characteristic given by the dynamism of the game phases, by the high physical training of the tennis players, which complements the technique and tactics learned and developed, adapted to the individual characteristics of the players. The performances achieved by most elite athletes highlight their superior athletic training. If until now the general training, which represented the basis of the specific physical training, was more often found in training, now the specific one, carried out and adapted to the game of tennis, takes up more time in the training process. The game of tennis can be very different depending on the surfaces used. On clay, the tempo and intensity can be reduced, while on fast surfaces (green-set, cement, carpet, grass) they are very high and require athletes to play and move faster.

In our research, we evaluated the competitive activity of junior female tennis players when playing on courts with different types of coverage, with a two-week interval between starts. Research results have shown that when young women switch from the type of coverage *hard* to the *soft one*, the net time of the match increases significantly by 40%, the distance covered - by 53%, the tempo of the game decreases by 30%, the volume of game actions - by 14%.

The results of the analysis of the competitive activity of 11-13-year-old female tennis players when they play on courts with different types of surfaces are consistent with the data of scientific and methodological literature, although the distribution of individual indicators was not as significant as that of qualified players. This is probably due to the fact that throughout the year the participants have always been the same.

Table 1. General evaluation of indicators of competitive tasks of 11-13-year-old female tennis players when performing on courts with different types of coverage (X±m)

Indicators	Hard terrains		Soft terrains	
	October	April	May	September
Total time (min)	76,7±10,90	78,2±11,15	91,4±18,51*	93±17,29*
Net time (min)	19,4±6,82	20,7±5,61	31,5±11,53*	31,3±11,45*
Number of Games (No)	16,6±1,08	16,3±1,32	18,6±3,09*	19,2±3,14*
Number of shots in a game (no)	16±2,31	15,4±2,83	18,4±5,3*	17,5±5,21*
The sum of the races (number of shots)	237,3±42,63	252,5±35,67	281,4±29,55*	281,5±30,49*
Distance covered in a match (m)	978,8±74,99	968,7±83,50	1675,8±439,6*	1676,7±439,7*
Action volume (beats/hour)	198,3±23,89	194,7±23,53	169,3±21,46*	169,2±21,57*
Tempo (bpm)	23,7±1,23	23,5±1,35	17,4±2,79*	18±2,67*
Motor density (%)	24,83±5,60	26,86±5,61	33,68±6,12*	33,3±6,2*

Note: * - the differences are statistically significant (P<0.01), the value level of 5%

As the results of the study showed (Table 1), the performance efficiency of technical and tactical actions of junior female players during competitions on a hard surface in the autumn-winter season changed slightly: the success of the first serve increased by 9%, and the "double error" indicator to serve" decreased by 7%. Service is one of the most important indicators of the level of resistance in the speed-power regime. The percentage of forced and unforced errors in this indicator slightly decreased, that is, female tennis players began to make fewer mistakes and also became more attentive to the actions and attacks of the opponent. However, they could not diversify their game due to the variation of shots. For example, active netting with an additional point gain only got 10% worse. This means that female tennis players had the same pattern of play, only using recovery shots while behind the court.

Special attention, in our opinion, should be paid to the assessment of special indicators of competitive activity when changing the type of playing court surface. Between the control games in April (hard) and May (soft) there was a short period - two weeks. However, the indicators of technical and tactical actions of young sportswomen are changing significantly. The success of the service is statistically significantly reduced (21.5%), the players' attention and reaction to the opponent's attack are reduced, a fact reflected by the "forced errors" indicator, increased by 13%. The number of unforced errors also increased (19.5%). The accuracy of hitting the ball in the intended area of the court decreased by 25.5%. An active performance to the net with a point gain was achieved by junior tennis players on a soft surface 20% less often than on a hard surface (Table 2).

Table 2. Characteristics of special indicators of competitive tasks of junior tennis players aged 11 - 13 years on courts with different types of coverage (X±m)

Indicators	October	April	May	September
Effective percentage at serving	17,6±6,52	19,4±7,98	15,6±3,80*	23,6±9,46*
Serving outside the court	3,4±0,53	3,1±0,94	2,4±0,67*	3,2±1,20*
Double fault at serving	11,6±1,57	10,8±2,23	12,7±2,70*	10,5±2,31*
Forced errors	37,4±7,50	35,3±6,81	40,2±3,73*	27,2±5,24*
Unforced errors	33,5±5,19	31,5±6,08	38,3±1,75*	27,1±5,19*
Point gained from "ace" serving	2,3±1,03	2,3±1,03	1,6±0,67*	3,2±0,99*
Active net performance with point win	2,2±0,88	1,8±0,99	1,4±0,53*	2,5±0,84*

Note: * - the differences are statistically significant (P<0.01), the value level 5%

It can be assumed that a significant decrease in the effectiveness of competitive activity during the transition from hard to soft cover is associated with an insufficient level of physical condition of junior girls. Soft surface courts place increased demands on tennis players' coordination skills and, above all, on the development of speed-strength capabilities and the ability to maintain a high tempo of play throughout the match.

In the summer, when training takes place on soft surface courts, the level of physical condition of junior tennis players increases significantly, which, in turn, makes it possible to increase the efficiency of competitive activity. This is because on soft courts players are forced to run long distances during a training session. As a result, until the end of the spring-summer period, the physical condition indicators of junior tennis players increase statistically significantly.

Along with the evaluation of the competitive activity, an evaluation of the level of physical training of the junior tennis players at different stages of the annual training cycle was also carried out. The correlation analysis performed confirmed the hypothesis that, on soft surfaces, the efficiency of competitive activity is interconnected with the level of speed-endurance capacity development. It can be assumed that the process of training junior female players for competitions with a change of the court surface can be rationalized based on the inclusion of exercise complexes for the development of speed-strength capabilities in the training process.

Conclusions:

1. As a result of our research, a change in the technical and tactical indicators of the competitive activity of junior tennis players was observed, which was manifested during the game on courts with different types of coverage.

2. It is fundamental to choose the exercise complexes for the training of junior tennis players according to the type of court coverage on which the following tournaments will be held.

3. It is recommended that, when preparing for competitions to be held on soft courts, special attention should be paid to the development of strength-speed capacity.

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