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**IMPORTANCE OF TOPSPIN AND RETOPSPIN IN TABLE**  
**TENNIS FOR FEMALE JUNIORS II**

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*Abstract*

To achieve top performance in table tennis, it is necessary to identify and use the most effective technical and tactical elements in the attack phase, which, improved to the highest level during training and subsequently used in competitions, are meant to foster performance improvement. The objectives of this paper are to create an efficient model for the execution of topspin and re-topspin and to identify the importance of their use in the attack phase. The study was conducted on a total of 22 technicians and athletes, using a questionnaire comprising 30 questions. Purpose: We propose to increase technical and tactical efficiency of our athletes in the attack phase by collecting and studying information from the most talented technicians and athletes and their application in training and competitions. Premise: We believe that at present we do not have statistics of the most prolific technical and tactical elements and an attack model for female juniors II, topspin and re-topspin representing in our opinion the most effective ones. Research methods: the recording method based on an opinion poll, statistical and mathematical method and computerised graphical method. Conclusions: 52.38% of the interviewed specialists consider topspin as the most prolific technical and tactical element, compared to 19.04% expressing in favour of the serve; almost 80% of them consider it the most used element in attack, the timeliness and importance of the development and use of topspin and re-topspin becoming a mandatory duty for performance.

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**Keywords:** Female juniors II, table tennis, topspin, attack model, re-topspin.



## 1. Introduction

According to specialists in the area, spin and speed are two of the most important factors in winning matches in this athletic discipline (Wu et al., 1992, p. 73). The technical-tactical elements of topspin and re-topspin include a combination of the two “ingredients” in their execution, representing thus important weapons of the technical-tactical arsenal specific to the athletes who practice table tennis and, at the same time, one of the most prolific and spectacular hits, reason for which they are used both by offensive and defensive players. Also, out of the variety of the technical-tactical elements, the forehand topspin is considered one of the most frequent attack hits used in competitions. These hits have aroused the interest of many specialists in the area, who studied different aspects, such as the effect imprinted to the ball, its movement after being hit and the biomechanics of execution. It was measured the imprinted effect after hitting the ball with topspin, cut middle game and flip at the level of China’s senior national team, the topspin being on the first place with 151.3 revolutions/second versus 73 and 84.8 revolutions/second for the other two (Qian et al., 2015).

In an article on the biomechanics of the forehand topspin performed by the Chinese and British researchers, it is mentioned that the forehand topspin is one of the most used execution techniques during contests. Another important aspect is represented by the trajectory of the ball after impact with the playing table; its orientation downwards creates difficulty in being countered by the opponent. On a normal drive, topspin is moderate, so the effect is moderate, but with a loop or topspin attack, the spin is extreme and the imprinted effect becomes thus maximal (*Looping - Topspin attacking*, 2011, p. 69). One of the reasons for which the Chinese players were defeated by their European opponents was the precarious technique in countering topspin with the re-topspin (counter-looping), leading to the study of spin techniques and their laws (Wu et al., 1992, p. 73). For the 19<sup>th</sup> edition of Asian Cadet and Junior Championships held in Doha (Qatar), Mulloy et al. (2014) performed an analysis of the technical-tactical elements that had brought most points in a set of the Cadet Singles Finals, the topspin leading with 14.9 winning hits, followed by the loop with 7.2 and the push with 7.1. Top performers, such as the European Champion in Women’s Singles, Elisabeta Samara, and Romania’s reigning Women’s Champion – Junior II (no. 11 in the world – Cadets), Elena Zaharia, use frequently these technical-tactical elements (topspin and re-topspin) in their games. The female junior II category is the period when the technical, tactical and physical elements are formed, as well as personality traits; during this period, the first aspects of individualization appear, based on the skills manifested for a certain game profile; when finishing this stage, the athlete must have a well-shaped game profile (Doboși, 2009, p. 33). Considering the above-mentioned aspects, we wanted to find out the specialists’ opinion on the importance given to both the elements specific to the attack, as compared to other elements from the game technique, and the way of developing them in order to create an efficient training program aimed to enhance the topspin and re-topspin attack in female juniors aged between 13 and 15 years.

In order to develop this research, we have started from the following observations:

- The lack of an efficient and acknowledged execution model;
- The lack of knowledge, in percentage, of the importance and influence of the physical and technical-tactical training;

- The need to know the optimal number of training sessions in order to consolidate the topspin and re-topspin;
- The importance of knowing the optimal way of executing the topspin and re-topspin;
- The opportunity of using, for this age category, the two elements, namely the topspin and re-topspin.

## 2. Problem Statement

By combining speed and spin, in the conditions where increasing the ball's diameter from 38 to 40 and from 40 to 40.25 mm has led to the decrease of the two parameters, the consolidation of topspin and re-topspin in female juniors II can improve the attack phase so that the athletes achieve victory in an efficient way by using these elements.

Following the observations and the study of literature, the attack phase is the most prolific, topspin being the most used element in this stage, which results in increased attention for consolidating the re-topspin as a counter-attack method or countering the topspin method, their optimization creating a considerable advantage in the table tennis match, implicitly for the female junior II category.

Since this sport does not have high audience in our country, which would draw in top sponsors, the problem of performance, which would facilitate a financial contribution to the sports clubs with table tennis division, must be taken into consideration, the creation of a training model for consolidating the topspin and re-topspin attack in female juniors II being one of the possible efficient solutions.

In the case of private-funded sports clubs, obtaining high results contributes to the continuity of the financial support for participating in important competitions from the competition calendar, which forces both coaches and athletes to find the best solutions in order to facilitate performance in their activity and to reach the proposed objectives.

Special performances can draw in rewards, which would stimulate sustained training and the athletes' increasing desire to outperform, the attack phase that combines in a high percentage the use of topspin and re-topspin being a direction to approach. The level of rewards is different according to the athletes' participation in the National Championship, Division B, Division A or Super League. Accordingly, the monthly compensation for an athlete participating in Division B is around 300 lei, while for an athlete in the Super League it is 1,000 lei, and the same for winning a medal at the European and World Championships or the Open competitions, the main factor being performance.

In these divisions, a significant number of female juniors II is involved, the efficiency of topspin and re-topspin possibly making the difference of placing them on an inferior or superior competitive level, with the above-mentioned financial implications.

As solutions to optimise the attack in female juniors II, which would reflect in all aspects related to this discipline (the athletic one, financial performance, continuity in activity), we propose the following:

- Unspecific and specific physical training should be done in the speed/force/coordination/versatility direction;
- Consolidation of the topspin and re-topspin attack should be done through technical-tactical themes in each training session;

- Recording, viewing and analysing the attack phase at the matches played by the athletes within competitions;
- Athlete awareness on the importance of the attack phase and the use of these two elements during it.

We believe that consolidating the attack phase through the topspin and re-topspin by adopting the above-mentioned solutions can lead to an increase in performance, which will turn into a stimulus for the continuity of training and for obtaining financial rewards.

### 3. Research Questions

**Hypothesis: By collecting information from coaches and athletes on the attack phase, the technical-tactical elements specific to this phase and the most important methods for their consolidation, we will be able to create a training model for optimising topspin and re-topspin in female juniors.**

Premise: Our study is useful and interesting because it analyses the importance and the ways of developing topspin and re-topspin by using an investigation tool that consists in a public opinion survey focused on this direction.

Within our research, we have focused on the following directions considered by us to be useful, modern and meant to bring an addition to the athletes' performance training:

- Is there a relation between the ball's hitting area, in the case of the two technical-tactical elements, and a successful execution?
- Can the attack efficiency influence the development of a muscle group or the entire muscle chain?
- Is the consolidation of the attack with topspin and re-topspin timely at this age?
- Do the audio-video recording method and the analysis of the execution method facilitate efficiency of the attack phase?
- How important is the physical and the technical-tactical training in the attack consolidation process?
- Do technicians have different perceptions of the way of executing the topspin and counter-topspin?

### 4. Purpose of the Study

Our purpose to increase technical and tactical efficiency of our athletes in the attack phase by collecting and studying information from the most talented technicians and athletes and then applying it in training and competitions.

**We think that by succeeding to create an effective model for the execution of topspin and counter-topspin, we will be able to achieve such models in the case of other technical-tactical elements specific to the attack and defence phases.**

**Our purpose is also to fill in an informational gap connected to the two elements, which would orient the future coaches willing to perform along with the athletes they are training.**

Our research aims to contribute considerably to the attack optimization by making efficient the topspin and re-topspin hits for this age category, also highlighting theoretical aspects (their inclusion in the attack hit phase) and methodological aspects (optimal hit zone, the most efficient hit part, number of training sessions performed in a monocycle).

It is topical to use modern investigation methods for obtaining data and interpret them, their importance making the difference, in our opinion, between performance and non-performance.

We also aim to underline the importance of our research and capture the interest of those willing to develop the topspin and re-topspin attack.

By collecting information from specialists in the field related to the importance, means, methods of improvement and the optimal way of executing the topspin and re-topspin attack, our purpose is to create a model of training in order to increase the performance of female juniors aged 13 to 15 years.

## 5. Research Methods

The questions used in our research were formulated so as to obtain from specialists as much information as possible about topspin and re-topspin and the ways of developing them, about top execution methods, affiliation to the match phases, their importance in the technical-tactical register and especially in the attack phase.

For this research, we used the following methods: the recording method based on an opinion poll; statistical and mathematical method; computerised graphical method; observation method; bibliographical study.

The opinion poll used comprised 30 questions completed by a number of 22 specialists (coaches) on A-4 size papers and online, the latter being then printed.

Most interviewed specialists have remarkable performances at the national level and abroad with at all age categories, men and especially women.

The questions are mainly related to the two technical-tactical elements of topspin and re-topspin, in order to discover the best strategies of making them efficient in the game of female juniors II. To analyse the importance of the topspin and re-topspin in winning a point, we calculated the Spearman's correlation coefficient ( $\rho_s$ ) for two ordinal variables. The statistical analysis was performed using IBM SPSS Statistics, version 23.

As for the bibliographical study, we consulted the materials of interest in the international and national fields, which helped us to understand better the aspects and importance of the topic addressed.

By participating in athletic events, such as the National Championship - Division A, National Championships - team and singles, Romanian Cup, we could observe how the female juniors II expressed themselves in table tennis by using these two elements, but we could also discuss about this with the coaches present at those events.

The questions used in our research were formulated so as to obtain from specialists as much information as possible about topspin and re-topspin and the ways of developing them, about top execution methods, affiliation to the match phases, their importance in the technical-tactical register and especially in the attack phase. We will present only a few of the 30 items used in the questionnaire:

- What procedure do you believe is the most important in the attack phase?

- Out of the technical-tactical elements, which one do you consider to be the most prolific?
- How important do you believe the physical training is in table tennis, taking into consideration the other training factors?
- How important do you believe the technical-tactical training is in table tennis, taking into consideration the other training factors?
- How important is the regular practice (at least 3 times per week) of the re-topspin during training for perfecting these technical-tactical elements and increasing the chances to win the game?
- How important do you believe the topspin is (in percentage) for winning a point?
- Which one is the most efficient, in your opinion: the forehand topspin or the backhand topspin?
- How important is the topspin and re-topspin (in percentage) at high performance level?
- Where do you believe the topspin is useful? In attack or in defence?
- Where is the ball hit, i.e. its position towards the body of the performer?
- To increase the chances of success in executing the counter-topspin, where do you believe it is indicated to send the ball?

Using the computerised graphics, we expressed in percentage the results recorded from the opinion poll in connection with the frequency of practicing the topspin and re-topspin during training, the importance of these two elements in the attack phase and the technical-tactical register of table tennis etc.

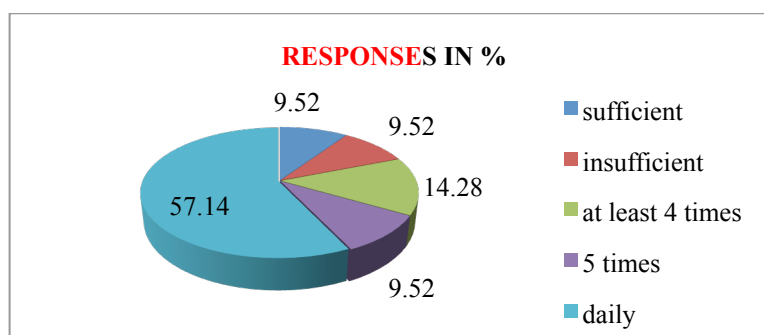
## 6. Findings

Following the conducted research, we have observed the importance and the special interest of specialists in these two technical-tactical elements that enhance the athletes' performance, bringing consistency and quality to their expression at the playing table.

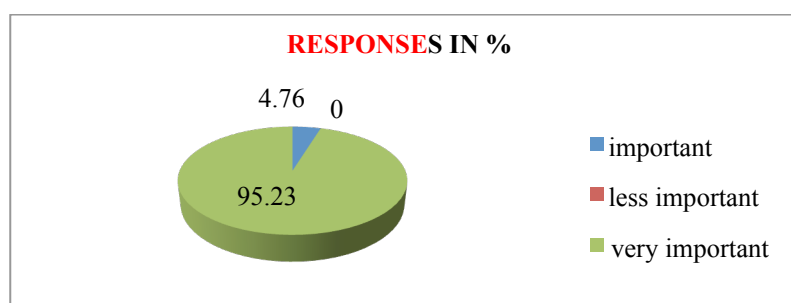
We have identified the following interesting aspects related to topspin and re-topspin:

- The daily training of the two elements is supported by 57.14% of specialists (Figure 01), an opinion that we share and recommend to be put into practice;
- According to Figure 02, over 95% of specialists believe that physical training has a significant weight in optimising the attack, the technical-tactical training being rated with 90.47% as importance, which is why we conclude that these two factors are the key to success towards the attack optimisation;
- The optimal zone for hitting the ball is situated in front of the trunk – 90.48%;
- For winning a rally within a match, the topspin has a weight of 60% as importance, according to coaches' option, 42.85% of them voting for that purpose, and the same percentage of specialists mention that the re-topspin has an influence of 50% in this regard;
- The forehand topspin and re-topspin are more efficient when putting more pressure on the opponent than when executed with the backhand – 90.47%;
- Execution speed (100%) and execution technique (76.19%) are fundamental for success;
- Sending the ball in cross increases the chances of success, while in line it is more difficult to perform – 61.90%;

- In order to increase the chances of winning, it is recommended the execution near the table in the case of topspin and at a half-distance in the case of re-topspin (47.61%);
- The timing or the moment of hitting the ball plays an important role in the success of the execution – 100%;
- The most effortless execution of the topspin is performed with no effect of the ball – 76.19%;
- **These two hits are 100% considered as belonging to both the female and male zones in table tennis;**
- The age of 8 years has received most votes (38%) for being the best to introduce the topspin and re-topspin in training, which confirms that, in the case of female juniors II, the training will be done in the direction of consolidation and improvement;
- The methods of recording the somatic and motor potential are considered by all specialists as being adequate for supplying the values of indices that would support performance;
- In order to fight back the topspin and counter-topspin, the most efficient technical-tactical element is considered the middle game with a backspin effect, an opinion shared by 42.85% of respondents, followed by the active blockage, with a ratio of 33.33%;
- Most attacks in which the two technical-tactical elements are used are initiated with the forehand part.



**Figure 01.** How important is it to practice the topspin and re-topspin regularly (at least 3 times a week) during training to improve this technical-tactical element and maximize the chances of winning a match?



**Figure 02.** How important do you consider the physical training is in table tennis, taking into account the other training factors?

## 7. Conclusion

Over 50% of the interviewed specialists consider the topspin as the most prolific technical-tactical element, and almost 80% of them, as being the most used element in attack, the contemporaneousness and importance of developing and using the topspin and re-topspin in the attack phase becoming a mandatory task for performance in female juniors.

For the success of the proposed objective, it is necessary to adequately combine these two physical and technical-tactical components with an optimal execution from the biomechanical point of view, and at the same time with the daily practice of the topspin and re-topspin in the technical-tactical training, together with exercises for developing motor abilities of the entire muscle chain. The female junior II category is optimum for the occurrence in the game of the re-topspin together with an evolved topspin, which involves special attention to the development of the two technical-tactical elements.

For winning a rally within a match, the topspin has a weight of 60% as importance, according to coaches' option, 42.85% of them voting for that purpose, and the same percentage of specialists mention that the re-topspin has an influence of 50% in this regard.

According to specialists' opinion (100%), most attacks are initiated with the forehand topspin, which is thought to be the element that creates the highest difficulty to the opponent, as compared to the backhand topspin (85.71%), which makes us pay more attention to optimising the forehand attack.

In high performance, the two technical-tactical elements specific to the attack phase practically condition the athletes' belonging to this level, the coaches unanimously appraising their importance.

Our research also supports the attack phase development in male juniors practicing this sports discipline, due to the fact that these two hits are 100% considered as belonging to both the female and male zones in table tennis.

By comparing the two elements specific to the attack, only 4.78% is the percentage in favour of those considering there is a difference between the technique of executing the topspin and that of executing the re-topspin; in our opinion, the re-topspin claims higher coordination of speed and strength than the topspin, although the basic movement is not fundamentally different, which is also underlined by the name of re-topspin or counter-topspin.

Designing a program to improve the attack with topspin and re-topspin can be an efficient solution for a modern game, which will increase the chances of female juniors II to perform at the highest level, the audio-video recording means being unanimously approved in supporting the athletes' performance and development.

As future study directions, we also investigated the defence phase from the standpoint of the most used technical-tactical element, the blocking (another way of counteracting the topspin and re-topspin), which has aroused our curiosity to create a training model for this element too, but which strengthens our belief that our endeavour has for purpose the attack consolidation and performance optimisation.

### 7.1. A training model for improving the attack with topspin and re-topspin in female juniors II:

- The daily practice of the two elements within the training sessions, based on the multi-ball training method using the backspin effect, topspin effect and no effect;



- Developing movement to the table in order to cover with the forehand part a surface as large as possible for initiating the topspin and re-topspin attack;
- The most effortless execution of the topspin is achieved with no effect of the ball;
- Developing motor abilities of the entire muscle system toward the speed-strength coordination;
- Executing the two elements at high speed in front of the trunk with well-chosen timing and sending the ball in cross;
- Audio-video recording of the executions and their analysis;
- Using the latest equipment (bats, tables, rubbery support areas);
- Performing themes for the consolidation of the topspin near the table and the re-topspin at a half-distance, due to increased efficiency of the hits from the two mentioned areas.

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