

# RESEARCH OF THE EFFICIENCY OF ONLINE TRAINING SESSIONS AMONG 10-13-YEAR-OLD CHESS PLAYERS

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## ABSTRACT

*The aim of the research was to establish the actual interrelations and interdependencies between the traditional (face-to-face) and online forms of chess training sessions among 10-13-year-old chess players. The research was done among 37 competitors with Elo rating 1050-1400 points from four chess clubs in Bulgaria. They were divided into two groups. In one of the groups, the sessions were conducted only online, and in the other group – only in a training hall. A unified lecture course was created for the purpose of the research. It consisted of the obligatory elements of two-component education – lectures on 15 basic chess topics (10 about chess tactics and 5 about chess strategy) and tests-exercises for each of them. At the end of the lecture course, through a suitable set of chess indexes, we measured the degree to which the material had been learnt by the participants in the two groups. The applied Student's t-test for two independent samples showed that the difference in the results from the two forms of testing was insignificant, i.e., it was not a consequence from the form of testing but from fortuitous factors. The result from this research can help chess coaches working with this age group to take a much more professionally conscious choice regarding the degree of presence of the two types of chess practices during their training sessions.*

**Keywords:** chess education, chess tactics and strategy, face-to-face and on-line training.

## INTRODUCTION

Thanks to modern technologies, chess has turned out to be one of the few sports which can function in nowadays pandemic conditions, and able to adapt successfully to the on-line form of education and practice (Petkova, 2020). The prospect that the two types of chess training (face-to-face and online) can develop parallel in future is becoming much more obvious. This fact leads to their in-depth analysis for the purposes of educational, training, and competitive practices. Professional chess players, as well as more advanced professional players, possess numerous resources for both self-dependent studies and online practice (Almeira et al., 2017; Hajari et al., 2014). For the growing 10-13-year-old players, however, the importance of personal touch and the contact with their coaches and teammates is

crucial for their chess development (Krogius, 1976; Charness, 1981; Hartston & Wason, 1984). However, when talking about young chess players aged between 10 and 13 years, we should take into consideration some pedagogical concerns which are wider than the use of a custom-designed chess curriculum only. There are many substantial social pros in face-to-face chess classes that young players cannot take advantage of when training online. Undoubtedly, if we want children to get to know more sides of the game of chess (Prost, 2012), they should attend face-to-face chess training sessions because they are much more beneficial due to various reasons. Playing chess “live” helps children make friends and teaches them what sportsmanship is. Moreover, face-to-face training sessions improve young athletes’ social habits allowing those of different

social and ethnical background to get integrated with others. Face-to-face training sessions also contribute to discerning non-verbal clues (gestures, mimics, body language) of the opponents. Young chess players learn how to win graciously and, more importantly, how not to give up when encountering defeat – by facing their opponents and not by simply closing the chess program or by exiting the game (Aciego et al., 2012). Another important plus of face-to-face sessions is that young athletes can understand the things which have remained unclear at once through receiving instant feedback (Fine, 2015).

From a practical point of view, the current pandemic situation provides a good opportunity for examination of the degree of interdependence and interrelation between face-to-face and online forms of chess education in this age group. This formulates **the aim** of the research: to examine the effect of online education among 10-13-year-old chess players in comparison to their face-to-face education.

Due to the topicality of the researched topic, we found very few surveys related to it. The work of Fuentes, et al. (2020) and Iliescu (2020) drew our attention, but they did not view the training process of growing chess players. Despite the growing number of surveys devoted to the educational value of chess, there is still no accepted model which explains the most significant differences between the two kinds (face-to-face and online) of teaching chess. A number of studies have proven that group practice provides better opportunities for high-level performance than individual practice does (Campitelli & Gobet, 2008). However, the opposite view has also become widespread recently (Murray, 2020). Fine (2015) compared the potential limitations in social interaction that online chess introduced with the possibilities that the Internet (the new home of chess) could provide. The theoretical

significance of current research can be found in supplying deficiencies in this field as well as in the possibility of discussing this issue from a scientific point of view.

We used specific informative distance forms of teaching and control, such as the application Microsoft Teams and chess program for working with different databases Chess-Base, an incredibly useful piece of chess software that allows you to work with chess databases, to analyze games, to find games with similar openings, positions, content endgames, etc. For example, Mega Database 2021 is the ultimate Database that gives you access to over 8.4 million games, to the world's largest database of in-depth analysis (more than 200 million positions), and to 85,000 annotated games.

## METHODS

### *Subjects*

The research was done among 37 chess players aged between 10 and 13 years from four chess clubs in Bulgaria. In each club, two groups were created randomly. The first one attended only face-to-face training sessions, and the second one trained only online. As all the participants were ranked between 1050 and 1400 Elo points and as we had enough previous observations on their chess skills, we did not find it necessary to test them to determine their exact current level.

The participants in the research were selected with an entrance test including 12 tasks chosen by us – 9 about chess tactics and 3 about chess strategy. The aim of the test was to establish that the chess players could meet the requirement for the chess level within the range of Elo rating 1050-1400 points. All the participants' parents provided written consent after being informed of the test protocol. The research was carried out in the period February-May 2021.

### *Procedure*

The participants were divided into two groups according to the club they belong to. In the first group, consisting of the chess players from two of the clubs (19 children), the training sessions were conducted only face-to-face. In the second group, consisting of the chess players from the other two clubs, the training sessions were conducted only online. The face-to-face education was carried out in two of the chess clubs, while we used the application Microsoft teams for the online education. We used the program ChessBase for chess visualization with both groups (Acher, Esnault, 2016). This program enables the coach to demonstrate and translate on the screen various annotated games, to search the games of similar structure, to show examples from video archives, to suggest interactive exercises on the theme.

### *Measuring instruments*

For the purposes of the pedagogical experiment, we created a lecture course based on modern materials. We selected the topics so that they could help the development of a critical set of habits and skills in the field of chess strategy and tactics, particularly for this age group. The topics were in compliance with the recommendations of FIDE Trainers' Commission, with leading specialists in this area, as well as with our own coaching experience. We created 15 topics – 10 about chess strategy and 5 about chess tactics. After a careful analysis of a great amount of methodological literature (Perotti et al., 2013; Engqvist, 2016; Grooten, 2017) and on the basis of our own

survey among leading chess pedagogues and our personal coaching experience, we selected the following topics related to tactics: 1. Forcing moves 2. Deflection 3. Decoy 4. Removing the Defender 5. Blockade 6. Clearing a square 7. Interference 8. Using open Files 9. Pin 10. Windmill and Double Check. We developed the following topics in the field of chess strategy: 11. Sacrificing a pawn for Initiative and Wedge Pawn Formation 12. Open Files and Diagonals 13. Different Pawn Structures (Pawn Weaknesses in the Centre. Connected Pawns) 14. Dynamic Pawn Centre. 15. Checkmate with Two Bishops. Checkmate with Knight and Bishop.

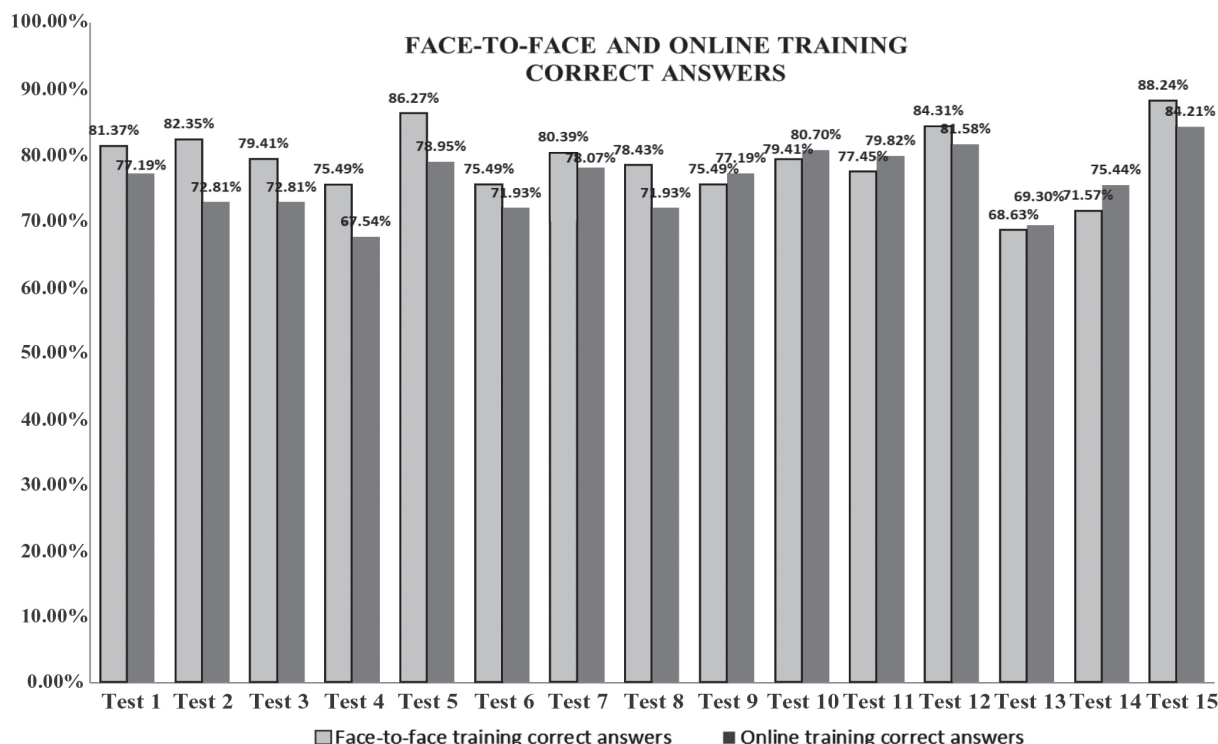
This helped us trace the level of acquisition of the material taught. All tasks were processed with a computer so that any possible mistakes and alternative solutions could be removed. The contents of the lecture course and the tests were submitted for evaluation to an expert from the Bulgarian Chess Federation 1928, who considered them excellent.

### *Statistical analysis*

The data were processed with correlation analysis, Mann-Whitney U Test, One-Sample Kolmogorov-Smirnov Test, Frequency analysis. The conclusions were drawn at a significance level of 95% ( $\alpha = .05$ ).

## **RESULTS**

Figure 1 shows the relation between the correct answers to the test tasks in the two forms of chess training – face-to-face and online.



**Figure 1.** Percentage of correct answers to the tests covering each of the 15 topics in the two groups – face-to-face and online

We can see in the graph that in both groups of 10-13-year-old chess players, the percentage of correctly solved test tasks (an indicator of the degree of acquisition of the material

taught) was high and stable – between 67.54 and 86.27%. Of all 15 tests, those who studied online showed better performance in 5 topics – two related to tactics and 3 related to strategy.

**Table 1.** Group statistics for chess players' performance in the tests

Group Statistics					
	Group	N	Mean	Std. Deviation	Std. Error Mean
Percent correct answers	Online training	15	.7596	.04790	.01237
	Face-to-face training	15	.7895	.05264	.01359

The average percentage of the correct answers provided by the tested individuals who studied online was 75.96%, and that of the individuals who studied face-to-face – 78.95%.

We can see that the difference was approximately 3% (2.99%) in favor of the results provided by those who studied face-to-face.

**Table 2.** Results from Student's t-Test for two independent samples

Independent Samples Test										
		Levene's Test for Equality of Variances		t-Test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Percent correct answers	Equal variances assumed	.000	.987	-1.626	28	.115	-.02989	.01838	-.06753	.00776
	Equal variances not assumed			-1.626	27.755	.115	-.02989	.01838	-.06755	.00777

The applied Student's t-test for two independent samples showed that the difference in the results from the two forms of testing was insignificant, i.e., it was not due to the form of testing but to fortuitous factors. The dispersion in the results for the two groups was the same, as shown by the test of Levene (Sig. = .987 > .05). The conclusion was drawn at a significance level  $\alpha = .05$  (Sig. = .115 > .05).

## DISCUSSION

Every year the chess educational materials (literature; videos on the Internet; chess gates; chess programs with different difficulty and aim, etc.) are becoming much more in number and at the same time, the orientation in modern electronic streams – much more complicated. Often, in order to find a really valuable and correctly selected material for chess players belonging to a certain target group, one has to examine tens of not so useful resources (Dvoretzky, 1991). We should also take into consideration the fact that the materials which were considered optimal several years ago, today could turn out to be obsolete and inefficient (Holding & Reynolds, 1982). We should not ignore the fact that the very sport Chess is getting “younger” (Jensen, 2020; Zakharov, 2020), and the training time – less and less. That is why the efficiency of the methods used in the training process is of primary importance. The correspondence of these methods to the needs of particular players is among the main responsibilities of a coach.

The scoring of the tests and especially the analysis of the unsolved tasks are in the basis of the individual growth of each competitor (Petrovic et al., 2014). Tactical ability requires knowledge and skill. Knowledge of patterns and tactical methods, and the skill to recognize them and combine them (Simon & Chase, 1973). Solving chess puzzles sharpens players' vision for combinations, improves attacking

and defensive skills, teaches to search and find hidden candidate moves, hones winning technique. In our research, the biggest difference in the responses of the two groups (almost 10%) was observed in test 2 – Deflection. This is a chess tactic that forces an opposing piece to leave the square it occupies. After the deflection is performed and the piece is forced away from the important square, another operation can be carried out that was not possible before. Deflections can be used for different aims such as winning material, promoting a pawn, delivering checkmate, etc. Since simple chess tactics do not always present it, it often has to be created with a combination. In our opinion, this difference was mainly due to the vast scope of the topic which includes numerous sideward derivations which makes its explanation in an online format much more difficult than in face-to-face training. For example, such chess combinations often start off with a material sacrifice to achieve a deflection.

The results show that the topics provoking the most serious difficulties are in the field of chess strategy, which is briefly the understanding of different aspects on the chessboard to guide a player in formulating a plan of action. The difficulties in teaching and learning this material arises from its great variety and complexity – there are seventeen pawn structures in chess. The inclusion of these topics in the lecture course, however, was fully justified because they help chess players to become familiar with a greater number of strategic concepts, which is undoubtedly of help in the process of understanding pawn structures.

## CONCLUSIONS

If the lecture course is well designed and is consistent with the initial level of knowledge and abilities of the players, as well as with the peculiarities of the chess material taught, the online studies of 10-13-year-old chess players

with Elo rating 1050-1400 points are as efficient as the face-to-face training.

In conditions of a pandemic or some other restrictions preventing face-to-face training sessions of the groups of growing players with Elo rating 1050-1400 points, their coaches will be able to take advantage of the online form of coaching and testing without being concerned about the quality of teaching.

The topics about chess tactics consisting of several components require a more in-depth attention when taught online.

The explanation of the topics about chess strategy related to the various pawn structures provokes difficulties in both forms of education due to their great complexity.

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