

INDIVIDUAL PROFICIENCY OF RECEPTION BY THE ESTONIAN MEN'S NATIONAL TEAM AT THE QUALIFICATION TOURNAMENT OF THE EUROPEAN CHAMPIONSHIP

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ABSTRACT

The aim of the study was to analyse players' individual proficiency at serve reception and its influence on the following attack in the Estonian national team during the qualification for the European Championship in 2016.

The subjects were the players of Estonian national volleyball team during the qualification for the European Championship in 2016. To collect data, video recordings of eight games of the Estonian national team were viewed; the number serve receptions, type and zone of reception and proficiency were registered. In addition, the number of attacks following serve reception, their zone, performer and proficiency were recorded.

The results revealed that success at the reception of serve influences the proficiency of attack. At more successful reception, the proficiency of attack was higher than at poorer reception.

As a result of the study, it was shown that serve reception by the Estonian team was more proficient in sets won than in sets lost. In the case of more successful reception, the Estonian national volleyball team was more proficient at attack than in the case of less proficient reception. When types of reception were compared, the receivers of the Estonian national team were most proficient at reception from above. The receivers of the Estonian national received the serve best in zone 5.

Keywords: *volleyball; serve reception; proficiency*

INTRODUCTION

Game analysis is increasingly often used in present-day volleyball as it enables to collect much useful information about the course of the game. Both real-time recording of games and later repetitive viewing of video recordings are used [7; 4]. It has been found to be essential to get information about the performance of technical elements by one's own team and to collect the necessary information about the activities and proficiency of the opposing team [3; 9].

Serve reception constitutes approximately 16% of the whole volleyball game. Success greatly depends on the precision of the pass; therefore, serve reception is the most important element in the good performance of the team. Serve reception is not the most technical element in volleyball, but the receiver is under the greatest psychological tension. It has been estimated in literature that, with the addition of the libero, positive reception by the whole team increased by 8% [8]. The receiver of the serve must choose, according to the serve type, which passing technique to use [1]. The use of overhand or forearm pass greatly depends on the serve type and direction and the receiver's position on the court [6]. Hughes and Daniel have found that it is the proficiency of reception that differentiates elite teams from mediocre ones [5]. This article concentrates on serve reception by the Estonian men's national team and the analysis of its proficiency in the games played at the qualification tournament of the European Championship in 2016.

MATERIAL AND METHODS

The paper analyses eight games of the Estonian national team at the qualification tournament of the European Championship where a total of 31 sets were played. In the games played at the qualification tournament, 17 sets were won, and 14 sets were lost.

The opponents of Estonia in these games were the national teams of Latvia, Czechia, Romania and Macedonia. The main receivers of serves in the Estonian team were libero Rait Rikberg and two outside hitters – Keith Pupart and Robert Täht.

The method of data collection was video observation and giving an expert assessment to each serve reception.

Assessment criteria on a 5-point scale:

1. Reception error.
2. The receiver directed the serve straight over the net, or the reception was so bad that the team could not perform an attack, and the ball was passed over the net. Also, the situation where the setter cannot reach the ball, and the set is performed by another player.
3. Bad reception; the setter reaches the ball by overhand or forearm pass. Reception in the distance of 3–4 m from the net. It is not possible to play a tempo attack.
4. Good reception; the setter reaches the ball with an overhand pass but has to set not nearer than 3 m from the net.
5. Very good reception. It is possible to use all the attack combinations.

In sum, the following was written out from the videos:

- Number of serve receptions
- Proficiency of reception – proficiency was assessed on the 5-point scale given above.
- Reception zone – in which zone reception was performed.
- Type of reception – from below or above.

To calculate the proficiency index of reception, the following formula was used:

$$\frac{(\text{reception with grade 5} + \text{reception with grade 4}) - (\text{reception with grade 2} + \text{reception with grade 1})}{\text{total number of receptions}}$$

The Estonian national team played fourteen games at the qualification for the European Championship, in which 17 sets were won and 14 were lost. In all the games, the Estonian national team used the tactics of three receivers at serve reception – two outside hitters and a libero. In the 14 games analysed, the players of the Estonian team performed 556 serve receptions in total. The greatest load at reception was borne by outside hitter Keith Pupart who received 32.86% of all receptions. He was followed by outside hitter Robert Täht (30.38%), libero Rait Rikberg (25.61%) and outside hitter Rauno Tamme, who participated in the game episodically (5.30%). The other players received 5.85% of the serves.

Table 1 gives an overview of serve reception by the Estonian national team in all the sets played. Serve reception was assessed by grades 1–5. The number of cases shows how many times the reception was performed at the corresponding grade; in addition, the table shows the percentage of receptions at the corresponding grade from all the receptions.

Table 1. Proficiency of serve reception by the Estonian national team (total of sets won and lost)

Proficiency (total of sets won and lost)		
Grade of reception	Number of cases	Frequency
5	144	25.50%
4	209	36.90%
3	128	22.60%
2	55	9.70%
1	30	5.30%
Total of receptions	566	
Mean grade	3.675	

The results showed that most serve receptions (209) were performed at grade 4. This constituted 36.9% of all the receptions by the team (see Table 1). The proportion of very good receptions and bad receptions was quite equal, respectively 25.5% and 22.6%. Serve reception was directed over the net or the team did not reach a proper attack 55 times or in 9.7% of all the receptions. In addition, there were 30 serve reception errors (5.3%).

Table 2. Comparison of the proficiency of serve reception by the Estonian national team in sets won and lost

Set won			Sets lost			
Grade of reception	Number of cases	Frequency	Grade of reception	Number of cases	Frequency	Difference
5	76	28.20%	5	68	23.00%	5.2 PP
4	100	37.00%	4	109	36.80%	1.8 PP
3	60	22.20%	3	68	23.00%	-0.8 PP
2	25	9.30%	2	30	10.10%	-0.8 PP
1	9	3.30%	1	21	7.10%	-3.8 PP
Total number of receptions 270			Total number of receptions 296			
Mean grade 3.77			Mean grade 3.58			

Table 2 analyses the Estonian national team's proficiency of serve in sets won and lost. The 'difference' column compares the sets won and lost in percentage points (PP). The minus sign in the 'difference' column means that the number of serve receptions at the corresponding grade was smaller in the sets won than in the sets lost.

The results showed that the mean grade of reception of serve by the Estonian national team was 0.19 PP better in the sets won than in the sets lost (see Table 2). In the sets won 3.8 PP fewer serve errors were made than in the sets lost. This means that in the sets won the opposing team received fewer points directly from the serve than in the sets lost. In addition, in the sets won, there were fewer serve receptions at grades two and three. In the sets won, there were also fewer serve receptions at grade four, but this was compensated by an increase in receptions at grade five.

Table 3. Comparison of proficiency of different types of serve reception by the Estonian national team in sets won and lost

Type of reception	Sets won	Sets lost	Difference	Total in sets
From below front	0.542	0.163	0.379	0.458
From below left	0.423	0.262	0.161	0.341
From below right	0.308	0.212	0.096	0.250
From above	0.733	0.756	-0.023	0.788

The table of different types of serve reception presents the proficiency of serve in all the sets played and separately in the sets won and the sets lost. Proficiency means the proficiency index of serve reception. For the formula for calculating the proficiency index of serve reception, see Methods.

Table 3 shows the proficiency indices of serve reception by the Estonian national volleyball team at different types of reception. In sets won and lost in total, the most proficient type of reception was reception from above (0.788). In the sets won, the figure for reception from above was lower by 0.055 and in the sets lost by 0.032. In all the sets played, the Estonian volleyball team showed the lowest proficiency of reception at reception from below right (0.250). At reception from below front, the proficiency was 0.458 and from below left 0.341.

The Estonian national team was more proficient at reception of serve from below front, left and right in sets won than in the sets lost. In the sets won, the proficiency index of reception from below front was 0.542, in the sets lost, however, lower by 0.378 or 0.163. At reception from below left, the proficiency index was 0.423 in sets won and 0.262 in sets lost. At reception from below right, the proficiency index of reception of the Estonian team was 0.308 in sets won; in sets lost, the same indicator was 0.212. Only the proficiency index of reception from above was better in sets lost than in sets won. The index of reception from above in sets lost was 0.756 and in sets won 0.733.

Table 4. Proficiency indices of serve reception by the Estonian national team in different zones in sets won and lost and in total

Zone of reception	Sets won	Sets lost	Difference	Total in sets
Zone 1	0.482	0.409	0.073	0.442
Zone 6	0.512	0.430	0.082	0.466
Zone 5	0.578	0.391	0.187	0.476

The results revealed that, in sets won and lost in total, the proficiency of reception was quite equal in different zones. The proficiency index was the highest in reception zone 5 (0.476) and the lowest in zone 1 (0.442). At reception in zone 6, the same indicator was 0.466.

In sets won, the proficiency index of reception was higher in all zones than in sets lost (see Table 4). At reception in zone 5, the proficiency index in sets won and lost differed by 0.187; at reception in zone 6, the same indicator was 0.082, and at reception in zone 1, the difference was the smallest – 0.073.

Outside hitter Robert Täht

Outside hitter Robert Täht was one of the leaders of the Estonian national team at the qualification tournament of the European Championship. His role at both serve reception and attack was very great. At serve reception, he had the second place in the team, as he performed 30.38% of all receptions. Only outside hitter Keith Pupart performed more serve receptions.

Table 6. Distribution of serve receptions by Robert Täht

	Reception zone 1			Reception zone 6		Reception zone 5	
	Grade of reception	Number of receptions	Number of cases	Number of receptions	Number of cases	Number of receptions	Number of cases
From below front	5		1		6		3
	4		3		20		4
	3	9	4	44	10	17	7
	2				7		3
	1		1		1		
From below left	5				1		
	4		1		4		2
	3	8	6	11	2	3	1
	2				3		
	1				1		

	Reception zone 1			Reception zone 6		Reception zone 5	
	Grade of reception	Number of receptions	Number of cases	Number of receptions	Number of cases	Number of receptions	Number of cases
From below right	5	4		12		6	2
	4		1		5		
	3		1		5		3
	2		1		1		
	1		1		1		1
From above	5	8	5	27	6	24	9
	4		3		13		10
	3				6		3
	2				2		2
	1						

Table 7. Proficiency of Robert Täht's reception by different types of reception in sets won and lost in total

Type of reception	Robert Täht's proficiency index	Proficiency index of the Estonian national team	Difference
From below front	0.357	0.458	-0.101
From below left	0.136	0.341	-0.205
From below right	0.136	0.250	-0.114
From above	0.666	0.788	-0.122

In each reception type, the proficiency index of Robert Täht's reception in sets won and lost in total was lower than that of the Estonian national team in sets won and lost in total. The difference was the greatest at reception from below left (-0.205) and the smallest from below front (-0.101) (see Table 7). At reception from below right and from above, the proficiency index of reception differed respectively by -0.114 and -0.122.

Table 8. Robert Täht's proficiency at different types of reception in sets won and lost

Sets won		Sets lost		Difference
Type of reception	Proficiency index	Type of reception	Proficiency index	
From below front	0.413	From below front	0.317	0.096
From below left	0.454	From below left	-0.181	0.635
From below right	0.181	From below right	0.090	0.091
From above	0.760	From above	0.696	0.064

The comparison of Robert Täht's proficiency index of reception separately in sets won and lost revealed that all types of reception were performed more proficiently in sets won. The proficiency index in sets won was the highest at reception from above – 0.760, and the same indicator in sets lost was by 0.064 lower or 0.696. In sets won, reception from below right had the lowest value (0.181). The same indicator in sets lost was 0.090 or poorer nearly by half. At reception from below front and left, the results in sets won were quite similar – 0.413 and 0.454 respectively. In sets lost, reception from below front differed by 0.096 and from below left by 0.635 (see Table 8).

Table 9. Proficiency of Robert Täht's reception in different zones in sets won and lost in total

Zone of reception	Robert Täht's proficiency index	Proficiency index of the Estonian national team	Difference
Zone 1	0.310	0.442	-0.132
Zone 5	0.489	0.466	0.023
Zone 6	0.414	0.476	-0.062

In zones 1 and 6, Robert Täht's proficiency of reception in sets won and lost in total was lower than the same indicators of the Estonian national team. In zone 1, the proficiency index was 0.310 and, in zone 6, 0.414. The indicators of the Estonian national team were 0.442 and 0.476 respectively. At reception in zone 5, however, Robert Täht's proficiency index was higher by 0.023 (see Table 9).

Table 10. Robert Täht's proficiency index in different reception zones in sets won and lost

Sets won		Sets lost		Difference
Zone of reception	Proficiency index	Zone of reception	Proficiency index	
Zone 1	0.333	Zone 1	0.352	-0.019
Zone 5	0.600	Zone 5	0.413	0.187
Zone 6	0.522	Zone 6	0.340	0.182

When Robert Täht's proficiency of reception in sets won and lost is compared, it is revealed that, at reception in zone 1, the proficiency index was lower by 0.019 in sets won than in sets lost. This, however, is compensated by better reception in zones 5 and 6 where the proficiency index was higher (see Table 10). In the sets won, the highest proficiency index at reception in zone 5 was 0.6, in the sets lost, however, the same indicator was lower by 0.187 or 0.413. At reception in zone 6, the proficiency index differed by 0.182, or in sets won, it was 0.522 and in sets lost 0.340.

Individual analysis of Keith Pupart's reception

Table 11. Proficiency of Keith Pupart's reception of serve in different zones of reception at different types of reception

	Grade of reception	Reception zone 1		Reception zone 6		Reception zone 5	
		Number of receptions	Number of cases	Number of receptions	Number of cases	Number of receptions	Number of cases
From below front	5		4		6		11
	4		3		3		14
	3	16	5	14	4	36	5
	2		4		1		3
	1						3
From below left	5		1		1		1
	4		3		2		3
	3	9	5	8	4	8	2
	2				1		1
	1		1				1
From below right	5		2		2		11
	4		7		4		4
	3	13	4	13	4	27	4
	2				3		5
	1						3
From above	5		1		7		6
	4		4		4		20
	3	5		12	1	35	7
	2						1
	1						1

Table 11 shows the distribution of Keith Pupart's serve reception. It can be said that he bore the greatest load of reception in zone 5. Being in zone 5, he received the greatest number of serves from below front and also from above and did it very well. In zone 5, he lost only 8 balls out of 106 serves, but in zones 1 and 6, he did not have a single error in 8 sets.

Table 12. Keith Pupart's proficiency of reception at different types of reception in sets won and lost in total

Type of reception	Keith Pupart's proficiency index	Proficiency index of the Estonian national team	Difference
From below front	0.393	0.458	-0.065
From below left	0.280	0.341	-0.061
From below right	0.358	0.250	0.108
From above	0.769	0.788	-0.019

When K. Pupart's proficiency of reception at different types of reception is compared with the mean indicator of the Estonian national team, we can say that, at reception from below right, it is higher than that of the whole team (see Table 12).

Table 13. Keith Pupart's proficiency indices at different types of reception in sets won and lost in total

Sets won		Sets lost		Difference
Type of reception	Proficiency index	Type of reception	Proficiency index	
From below front	0.500	From below front	0.400	0.100
From below left	0.400	From below left	0.200	0.200
From below right	0.354	From below right	0.363	-0.009
From above	0.736	From above	0.757	-0.021

As Table 13 shows, Keith Pupart's proficiency index was the highest at reception from above, in both sets won and lost.

Table 14. Keith Pupart's proficiency indices of reception of reception in different zones of reception

Zone of reception	Keith Pupart's proficiency index	Proficiency index of the Estonian national team	Difference
Zone 1	0.465	0.442	0.023
Zone 5	0.500	0.466	0.034
Zone 6	0.510	0.476	0.034

When Keith Pupart's results are compared with the mean proficiency index of the whole team, it can be seen that, at reception from all zones, he exceeds the mean result of the players of the team (see Table 14).

Table 15. Keith Pupart's proficiency index in different reception zones in sets won and lost

Sets won		Sets lost		Difference
Zone of reception	Proficiency index	Zone of reception	Proficiency index	
Zone 1	0.400	Zone 1	0.521	-0.121
Zone 5	0.568	Zone 5	0.418	0.150
Zone 6	0.400	Zone 6	0.705	-0.305

Individual analysis of libero Rait Rikberg's reception of serve

The libero receives serves in zones 1 and 6. At the qualification tournament of the European Championship, Rait Rikberg, libero of the Estonian national team, occupied the third place in serve reception after outside hitters Keith Pupart and Robert Täht. In all the sets played, Rait Rikberg received 145 serves in total, which was 25.61% of all the receptions by the Estonian national team. Out of the 145 serve receptions, the libero of the Estonian national team received 103 serves in zone 6 and 42 serves in zone 1. Rikberg received the greatest number of serves from below left – 64 in total (44 of them in zone 6 and 20 in zone 1). Reception from below right was used by Rikberg least often. The greatest number of serves was performed at grade 4 (55 times). Rikberg received 44 serves at grade 5 and erred at serve reception 11 times (see Table 16).

Table 16. Distribution of Rait Rikberg's reception in sets won and lost in total

	Grade of reception	Reception zone 1		Reception zone 6	
		Number of receptions	Number of cases	Number of receptions	Number of cases
From below front	5	12	5	35	11
	4		5		13
	3		1		4
	2		1		4
	1				3
From below left	5	20	6	44	13
	4		6		16
	3		4		9
	2		1		2
	1		3		4

	Reception zone 1			Reception zone 6	
	Grade of reception	Number of receptions	Number of cases	Number of receptions	Number of cases
From below right	5	4		10	1
	4		1		3
	3		2		2
	2		1		3
	1				1
From above	5	6	3	14	5
	4		3		8
	3				1
	2				
	1				

Table 17. Rait Rikberg's proficiency indices of reception at different types of reception in sets won and lost in total

Type of reception	Rait Rikberg's proficiency index	Proficiency index of the Estonian national team	Difference
From below front	0.530	0.458	0.072
From below left	0.484	0.341	0.143
From below right	0.000	0.250	-0.250
From above	0.950	0.788	0.162

The comparison of the proficiency of serve reception by libero Rait Rikberg and the Estonian national team at different types of reception in sets won and lost in total revealed that only at reception from below right the proficiency index of reception of the Estonian national team was higher by 0.250 than Rikberg's index. Rikberg's proficiency index of reception from right below was 0.000, which is a very low indicator. At other types of reception, Rikberg's proficiency was higher than of the players of the whole Estonian national team (see Table 17).

Table 18. Rait Rikberg's proficiency indices of at different types of reception in sets won and lost

Sets won		Sets lost		Difference
Type of reception	Proficiency index	Type of reception	Proficiency index	
From below front	0.739	From below front	0.375	0.364
From below left	0.727	From below left	0.468	0.259
From below right	-0.200	From below right	0.111	-0.311
From above	1.000	From above	0.888	0.112

The results show that, in both sets won and lost, reception from above was the most proficient (see Table 18). The proficiency indices of reception from below front and left were higher in the sets won than in the sets lost, respectively by 0.364 and 0.259. Only the proficiency index of reception from below right was lower in sets won than in sets lost.

Table 19. Rait Rikberg's proficiency indices of reception in different reception zones in sets won and lost in total

Zone of reception	Rait Rikberg's proficiency index	Proficiency index of the Estonian national team	Difference
Zone 1	0.547	0.442	0.105
Zone 6	0.514	0.466	0.048

The results showed that, in all the sets played, Rait Rikberg's proficiency index at reception in zones 1 and 6 was higher than the same indicator of the whole Estonian national team. At reception in zone 1, the indicator differed by 0.105 and at reception in zone 6 by 0.048 (see Table 19).

Table 20. Rait Rikberg's proficiency indices of reception in different reception zones in sets won and lost

Sets won		Sets lost		Difference
Zone of reception	Proficiency index	Zone of reception	Proficiency index	
Zone 1	0.615	Zone 1	0.437	0.178
Zone 6	0.600	Zone 6	0.448	0.152

The results revealed that, in both zone 1 and zone 6, the proficiency index of reception was higher in sets won than in sets lost. In zone 1, the difference was 0.178 and in zone 6 0.152 (see Table 20).

DISCUSSION

The mean grade of the Estonian national team at serve reception was 3.675. The greatest load at reception was borne by outside hitter Keith Pupart who received 32.86% of all receptions of the Estonian national team. The players of the Estonian national team were most proficient at serve reception in zone 5. Serves were best received by reception from above. Barsingerhorn has found that overhand pass is used most often when the setter is near the receiver. In the case of longer distances, underarm pass is used more often [2]. Individually, outside hitters Robert Täht and Keith Pupart and libero Rait Rikberg also received serves best by reception from above. Rait Rikberg received serves best in zone 1, Robert Täht in zone 5 and Keith Pupart in zone 6. The main task of the libero in the team is reception of serves together with outside hitters and leading defensive play at the back row. Usually, liberos are smaller than other players, very skilful and good handlers of the ball [5]. Liberos receive serves in zones 1 and 6.

At the qualification tournament of the European Championship, Rait Rikberg, libero of the Estonian national team, occupied the third place in serve reception after outside hitters Keith Pupart and Robert Täht. In all the sets played, Rait Rikberg received 145 serves in total, which was 25.61% of all the receptions by the Estonian national team. The results showed that, in all the sets played, Rait Rikberg's proficiency index at reception in zones 1 and 6 was higher than the same indicator of the whole Estonian national team.

As a result of the study, it was shown that reception of serve by the Estonian team was more proficient in sets won than in sets lost. The receivers of the Estonian national team were most proficient at reception from above.

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