

AN ANALYSIS OF THE COLLECTIVE EFFECTIVENESS OF THE ROMANIAN NATIONAL TEAM'S ATTACKS DURING 2019 WORLD WOMEN'S HANDBALL CHAMPIONSHIP

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Abstract: *The aim of this study is to analyse (i) the collective effectiveness in the attack phases of team Romania at the Women World Championship in Japan, 2019 and (ii) whether the forced changes made just two days before the start of the competition had any impact on the final results. As it had been through a generational transition and had also been confronted with injuries and doping cases right before the debut of the competition, the Romanian team had an unstable evolution, being either severely defeated or winning games by a low margin. Game expertise and scoring index were the main factors that affected the ranking, to the disadvantage of Romania, in this important tournament.*

Key words: *women's handball; forced changes; national team.*

1. Introduction

In modern handball, the outcome of a match can be influenced by the smallest details of the game, especially at highly competitive levels, establishing the analysis of successful performance indicators as a decisive factor in the process of evaluation and applying the coaching strategy [8].

Due to the fast and continuous technology advancement in the last few years, the research in the field of sport analysis has greatly developed. In what handball is concerned, the published

research aims to record the individual and team evolution in view of acquiring statistical data sets that describe what happened at the end of the game and emphasise the factors that influence final results.

Performance in a handball team is determined by the individual playing performance of each player (technical, physical and psychological), team performance (tactics and social factors), and external influences (material and environmental conditions) [17].

Data obtained from watching live matches or reviewing recorded games is

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used in order to define performance demands and/or player behaviour: injuries (26.5%), physical capacities (18%), physiological responses (12.9%), performance and success factors (6.2%) [12] or covered distances, effective playing time, effort intensities, cardiovascular responses [9-10].

Sport effectiveness is evaluated by using quantitative indices, which represent the elements, actions and technical and tactical procedures both on the attack and defense phase. In order to successfully accomplish these phases, players must perform various tasks, different from one attack phase to the next, and from one defense phase to the next [2].

Some other research studies [1-11-15] highlighted the tendencies in modern international handball using cumulative statistical data for both men's and women's important tournaments. Regarding the Romanian National Team, different papers examined the team during other major competitions, in order to highlight the playing level [5-13-16].

2. Objectives

The aim of this study is to analyse the collective effectiveness, by evaluating the efficacy of specific performance indicators in the attack phases, and also to identify the factors that may have influenced the final ranking in this tournament.

3. Material and Methods

3.1. Participants

As it had been through a generational transition and had also been confronted with injuries and doping cases right before the debut of the competition, the

Romanian team had an unstable evolution, being either severely defeated or winning games by a low margin.

At first, the lot for the World Championship in Japan consisted of 18 players, out of which only 12 had also participated in the previous important competition, the 2018 European Championship in France, when Romania ranked 4th. After this competition, two players retired from the national team, and four others were replaced by Coach Thomas Ryde, who returned to the team after a 3-year pause. In addition, Cristina Neagu, a top player and the team's captain, was back after a long recovery after a knee injury, with minimal chances to be able to play at her full capacity. With a lot changed by 33% and with Neagu not fully recovered, Romania went to Japan aiming to be in the first eight teams, but two days before departure, a huge doping scandal had outburst, involving 4 of the players selected by Ryde. Consequently, he was forced to replace them, and the lot was decided on the very day of departure, consisting, in the end, of only 17 players, out of whom only 9 present in the last major competition. The team was thus changed by 47%. Under these circumstances, Ryde changed the objective, which became "survival" [6].

In what concerns positions, the national team consisted of 3 goalkeepers, 2 left wings, 3 left backcourts, 3 centre backcourts, 1 right backcourt, 2 right wings and 3 line players.

The age mean was of 25.8 years, average height - 178 cm, average weight - 70 kg while the average number of international games played was of 36.7 and the average number of international goals scored was 73.

3.2. Methods

We analysed the statistical data recorded after the 8 matches played by Romania at the Women World Championship from Japan, 2019. Data was collected from the IHF website. The observed facts were electronically recorded by Swiss Timing using instruments from the Omega Concern.

The analysis of data taken from public websites is a confirmed method in the field of handball research. [3-5-8-15-17].

After retrieving the data, we manually entered it into an Excel file and we used

common scientific methods of research, as statistical and mathematical calculation (the mean, percentage and ratio) and graphical representation (line chart). Within our study we examined the average number of goals per shots, per attacks and the position from it were scored. We also examined the ratios of position throws (6 meters, wing, 9 meters, 7 meters, fast break, and breakthrough). We also compared the data obtained from the analysis of the performance indices for Romania with the means of performance indices per championship and for the first three ranking teams.

4. Results and Discussions

Table 1

Romania's descriptive statistics of goals/shot position performance indicator, compared to the overall and the 1st place efficiency values

| | Goals | Shots | ROU Efficiency % | Ratio | Overall Efficiency% | Ratio | 1 st place Efficiency% | Ratio |
|--------------|------------|------------|------------------|-------------|---------------------|-------------|-----------------------------------|-------------|
| 6mS | 45 | 96 | 47% | 25% | 60% | 27% | 69% | 25% |
| WS | 40 | 68 | 59% | 22% | 57% | 17% | 63% | 16% |
| 9mS | 35 | 102 | 34% | 19% | 37% | 19% | 44% | 25% |
| 7mS | 34 | 40 | 85% | 18% | 76% | 12% | 88% | 11% |
| FB | 7 | 12 | 58% | 4% | 78% | 13% | 65% | 11% |
| BT | 16 | 21 | 76% | 9% | 77% | 10% | 70% | 10% |
| EN | 4 | 6 | 67% | 2% | 72% | 2% | 54% | 2% |
| TOTAL | 181 | 345 | | 100% | | 100% | | 100% |
| MEAN | | | 52% | | 57% | | 60% | |

Legend: 6mS – 6 m Shot; WS – Wing Shot; 9mS – 9 m Shot; 7mS – 7m Shot; FB – Fast Break; BT – Breakthrough; EN – Empty Net

Romania recorded a total of 345 throws during this championship, scoring 181 goals, which is a 52% throwing efficiency, under the 57% average of the tournament. Comparing this average with those of the first 3 ranking teams (The Netherlands, 60%, Spain, 62%, and Russia, 68%), we note that an average above 60% would have been an essential requisition for a good ranking.

Fast break throws had the lowest average of the goals scored, 4%, a huge difference from 13% and respectively 11% that would have been an effective ratio. What is more, the efficiency of fast break throws was very low, 20% under the means of the championship. Fast break is a key element in modern handball, one that can make a difference between teams of similar value. It is for this reason

that it has become a constant concern for the best teams, as it is an effective means of scoring easy goals [1]. Romania ranked 22nd out of 24 participants in what the number of fast break goals is concerned (7/12), far from the teams that played the same number of matches (8): Denmark (24/29); Japan (24/37); Korea (25/34). Moreover, an even bigger difference can be noted when compared to the top teams (Norway – 66/77, Russia – 58 /64, Spain – 44/57).

In the cases of 6 m shots and wing shots, a low efficiency is noted (53%), as a good percentage is considered to be around 65-70%. The 9 m players (backs and

playmakers) had the lowest success rate, 34%, 3 % under the championship average and 10% under the means of the Netherlands. 7 m shots and breakthroughs had the highest efficiency (85% and respectively 76%). This positive aspect sent Cristina Neagu on the second place in the 7 m shots top (25/26, 85% efficiency), after Lois Abbingh (29/32, 88% efficiency). This was, otherwise, the only positive nomination in a top for team Romania. As negative results we registered the 3rd position occupied by Polocoser in the 2- minute eliminations top and the last position for the team in the fast break efficiency.

Table 2

Romania's' descriptive statistics of goals/shot and goals/attacks performance indicators

| Matches Played | Goals/Shots | Efficiency% | Goals/Attacks | Efficiency% |
|----------------|-------------|-------------|---------------|-------------|
| SPAIN | 16/42 | 38% | 16/52 | 31% |
| SENEGAL | 29/45 | 64% | 29/48 | 60% |
| KAZAKHSTAN | 22/44 | 50% | 22/54 | 41% |
| MONTENEGRO | 26/42 | 62% | 26/55 | 47% |
| HUNGARY | 28/47 | 60% | 28/48 | 58% |
| RUSSIA | 18/38 | 47% | 18/53 | 34% |
| SWEDEN | 22/40 | 62% | 22/63 | 35% |
| JAPAN | 20/47 | 43% | 20/54 | 37% |
| TOTAL | 181/345 | | 181/427 | |
| MEAN | | 52% | | 42% |

After 8 matches (5 in the Preliminary Group C and 3 in Main Group II), Romania had number of 345 shots and 427 attacks, finalized with 181 goals, a shot efficiency average of 52% and an attack efficiency of 42%.

In table 2, one could see that Romania started the competition with a very bad performance, being defeated by Spain by a 15 goals difference, and also recording the lowest rates of throw and attack efficiency in this tournament (38% and

31%). In the next two matches, Romania wins: against Senegal, a team that was present for the first time at a Women's Handball World Championship, and against Kazakhstan (only 4 presences in this competition). The efficiency rates raised to 64% and 50% for throws and to 60% and 41% for attacks, but the overall performance was affected by many tactical mistakes. Although they showed a good play, with above average rates of the attack indicators, Romania lost to

Montenegro at one goal difference, shot in the last minute of the match.

The match with Hungary was a spectacular one, and was won by Romania during the last seconds, with a 7 m goal scored by Neagu. This match brought Romania the qualification to Main Group II, and the expectations for an honorable

placement seemed to grow with the increase of collective efficiency. However, according to statistics, Romania continued in the competition with bad performances, which brought it severe defeats. The team ended 12th the World Championship from Japan.

Table 3

Differences of efficiency indicators between Romania and the top 3 teams of the Tournament

| Team | Goals/Shots% | Goals/Attacks% |
|------------------------------------|--------------|----------------|
| ROMANIA(12 th) | 52% | 42% |
| NEDERLANDS (1 st Place) | 60% | 53% |
| SPAIN (2 nd Place) | 62% | 52% |
| RUSSIA(3 rd Place) | 68% | 57% |

Table 4

Differences of anthropometric indicators and experience level between Romania and the top 3 teams of the Tournament

| Team | Average age | Average Int. M P | Average height | Average weight |
|------------------------|-------------|------------------|----------------|----------------|
| ROMANIA (12 place) | 25.8 | 36.7 | 1.78 cm | 70 kg |
| NEDERLANDS (1st Place) | 25 | 90.9 | 1.76 cm | 71 kg |
| SPAIN (2nd Place) | 28.3 | 71.6 | 1.73 cm | 68 kg |
| RUSSIA (3rd Place) | 27.5 | 70.6 | 1.78 cm | 70 kg |

Table 3 provides significant data on the differences in efficiency between Romania and the top 3 teams. One can note that an essential requirement to win a medal in this competition was that of obtaining an above 60% average for shots and above 50% for attacks. In Table 4, we recorded the anthropometric and experience indicators of the compared teams. Data shows that there is no significant difference between age, height and

weight averages, but one can easily note a significant difference when it comes to the players' experience in international matches. Experience is considered an important factor which influences sport performance [11]. Team Romania had a lot changed by 47% compared to the 2018 European Championship, many of the new players playing for the first time for the national team or having only a few international matches alongside the team.

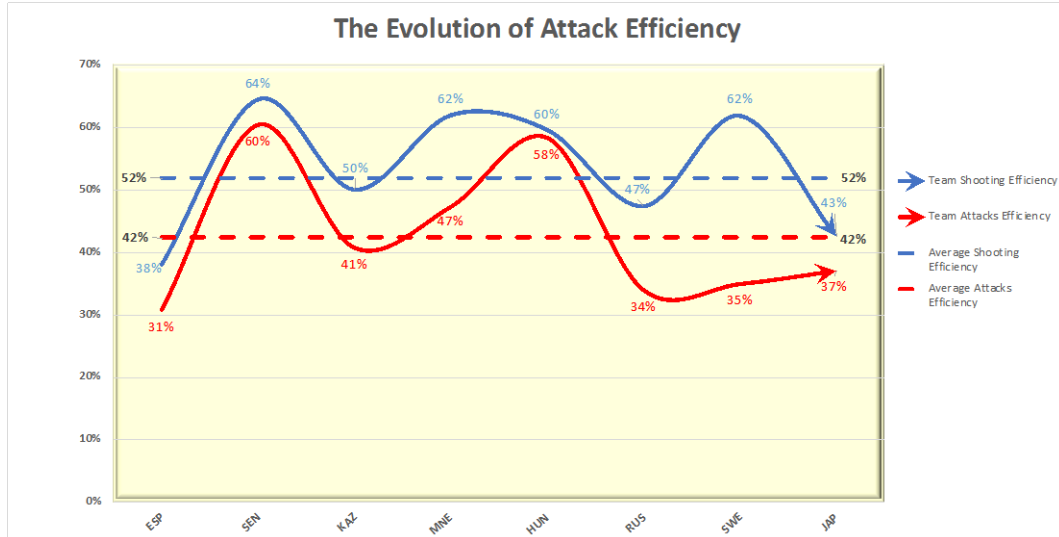


Fig. 1. The overall and average evolution of team shots and attacks efficiency

The graphic interpretation in Fig. 1 describes the trajectory of the throw and attack efficiency against the efficiency average of these two indices throughout the 8 matches played by Team Romania in the Handball World Championship from Japan. It is easy to notice the inconstant evolution, with significant fluctuations of efficiency, regardless of the value of the other team.

Rates below average have been recorded in the matches against Spain (15-goal lose), Kazakhstan (2-goal win), Russia (9-goal lose) and Japan (17-goal lose). Above average rates have been recorded in the matches against Senegal (5-goal win), Montenegro (1-goal lose) and Hungary (1-goal win). In the match against Sweden (12-goal lose), the team had good throw efficiency but very bad attack efficiency, which was the result of the many tactical mistakes on the attack phase and the precarious management of game situations by newer players.

4. Conclusions

The efficiency rates on the attack phase of team Romania depict an inconstant evolution, under the average of the tournament and the top teams. The goals on fast break had the lowest percentage out of the total of goals scored by Romania (7/181). The team recorded the counter-performance of ranking 22nd in the goals top and on the last position (24th) in the hierarchy of fast break throws efficiency.

It has been observed, following statistical analysis, that the teams with the highest efficiency rates in shots and attacks had the best results. This study comes to complement other pieces of research [1-11], which concluded that a good fast break efficiency influenced the rankings of the great international competitions.

The anthropometric indices influence sport performance, more in the case of men than women. The experience

indicator influences women's handball more than men's handball [11]. These two statements are supported by the results of the present study. In what the efficiency indicators are concerned, both the results of our study and other research confirm the major importance they have for final results in competitions [1-11-18].

As far as positive aspects are concerned, one should mention Cristina Neagu's ranking 2nd in the 7 m shots top (25/26, 85% efficiency), following Lois Abbingh (29/32, 88% efficiency). Neagu scored 27% of the goals of the team, although she only played in 6 matches (33' per game), as she was not fully recovered after her long recovery time. Another positive aspect was the win against Hungary, which qualified Romania to Main Group II, and which also mattered for Neagu from an emotional perspective, as it was in the 2018 match against Hungary when she suffered the severe knee injury.

The changes of the lot by 47% with just a few days before the departure for the competition had negative effects on the final result of team Romania. The immediate effect was the dramatic decrease of the average of professional experience of the team (an average of 36.7 international matches played and 73 goals scored), that negatively impacted the group homogeneity and cohesion, which are essential factors in any team sport. The result is reflected in the very low attack efficiency, in the lack of focus in key moments (technical errors), in the lack of collective vision, and of course in the 12th position on the leaderboard.

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