Original Article

Analyses of technical and tactical data in attack and defense at high level handball teams

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Abstract
Measurement of performance plays an important role in planning the training and to prepare the game plan. The analysis after a game helps to evaluate the performance, while mass analysis after one season, can contribute to evaluate the failure or the success of the participating teams. The purpose of this study was to record and process data from high-level handball competitions of the Greek handball championships of the 2017-2018 season. The sample were consisted of 60 handball matches. The variables evaluated were: a) attack variables (6m throws, 6m goals, 9m throws, 9m goals, penalty throws, counterattacks, quick throw-off), b) defense variables (goalie's saves, defense blocks), c) the variables of the inability of the attack or the defensive ability, leading to attack errors (offensive fouls, steps, 3" errors, passing errors, ball steals), e) the result of the matches (win, draw, defeat). SPSS 22 statistical program was utilized for the analysis of the results and the method applied was descriptive and inferential statistics. Mann-Whitney U test was used to compare differences between home and visitor teams and between winning and defeated teams. In most of the variables home teams had better values than visitor teams. In all variables winning teams had better values than defeated teams except 9m. throws. Mann-Whitney U test showed no statistically significant difference concerning home and visitor teams except counterattacks (p = 0.012). Between the winning and defeated teams there was a significant difference in 6m. throws (p = 0.000), 6m. goals (p = 0.000), counterattacks (p = 0.002), goalie's saves (p = 0.004), defensive blocks (p = 0.006), "steps" - 3" errors (p = 0.047), passing errors (p = 0.003) and in ball steals (p = 0.001). It is concluded that Greek Championship handball matches are sometimes similar and sometimes different comparing to the foreign championship matches.
Keywords: Team handball, analysis, performance, game.

Introduction
        The image of the analysis of a country's championships reflects its presence on the European and World Map of the sport. In addition, the competitiveness of the championships in a sport affects both the image and the performance of the national team (Meletakos, Noutsos, Manasis & Bayios, 2014). In modern sports science, movement and training are evaluated through performance measurement. This is because the measurement of performance plays a great role for trainers in planning the training process and also to prepare the competition and the game (Bilge, 2012). Debanne and Laffaye (2017) state that the analysis of sports performance can contribute to the exploration of the performance of a team and prescribe the success in a range of team sports that are described by the relevance of resistance among teams that have competitive interests. The analysis after the game helps to evaluate the performance in this specific game, while mass analysis after one season, one championship or a tournament cup can contribute to rate and estimate the failure or success of the participating teams and more than this to rate general of that branch of that sport (Bilge, 2012).
        Handball in Greece is not particularly developed taking into account many different aspects of the sport (Mavrikou, 2015). Nevertheless, the recent overview of the statistics of the championships in the Greek territory helps and contributes to the European and World Indices in order to better understand the individual elements of the games, both in Greece and abroad. In addition, the analyses of these indexes and their comparison with corresponding indexes from other countries contribute to the clarification of the image of the sport in Greece and the position that our country has in the World map of the sport. From the above it is understood that over time the data of a country in this sport may vary either to the positive side or to the negative. The continuous recording and analysis of the data and the indexes of the championships leads to safe and useful conclusions

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about the course of the sport both within the country and the course and the image of the particular sport abroad. In order to achieve this, it is necessary to make a regular analysis of specific indicators recognized as world-renowned in each season and to make useful conclusions that will benefit the people of the sport (federation, coaches, athletes, etc.)

This led to the purpose of this study, which was the recording and processing of data from high-level handball competitions held in the context of the Greek handball championships of the 2017-2018 season. In particular, the technical and tactical aspects of both attack and defense of the sample groups were investigated.

Materials and Methods

Participants

The sample of the survey consisted of 60 high-level handball matches of the Greek Handball Championships, held in the 2017-2018 season. A total of 25 teams were evaluated as home and visitor teams.

Procedure

The variables of the survey recorded and then analyzed were: a) the variables of attack (6m throws, 6m goals, 9m throws, 9m goals, penalty throws, counterattacks, quick throw-off) b) defense variables (goalie's saves, defense blocks) c) the variables of the inability of the attack or the defensive ability, leading to attack errors (offensive fouls, steps, 3" errors, passing errors, ball steals) and e) the result of the matches (win, draw, defeat).

Statistical Analysis

Descriptive statistics were used for the statistical analysis of the survey. In particular, the frequency of values and their proportions were used, as well as the mean value and standard deviation (SD), the median, as well as the minimum and maximum values. For the survey data, a homogeneity value test was performed by applying a non-parametric test that does not imply the regularity of distributions. In particular, U-Mann-Whitney tests with a p value of $p = 0.05$ were performed in order to examine the homogeneity of the data between home and visiting teams and the data between winning and defeated teams. The statistical processing of the study data was done using the SPSS 20 program.

Results

Table 1 presents survey data collectively for home and visitor teams.

Table 1. Total survey data for home and visitor teams.

Variables	Home teams	Visitor teams	All teams	Home teams %	Away teams %
6m. Throws	1791	1730	3521	50.9%	49.1%
6m. Goals	1030	981	2011	51.2%	48.8%
9m. Throws	784	795	1579	49.7%	50.3%
9m. Goals	335	326	661	50.7%	49.3%
Penalty throws	193	206	399	48.4%	51.6%
Counterattacks	313	233	546	57.3%	42.7%
Quick throw-off	87	61	148	58.8%	41.2%
Goallies saves	786	710	1496	52.5%	47.5%
Defense blockings	108	109	217	49.8%	50.2%
Offensive fouls	117	103	220	53.2%	46.8%
Steps, 3´´errors	106	115	221	48.0%	52%
Passing errors	294	306	600	49.0%	51.0%
Ball steals	206	201	407	50.6%	49.4%

Table 2 shows the descriptive statistics of home teams.

Table 2. Descriptive statistics of home teams.

Variables	N	Mean	(SD)	Median	Min Value	Max Value
6m. Throws	60	29.85	6.10	30.50	11	42
6m. Goals	60	17.17	5.18	17.00	8	28
9m. Throws	60	13.07	4.31	13.00	5	27
9m. Goals	60	5.58	2.68	5.00	1	14
Penalty throws	60	3.22	1.70	3.00	1	8
Counterattacks	60	5.22	3.54	5.00	0	17
Quick throw-off	60	1.45	1.58	1.00	0	5
Goallies saves	60	13.,10	4.07	13.00	5	24
Defence blockings	60	1.80	1.89	1.00	0	7
Offensive fouls	60	1.95	1.68	1.50	0	9
Steps, 3´´errors	60	1.77	1.41	1.00	0	6
Passing errors	60	4.90	3.44	4.00	0	14

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Ball steals	60	3.43	2.44	3.00	0	10

Table 3 presents descriptive statistics for visitor teams.

Table 3. Descriptive statistics of visitor teams.

Variables	N	Mean	(SD)	Median	Min Value	Max Value
6m. Throws	60	28.83	7.49	30.00	14	44
6m. Goals	60	16.35	5.82	15.00	6	33
9m. Throws	60	13.25	4.23	12.00	6	25
9m. Goals	60	5.43	2.63	5.00	2	13
Penalty throws	60	3.43	1.84	4.00	0	8
Counterattacks	60	3.88	3.00	3.00	0	18
Quick throw-off	60	1.02	1.44	0.00	0	6
Goallies saves	60	11.83	3.85	11.00	5	24
Defense blockings	60	1.82	1.60	1.00	0	9
Offensive fouls	60	1.72	1.63	1.00	0	9
Steps, 3´´errors	60	1.92	1.50	1.50	0	6
Passing errors	60	5.10	3.02	5.00	0	15
Ball steals	60	3.35	2.48	3.00	0	12

Table 4 presents the descriptive statistics for the winning teams.

Table 4. Descriptive statistics of winning teams.

Variables	N	Mean	(SD)	Median	Min Value	Max Value
6m. Throws	55	31.80	6.70	32.00	14	44
6m. Goals	55	20.05	5.28	20.00	8	33
9m. Throws	55	12.85	4.43	12.00	5	27
9m. Goals	55	5.93	2.96	5.00	1	14
Penalty throws	55	3.71	1.91	4.00	0	8
Counterattacks	55	5.67	4.05	5.00	0	18
Quick throw-off	55	1.44	1.69	1.00	0	6
Goallies saves	55	13.40	3.55	13.00	7	20
Defense blockings	55	2.25	1.95	2.00	0	9
Offensive fouls	55	1.75	1.92	1.00	0	9
Steps, 3´´errors	55	1.65	1.57	1.00	0	6
Passing errors	55	4.00	2.61	4.00	0	10
Ball steals	55	4.22	2.78	4.00	0	12

Table 5 presents the descriptive statistics for teams with a draw as a result

Table 5. Descriptive statistics of the teams with a draw as a result

Variables	N	Mean	(SD)	Median	Min Value	Max Value
6m. Throws	10	27.00	7.06	30.50	15	36
6m. Goals	10	15.30	4.90	15.50	6	21
9m. Throws	10	12.80	4.39	13.00	7	19
9m. Goals	10	5.40	2.37	5.00	2	9
Penalty throws	10	2.60	1.78	2.50	1	7
Counterattacks	10	4.10	2.47	3.50	1	9
Quick throw-off	10	0.40	0.84	0.00	0	2
Goallies saves	10	10.90	4.20	11.50	6	20
Defence blockings	10	1.10	1.20	1.00	0	3
Offensive fouls	10	2.10	1.10	2.00	1	4
Steps, 3´´errors	10	1.20	1.14	1.00	0	3
Passing errors	10	3.30	1.64	3.00	2	7
Ball steals	10	2.50	1.08	2.50	1	4

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Table 6 presents Descriptive Statistics for defeated teams.
Table 6. Descriptive statistics of defeated teams.

Variables	N	Mean	(SD)	Median	Min Value	Max Value
6m. Throws	55	27.31	6.16	29.00	11	41
6m. Goals	55	13.73	3.73	13.00	7	23
9m. Throws	55	13.53	4.10	12.00	6	24
9m. Goals	55	5.11	2.32	5.00	2	13
Penalty throws	55	3.07	1.55	3.00	0	6
Counterattack	55	3.51	2.16	3.00	0	9
Quick throw-off	55	1.18	1.40	1.00	0	5
Goallies saves	55	11.82	4.22	11.00	5	24
Defense blockings	55	1.49	1.51	1.00	0	6
Offensive fouls	55	1.87	1.45	2.00	0	6
Steps , 3´´errors	55	2.15	1.33	2.00	0	6
Passing errors	55	6.31	3.51	6.00	1	15
Ball steals	55	2.73	2.00	2.00	0	9

From the tests conducted with the U-Mann-Whitney test there was no statistically significant difference concerning data of home and visitor teams, with the exception of counterattacks (p = 0.012). In particular, it was observed that the home teams performed more counterattacks (5.22 ± 0.90) than visitor teams (3.88 ± 0.76). However, between the winning and defeated teams there was a significant statistical difference in several variables. Specifically, the winning teams made more 6m. throws (31.80 ± 1.77) from the defeated ones (27.31 ± 1.63) (p = 0.000) and achieved more goals (20.05 ± 1.40) than the defeated (13.73 ± 0.99) (p = 0.000). Also, the winning teams made more counterattacks (5.67 ± 1.07) than the defeated teams (3.51 ± 0.57) (p = 0.002). The winning teams scored better in their defenses, with their goalkeepers performing 13.40 ± 0.94 saves against 11.82 ± 1.11 saves from goalkeepers of the defeated teams (p = 0.004). Still the winning teams performed more defensive blocks (2.25 ± 0.51) against the defeated teams (1.49 ± 0.40) (p = 0.006). The defeated teams made more technical and tactical mistakes and in particular they made more "steps" and 3" errors (2.15 ± 0.35) than the winning teams (1.65 ± 0.41) (p = 0.047) and more passing errors (6.31 ± 0.93) comparing with the winning teams (4.00 ± 0.69) (p = 0.003). Finally, the winning teams achieved more ball steals (4.22 ± 0.73) from the defeated teams (2.73 ± 0.53) (p = 0.001).

Table 7 shows the results of the U-Mann-Whitney test on home and visitor teams.
Table 7. U-Mann-Whitney homogeneity test of home and visitor teams.

U-Mann - Whitney			
Home teams vs Visitor teams			
Variable	U	z	p
6m. Throws	1621,0	-0,942	0,3467
6m. Goals	1594,0	-1,084	0,278
9m. Throws	1788,0	-0,063	0,950
9m. Goals	1732,5	-0,358	0, 21
Penalty throws	1681,5	-0,631	0,528
Counterattacks	1326,5	-2,505	0,012*
Quick throw-off	1492,0	-1,721	0,085
Goalie's saves	1456,5	-1,809	0,070
Defense blockings	1660,5	-0,758	0,448
Offensive fouls	1650,0	-0,814	0,416
Steps , 3´´errors	1708,0	-0,499	0,618
Passing errors	1661,0	-0,735	0,463
Ball steals	1727,5	-0,385	0,700

Statistically significant difference among teams p = 0.05

Table 8 presents the results of the U-Mann-Whitney test on the winning and defeated teams.

Table 8. Homogeneity test of U-Mann-Whitney data of winning and defeated teams.

U-Mann - Whitney test			
Winning teams vs Defeated teams			
Variable	U	z	p
6m. Throws	873,5	-4,051	0,000*
6m. Goals	497,5	-6,246	0,000*
9m. Throws	1485,0	-0,485	0,628
9m. Goals	1281,5	-1,683	0,092
Penalty throws	1237,0	-1,955	0,051
Counterattacks	1047,5	-3,051	0,002*
Quick throw-offs	1439,0	-0,791	0,429
Goalie's saves	1073,5	-2,887	0,004*
Defensive blockings	1110,5	-2,756	0,006*
Offensive fouls	1415,0	-0,919	0,358
Steps, 3´´errors	1237,0	-1,987	0,047*
Passing errors	1063,0	-2,956	0,003*
Ball steals	1001,5	-3,333	0,001*

Statistically significant difference among teams p = 0.05

Discussion

Regarding to the 6m throws, from all teams an average of 29.34 ± 1.22 throws took place, of which 16.76 ± 0.98 resulted in goals. The home teams made 29.85 ± 1.54 throws, of which 17.17 ± 1.31 ended in goals (Table 2), while visitors made 28.83 ± 1.89 throws, of which 16.35 ± 1.47 resulted in goals (Table 3). The results of this survey are consistent with those of A Gomez, Lago-Peñas, Viaño, and González-Garcia (2014), who stated that the efficiency for the shot, for the teams that played at home, was higher from the zones in the court that are closer to the goal which means shots from 6 meters or close-distance shots

The winning teams made an average of 31.80 ± 1.77 throws with 20.05 ± 1.40 goals (Table 4), teams with a draw as a result 27.00 ± 4.37 throws with 15.30 ± 3.04 goals (Table 5) and the defeated teams 27.31 ± 1.63 throws with 13.73 ± 0.99 goals (Table 6). Efficiency in throws from 6m. was 57.1% for all teams, 57.5% for home teams, 56.7% for the visitors, 63.1% for the winners, 56.7% for the teams with a draw as a result and 50.3% for the defeated teams. Comparing the results of this research with others, showed that although more shots from the 6m.were made compared to other surveys, their effectiveness was lower and only the winning teams recorded results at levels similar to other surveys. The number of goals scored by the sample teams from the 6m. was similar to the research by Foretić, Rogulj, and Trninić (2010), who for 101 matches of the 2009 Men World Championship , 14.83 goals from 6m, but with fewer throws (22.69). In addition, the survey by Ohnjec, Vuleta, Milanović and Gruić (2008) is similar, who, for the 60 games of the Women World Cup matches of 2003, presented as a result 14.1 goals from 6m. but also with fewer throws (22.3).

The results of the present investigation show a higher efficiency compared to those reported by Vuleta, Sporiš and Milanović (2015), for the winning and defeated teams. These writers report about the 2012 Olympics Preliminary Round Games for the 6m throws, for the winning teams 24.9 throws with 12.9 goals and for the defeated 28.7 throws with 10.6 goals. In comparison to other studies, efficacy was calculated lower. Taborsky (2008), for the men's and women's matches at the Beijing Olympics, estimated the effectiveness of the 6m throws to 61.5%. Ferrari, Dos Santos and Vaz (2014), based on European Championship 2011/2012 data, calculated the effectiveness of the 6m throws, for defeated teams at 63.0% and for winnings at 67.7%. Finally, Gruić, Vuleta, and Milanović, D. (2007), for the 2003 World Championship, estimated the effectiveness of the 6m throws to 62.5%.

All teams on average, they made 13.16 ± 0.76 throws from 9m. achieving 5.51 ± 0.47 goals. Home teams performed 13.07 ± 1.09 throws, of which 5.58 ± 0.68 resulted in goals (Table 2) and the visitor teams performed 13.25 ± 1.07 throws with 5.43 ± 0.66 goals (Table 3). The winning teams had 12.85 ± 1.17 throws from the 9m. of which 5.93 ± 0.78 resulted in goals (Table 4), teams with draw results 12.80 ± 2.72 throws with 5.40 ± 1.47 goals (Table 5) and the defeated teams 13.53 ± 1.08 throws with 5.11 ± 0.41 goals (Table 6). Efficiency in 9m.throws were 41.9% for all teams, 42.7% for the home team, 41.0% for the visitors , 46.1% for the winners, 42.2% for the teams with a draw as a result and 37.8% for the defeated teams.

With regard to the number of goals from 9m, the results of the survey were similar to other surveys. Vuleta et al. (2015), presented for 9m throws, 8.3 throws with 6.2 goals for the winning teams and 6.7 throws with 4.2 goals for the defeated. Ohnjec et al. (2008), reported an average of 22.7 throws from the 9m. with 7.7

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goals. Taborsky (2008), calculated 19.9 throws from 9m. with 7.3 goals and their effectiveness at 37.1%. However, in relation to some other studies, variations were observed. Foretić et al. (2010) presented an average of 21.8 throws from 9m. with 8.6 goals. Gruić et al. (2007), calculated the efficacy at 38.5%. Ferrari et al. (2014), calculated the effectiveness of 9m.throws for defeated teams at 41.0% and for winning teams at 52.3%. In general, we would say that in contrast to the 6m throws, the effectiveness of the teams in this investigation in the 9m throws was calculated at higher levels compared to other surveys, with the exception of Vuleta et al. (2015).

Penalty throws for all teams were 3.33 ± 0.32 on average. More specifically, home teams had 3.22 ± 0.43 (Table 2), visitors 3.43 ± 0.47 (Table 3), winning teams 3.71 ± 0.51 (Table 4), teams with a draw result 2.60 ± 1.10 (Table 5) and the defeated 3.07 ± 0.41 6). The average of penalty throws for the teams from our own research is a bit lower than the Taborsky (2008) and A Gómez et al. (2014). Taborsky (2008), for the men's and women's games at the Beijing Olympics, estimated 3.9 penalty throws for each team, while A Gómez et al. (2014), from the Spanish Championship data (2012/2013), showed, concerning high level teams, an average of 3.5 penalty throws.

Counterattacks for all teams were calculated at an average of 4.55 ± 0.60. In particular, 5.22 ± 0.90 from the home teams (Table 2), 3.88 ± 0.76 from the visitors (Table 3), 5.67 ± 1.07 from the winning teams (Table 4), 4.10 ± 1.53 from the ones with draw as a result (Table 5) and 3.51 ± 0.57 from the defeated teams Table 6). The percentage of counterattacks for the total of throws is relatively low and for all teams it was estimated at 9.9%. The counterattack rate was 11.3% for the home teams, 8.5% for the visitors, 11.7% for the winners, 9.7% for the draws and 8.0% for the defeated teams. The above results are in line with the Bilge (2012) estimates for Olympic, World and European Championships in the 2004-2012 season who calculated an average of 5.7 counterattacks. Differences were observed regarding Taborsky (2008) investigations, who calculated 7.8 counterattacks in the Olympic Games and regarding Ohnjec et al. (2008) for the Women World Championships in 2003, where it was calculated an average of 6.4 counterattacks. As for the percentage of counterattacks against the total number of attacks, Ormanidou (2013), for the 2011 Men's Junior World Championship, calculated them at 22.8%, while Bairlis (2018) for the A1 Men's Greek Championship of 2016, calculated at 23.4% of which 59.9% ended up at a throw to the goal.

The quick throw-off percentage made from all teams was 1.23 ± 0.27. From home teams, 1.45 ± 0.40 quick throw-offs (Table 2), from the visitors 1.02 ± 0.37 (Table 3), from the winning teams 1.44 ± 0.45 (Table 4), the ones with a draw as a result 0.40 ± 0.52 (Table 5) and the defeated 1.18 ± 0.37 (Table 6).

The goalkeepers' saves for the total of teams teams were 12.47 ± 0.71 on average. For the home teams it was 13.10 ± 1.03 (table 2), for the visitors 11.83 ± 0.97 (Table 3), for the winning 13.40 ± 0.94 (Table 4), for the draws 10.90 ± 2.60 (Table 5) and for the defeated 11.82 ± 1.11 (Table 6). The effectiveness of goalkeepers for all teams was 33.91%, for the home teams 35.89%, for the visitors 32.40%, for the winners 39.52%, for the draws 32.54% and for the defeated teams 29.39%.

The results of the present research, both for the total number of goalkeepers' saves and their effectiveness, were found to be in line with those of other researches. Šibila, Bon, Uroš and Pori (2011), for the 2002-2010 European Men's Championships, calculated a median of 14.7 for 2006, 13.77 for 2008 and 13.90 for the year 2010. Bilge (2012) for the men's Olympic, World and European Championships reports 13.91 saves for the goalkeepers. Daza, Andrés and Tarragó (2017) for the 2015 Men's World Championship counted 13.09 for the winning teams and 10.37 for the defeated team. Skarbalius, Pukėnas and Vidūnaitė (2013) for the 2010 European Men's Championship reported the effectiveness of the goalkeeper in 33.6% for the winning and 29.4% for the defeated teams. Loizos (2015), investigating two high-level team goalkeepers of the Greek Championship, estimated their effectiveness at 33%. Finally, Macovei (2008) estimated the efficiency at 31% for the 2008 European Championships. Generally, for all research teams, the effectiveness of the goalkeeper ranged to similar levels to that of other surveys, but there was a big difference between winning and defeated teams in relation to the research and estimates of Skarbalius et al. (2013).

The defensive blocks average for all teams was 1.81 ± 0.31. For the home teams there were 1.80 ± 0.48 (Table 2), for the visiting teams 1.82 ± 0.40 (Table 3), for the winning 2.25 ± 0.51 (Table 4), for the draws 1.10 ± 0.74 (Table 5) and for the defeated 1.49 ± 0.40 defensive blocks (Table 6) on average. The median of defense blocks is much lower compared to other surveys and this was also observed for the winning teams. Daza et al. (2017) showed 3.29 defensive blocks for the winning teams and 2.09 for the defeated teams. Vuleta et al. (2015), studying 30 handball matches at the 2012 Olympic Preliminary Round, counted 3.8 defensive blocks for the winning and 2.0 for the defeated teams. Skarbalius et al. (2013) for the 2008 European Men's Championship reported 3.7 defensive blocks for the winning teams and 2.6 for defeated. Finally, Šibila et al. (2011) showed for the European Men's Championships the defense blocks at a median of 3.73 for the year 2004, 3.06 for 2006, 3.28 for 2008 and 3.29 defensive blocks for the year 2010.

For the defense elements that result in an attacking error, or when it stems from the inability of the attack, from the present research data were calculated offensive fouls at an average of 1.83 ± 0.30 (home teams 1.95 ± 0.43, visitors 1.72 ± 0.41, winning teams 1.75 ± 0.51, draw results 2.10 ± 0.68 and defeated teams 1.87 ± 0.38) (Tables 2,3,4,5,6). Steps and 3" errors averages were calculated at 1.84 ± 0.26 (home teams 1.77 ± 0.36,

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visitors 1.92 ± 0.38, winning teams 1.65 ± 0.41, draw results 1.20 ± 0.70 and defeated teams 2.15 ± 0.35) (Tables 2, 3,4,5,6). The passing errors were found to be on average 5.00 ± 0.58 (home teams 4.90 ± 0.87, visitors 5.10 ± 0.76, winning teams 4.00 ± 0.69, draw result 3.30 ± 1.01 and defeated teams 6.31 ± 0.93) (Tables 2, 3,4,5,6). The ball steals were on average 3.39 ± 0.44 (home teams 3.43 ± 0.62, visitors 3.35 ± 0.63, winning teams 4.22 ± 0.73, draw results 2.50 ± 0.67 and defeated teams 2.73 ± 0.53)) (Tables 2,3,4,5,6). Total errors for all teams were 12.07 on average. For the home teams it was 12.05, for the visiting teams 12.08, for the winning teams 11.62, for the teams with draw results 9.10 and for the defeated teams 13.05 errors (Tables 2, 3, 4, 5, 6).

The number of total errors for the teams of this research was estimated to be similar to the data of other researches. Bilge (2012) analyzing the Olympic, World and European Championships 2004-2012 Men's Handball reports 12.11 errors. Vuleta et al. (2015), for the Preliminary Round of the Olympic Tournament in 2012, he calculated 11.3 offensive errors for the winning teams and 13.8 for the defeated teams. A difference was observed in the investigations of Ohnjec et al. (2008) and Gruić et al. (2007). Ohnjec et al. (2008), for the 2003 World Championship presented, 17.33 offensive errors. Gruić et al. (2007), for the 2003 World Championship games reported 15.68 offensive errors.

The average of ball steals for this research teams is lower than other researches. Šibila et al. (2011) for the European Men's Leagues have calculated the steals at 4.87 for the year 2004, 4.19 for 2006, 4.07 for 2008 and 3.12 for the 2010 steals. Daza et al. (2017) reported 4.64 steals for the winning teams and 4.06 for the defeated.

Finally, from Table 7 it was shown that the only statistically significant differences between the hosts and the visitor teams of the present study were only in counterattacks $p = 0.012$. Gutiérrez Aguilar, Fernández Romero and Saavedra García (2014) said that the advantage that results for better performance when a team plays at home is called home advantage (HA). The same authors reported the existence of a home advantage (HA) in many team sports and also in handball. More specifically, A Gomez et al. (2014) said that (HA) was related to the final result and also in European Leagues it had a rating of 61% to 66%. Lago-Peñas, Gómez, Viaño, González-García and Fernández-Villarino (2013) reported that in the Spanish Handball League the values of the (HA) in his study and in the study of Oliveira, Gómez and Sampaio were among 61.95% to 64%.

Finally, Table 8 showed statistically significant differences between winning and defeated teams. In particular, there appeared to be differences in the variables, throws and goals from 6 meters $p = 0.000$, in counterattacks $p = 0.002$, in goalies saves $p = 0.004$, in defensive blocks $p = 0.006$, in steps and in 3 seconds errors $p = 0,006$, in passing errors $p = 0.003$ and in the steals of the ball $p = 0.001$. In all the above variables the winning teams dominated, having better values. Therefore the above variables are important and determine to a certain extent whether a team will win or lose.

Conclusions

Consequently, we would say that the Greek Championship handball matches are sometimes similar and sometimes different comparing to the foreign championship matches. More specifically, the total throws that the Greek teams are attempting, we would say that they are more than the throws on international level. In addition, the effectiveness of the 6-meter throws is also greater than the effectiveness seen in non-Greek leagues. With regard to the 9-meter throws, Greek teams are making fewer throws than those in other championships. Similarly, the 9m. goals achieved by the Greek teams are also less compared to the foreign championships. The penalty kicks in the Greek leagues show the same frequency as the foreign championships frequencies. In counterattacks, the Greek teams are attempting less than they do in foreign leagues. Correspondingly, the percentage of counterattacks in total throws is also low compared to non-Greek championships. Still, the saves of the goalkeepers seem to be in line with earlier researches in Greece as well as abroad. In addition, the defensive blocks of the Greek championships appear to be lower than those applied globally, while the number of total errors in Greek championship seems to be in line with the Olympic, World and European Championships.

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