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THE IMPORTANCE OF ANTICIPATION IN INCREASING THE DEFENSE EFFICIENCY IN HIGH PERFORMANCE HANDBALL

E. BALINT [1] I. CURIȚIANU

Abstract: *This study allows us to analyze by comparison the evolution of teams ranked on the first three positions in the editions XXI and XXII of the Men's Handball World Championship in terms of physical involvement of players in solving concrete issues of attack and defense. Therefore, the parameters of the game set to be evaluated in terms of the involvement of their capacity to anticipate and to take decisions of the players are: the 7m throw, fast break and fast attack, overtaking actions and breakthroughs, assists, technical faults committed in attack, interceptions, blocke shoots, closing lanes of breakthrough and the breakthroughs applied to players that behave beyond regulations*

Key words: *high performance handball, defense, anticipation, efficiency, fair play.*

1. Introduction

At each big annual world reunion the participating teams surprise us by applying innovations in the field of competition. If modern handball gets a more outline issue regarding simplifying the attack actions, in defense appear new features of some teams, particularly male, based on a high mobility of the players, dynamism, activation and high efficiency [2],[3]. These statements are founded on theoretical interpretations drawn from studies conducted at major competitions - Olympic Games, World Championships, European Championships. Beside the exceptional training of the players, at the dynamic of the game contributed the amending Regulation (2010), freedom in interpreting the actions of the game by the referees, particularly passive play but also the accent on "actors in the arena" to create the sports performance. In support of the last argument, tactical thinking is a big part of the team [4],[6]. Creativity, practical intelligence, alternating circulation of the ball and players and the speed of application have led to changes in the concept of the game for both compartments. Therefore, modeling training brings coaches in the center stage, ways of training with high exercises percentage that have been modeled very close to those of the actual game forms, competitive games carried out in resembling stress conditions like in the official large scale [1], [5], [8].

The players 'behavior engaged in motor type body activities, in many ways skills are expressed in improved capacity of controlling

[1] *Transilvania* University of Brasov, Faculty of Physical Education and Mountain Sports.

the acts of motion, managing of the body with speed and accuracy and of taking timely decisions. At the basis of accomplishments stays to large extent psychomotor components, especially ideomotricity as dynamic synthesis of body scheme and perceptive-motor coordination with motor task to achieve as it claims [7], [8].

Applied within the handball game, especially in defense all this joined together harmoniously with a very good physical condition, technical mastery, mental training and game strategy determines the athletic performance. Only in the training and education process a player becomes a responsible defender and training makes him effective in his mental structure, in mastering the technical and tactical actions and educates physical capacity at a high level [9],[10] The basic rule of defense is keeping the physical contact permanent with the opponent, relying on its temporary removal from the gate acquired by regulations, leading it to the desired areas of defense and not those of the strikers [11], [13]. Permanent harassment of the attackers must have as support a very good physical condition. The layout of a player in an advanced defense requires a great effort but gives them more opportunities to decide in anticipating actions or react to other actions using initiatives. Both are complementary and should be dominated by defenders [12], [14].

Mentally speaking, anticipation is the main capacity of a defender and training makes him able to understand, analyze information and apply them in the game, especially when he is using the individual tactical actions with which the player is facing real situations in the game. He must choose the best solution in order to overcome the enemy through his constantly immediate actions, options that must be conditioned and adapted to the game teammates [15], [16].

The decision of prediction is based on the ability of perceiving the game, to know how to act on instructions given by the subtle movements of the attackers, some of them made just behind the defenders, the line players position, for example, coordinating to everyone's tasks in order to fulfill and guide actions taken in coordination with the tactical objectives. This psychomotor component is involved in the action when the defender is forced to surprise his opponent by changing his behavior. Effective enforcement of anticipation depends on the ability to continuously observe the actions of the opponents, gaining experience in this regard and to know how to select those that meet the real situation. In a game, players have a multitude of intentions regarding the game strategy and the most efficient player is not the most knowledge but he is the one who chooses the solution and adapts his behavior more quickly and efficiently to the sequence of the real actions of the opponent [17], [18].

The personality characteristics related to each player are also very important in achieving predictive actions. Physical and mental commitment, courage, warrior qualities - dynamic and anticipatory creating doubts among opponents, imposing time limits and space in action are among the most important attributes of the defender [19].

2. Materials and methods

The research had as an object of study the efficiency of the behavior of players participating in the World Cup final of men's handball, XXII edition witch was held in Sweden from 13 to 30 January 2011, compared to the efficiency of the behavior of players participating in the World Cup male handball, XXI edition - held in Croatia from 16 January to 1 February 2009.

2.1. Groups and subjects

- The experimental group represented by the France, Spain and Denmark teams, occupants of the first three places in the overall standings, each consisting of 18 male subjects, with ages between 21-37 years;
- The control group represented by teams France, Croatia and Poland, the occupants of the first three places in the overall standings, each consisting of 18 male subjects, with ages between 21-35 years.

2.2. Applied tests

We used the studying of the video of games performed to highlight the anticipation of the opponent actions and decisions taken, based on its reaction to various individual and collective tactical maneuvers used in attack and defense.

To achieve the analysis of the team behavior and the players performance the official games were recorded and then examined in detail on the problems and tasks of the study hypothesis. For this purpose, we used the video and computer equipment with which were evaluated the teams behaviors and the transcription of the data was reflected in a record sheet summarized after the statistics provided by the International Handball Federation [1], [3] and that had several parameters regarding the attack and defense.

2.3. Statistical methods used

The data were processed statistical and mathematical using the significance of the difference between the average, unrelated samples performed graphical and descriptive using Microsoft Excel application.

The parameters on which we turned were:

- 7m throw received as sanctions and their efficiency;
- Number of fast breaks and their efficiency;
- Technical fouls made in attack;
- Assists;
- The percentage of successful interceptions of all defense actions;
- Blocking the shoots at the gate;
- Closing breakthroughs and lanes of breakthroughs;
- Errors made and sanctions received by the defenders;

The obtained data led us to establish the model of fast attack, aiming the number of attack actions and goals scored as well as the efficiency of overruns, penetration and assists, and for defense the playing model of the individual and collective game and the effectiveness of defense tactical actions for each experimental group separately.

2.4. The working hypothesis

It started from the assumption that if a high performance handball team has players with a high degree of intelligence and tactical thinking, along with a well built psycho-motricity support, technical and tactical skill but also competition experience, perhaps at a moment of its evolution, to position itself successfully in a top-level worldwide competitions, achieving a profile of the game based on rationality in action.

2.5. The research results

Throughout the competition there were recorded, centralized by observation sheets and analyzed 60 games, played by the teams included in the experimental groups. Statistical processing, interpretation and graphic representation of the data revealed the importance of anticipation in the defense efficiency for the first three teams over 10 official games, in both editions of Men's

Handball World Championship [20–23]. Some of the defense parameters observed were based on the defense ability to anticipate the actions of the opponents in attack, situations that were recorded in the games carried out by the teams under study. The offensive and defensive parameters the game expected to be recorded and analyzed are presented in Tables 1, 2, 3, 4, 5, 6, 7 and Figures 1. 2. 3.

Table 1

The parameters of attack in the experimental group at World Championship 2011

Team	PM	7 m throw		Fast Breaks		Overcomes / Breakthroughs	
		Goals / Shoots	%	Goals / Shoots	%	Goals / Shoots	%
Experimental Group							
France	10	29/41	71	56/63	89	56/66	85
Denmark	10	20/22	91	29/41	71	54/68	79
Spain	10	41/53	77	39/58	67	47/67	70
Total	30	90/116	79,6	124/162	75,6	157/201	78

Table 2

The parameters of attack in the control group at World Championship 2009

Team	MP	7 m throw		Fast Breaks		Overcomes / Breakthroughs	
		Goals / Shoots	%	Goals / Shoots	%	Goals / Shoots	%
Control Group							
France	10	30/37	81	46/56	82	66/98	67
Croatia	10	28/34	82	59/75	79	59/83	71
Poland	10	26/34	76	57/78	73	48/71	68
Total	30	84/115	79,6	162/209	78	173/252	68,6

Table 3

Attack and defense parameters of the experimental group at the World Championship 2011

Team	MP	Defense		Offense		
		Assists	Technical fouls	Interceptions	Blocked throws	Close breakthroughs and breakthrough lanes
France	10	127	129	42/485*	49/485*	50/485*
Denmark	10	134	106	28/515*	44/515*	38/515*
Spain	10	122	133	63/483*	27/483*	52/483*

* Defense situations MP – matches played

Table 4

The parameters of attack and defense made by the players from the experimental group at the World Championship 2011

Team players	MP	Defense		Offense		
		Goal	Assists	Intercep-tions	Blocked throws	Close breakthroughs and breakthrough lanes
Hansen Mikkel (DAN)	10	68	34	5	9	6
Nicola Karabatic (FRA)	10	51	34	7	10	7
Entrerrios Rodriquez (SPA)	10	30	32	4	5	4

Table 5

The parameters of attack and defense realize by the control group at World Championship 2009

Team	MP	Defense		Offense		
		Assists	Technical fouls	Interceptions	Blocked throws	Close breakthroughs and breakthrough lanes
France	10	116	121	57/343*	34/343*	47/343*
Croatia	10	127	126	46/355*	29/355*	35/355*
Poland	10	129	143	49/400*	41/400*	46/400*

Table 6

The parameters of attack and defense perform by the players of the control group at World Championship 2009

Team players	MP	Defense		Offense		
		Goal	Assists	Intercep-tions	Blocked throws	Close breakthroughs and breakthrough lanes
Cupic I. (CRO)	10	66	5	3	2	4
Tluczynski T. (POL)	10	58	4		2	2
Abalo L. (FRA)	10	47	10	15		
Karabatic N. (FRA)	10	45	36	6	9	6
Lijewski M. (POL)	10	34	25	3	2	6

Table 7

Regulation penalties received in response to errors committed in defense by the experimental group and control group

Experimental Groups		Yellow Card	2 minutes suspension	Red Card
Experimental Group	France	29	31	0
	Denmark	29	24	0
	Spain	26	33	1
Total penalties		**84**	**88**	**1**
Control Group	France	28	19	1
	Croatia	32	35	1
	Poland	33	39	0
Total penalties		**93**	**93**	**2**

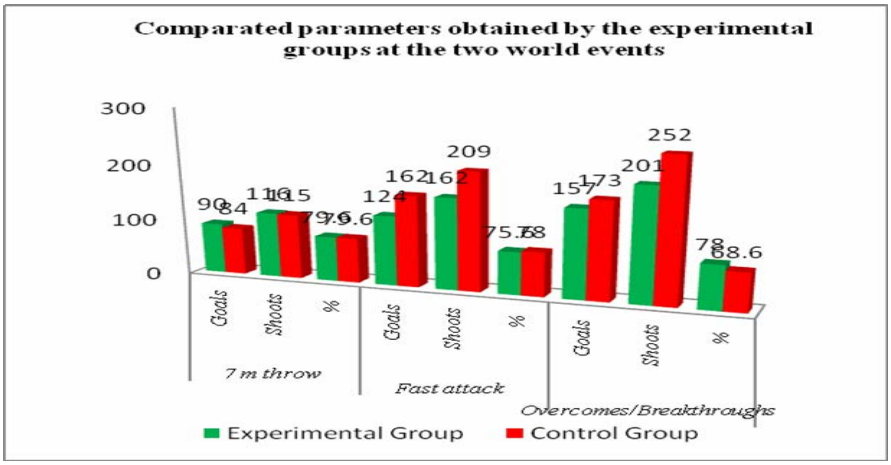

Fig. 1**.** *Comparative representation between the results obtained from the two experimental groups*

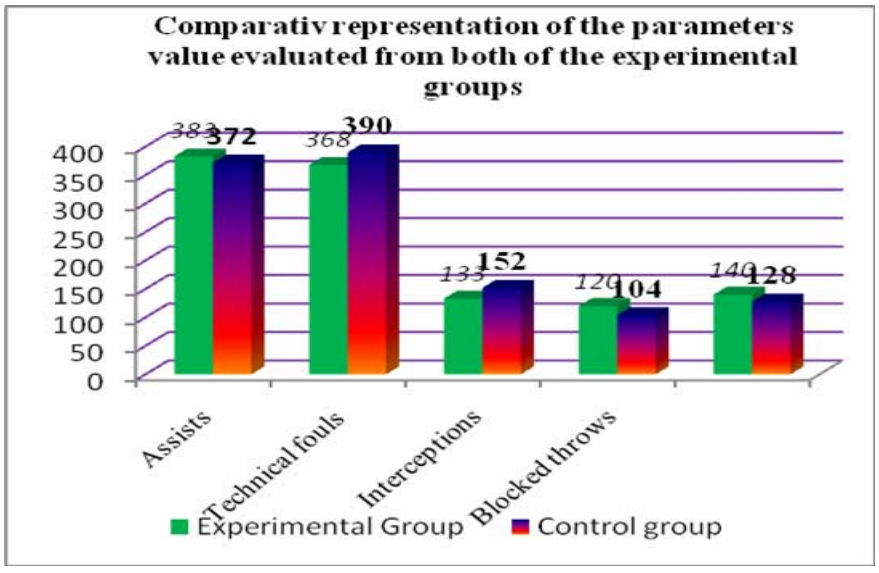

Fig. 2. *Compared representation between the results obtained from the two experimental groups*

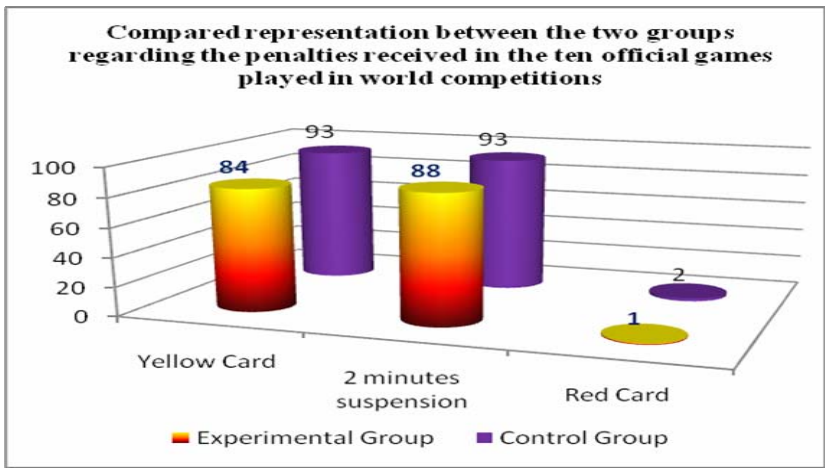

Fig. 3. *Compared representation between the results obtained from the two experimental groups*

3. Discussion of the results

The 7m. throws given for the teams in attack are the result of a brutal behavior performed by the defense game, out of regulation limits, but also the impetuosity of the attackers breakthroughs on their way to the opponent gate.

Therefore, the experimental group has benefited from 116 throws, scoring 90, with a 79,6% efficiency. Denmark team achieved 22 throw, completing 20 with goal and an efficiency of 91%. Spain is ranked second at the percentage of success, she benefited of 53 throws with 41 goals and an efficiency of 77%. Regarding France, out of 41 throws they scored 29 goals and had an efficiency of 70,8%. (Tables 1, 2 and Figure 1). The best markers were: Guigou M. 17/22 with an efficiency of 77.3% and Joli G. 10/15 and 66,7 efficiency (France), Lars C. 14/14 with 100% success and Jensen A. 6/8 75% achievement (Denmark), Iker R. 26/33 with 78,8% efficiency and Cañellas R. 8/9 with an efficiency of 88,9%. (Spain)

The control group had a total of 115 throws, a success of 84 and an efficiency of 79,6%. Croatia has received 34 throws, 28 expressed in goals and an efficiency of 82,3%, France 37, of which has scored 30 goals with 81% success and Poland gained 34 throwing from which marked 26 having an efficiency of 76%. Players who were noted at this parameter were Cupic I. (Croatia) with 27 goals in 30 throws 90% efficiency, Guigou M. (France) 24 goals out of 26 throws and an efficiency of 92%.

The large number of 7m throws reveals the speed and aggression of the attack the determination and ardor with which teams defended, most of the time using a tactical maneuver at the limit of the regulation which resulted in sanctioning the team with punishment throws.

Regarding the fast break carried out after the interception or recovery of the ball, the situation is as follows:

- The experimental group has a total of 162 fast breaks, 124 goals and an efficiency of 75,6%. France has an 89% success percentage, 56 goals in 63 cases; Denmark is ranked second with 71% efficiency - 29 goals in 41 cases of fast break, and Spain has 67% percentage, with 39 goals in 58 fast attacks.

- The control group had 209 cases of fast attack and fast break with the registration of

162 goals with an efficiency of 78%. France score 46 goals in 56 situations with 82% efficacy, Croatia 59 goals in 75 cases and an efficiency of 79% and Poland 57 goals in 78 situations and an efficiency of 73%.

Taking into study and evaluating the two others parameters of the attack - overrun and breakthroughs that have as a result the presence of mind of the players, determination and decision in the actions of the attack, we obtained the following values:

- Experimental group had 201 tactical situations in which they applied individual actions in attack, they scored 157 goals achieving the general efficiency of these parameters of 78%. The team of France had an efficiency of 85% with a total of 56 goals in 66 actions, Denmark 79% with 54 goals in 68 shares and Spain 78% efficiency with 47 goals from 67 cases.
- The control group has a total of 252 individual actions in attack with 173 goals and an efficiency of 68,6%. Among these there was noted Croatia with a total of 83 situations, 59 goals, with a success percentage of 71%, Poland, 71 actions, 48 goals and an efficiency of 68% and France with 98 individual actions in attack, 66 goals and 67% efficiency.

Assists represent a key parameter in analyzing modern game, highlighting the skills of the one that realizes them, the ability to anticipate and the decision of choosing the best moment and technique. In the study and analysis that we have conducted we observe that these assists were sent to either the line player, wing player or back player who occupied favorable placements making best use of the attack action. In the experimental group the first place is occupied by Denmark team with a total of 134 assists ended with goal, then France with 127 and Spain 122 and the best players were M. Hansen, (Denmark) 34, Karabatic N. (France) 34 and Entrerrios R. (Spain) 32. From the control group Poland achieved 129 assists, 127 and France, Spain with 116 assists, the teams and the players in the control group obtained the following values regarding the assists: N. Karabatic (France) 36, Vori I. (Croatia) 26 and Lijewski M, (Poland) 25.

For the defense game we analyzed interceptions, blocking shoots and closing lanes of breakthroughs made by the defender. The experimental group had 133 situations of interception out of 1483 defense situations, representing a percent of 8,9% from a total of possession of the ball, 120/1483 defense situations (8%) blocked shoots and 140/1483 defense situations (9,4%) individual and collective actions to close the lanes for the breakthroughs.

The control group received 152 (13,8%) of 1098 cases of interception in defense, 104 (9,4%) blocked thrown at the gate / 1098 defensive situations and 128 (11,6%) individual and collective actions for closing lanes of breakthroughs / 1098 defense situations.

We noticed the superiority of the control group at these defense parameters, which indicates a more aggressive tendency of the players to take more and critical decisions. These defensive actions have had negative consequences on the players and implicitly on the team by registering deviations from the rules of the game. Changing some rules has had influence on the behavior of the players and the penalties received by them. The experimental group showed at the World Championship in 2011, 173 penalties, 84 yellow cards, 88 2- minute suspension and a red card. France had 29 yellow cards, 31 of 2 - minute suspension, Denmark 29 yellow cards, 24 players eliminated for two minutes, and Spain was sanctioned with 26 yellow cards, 33 players eliminated for 2-minutes and 1 red card.

Compared with the other group, the control group "acquired" 188 disciplinary sanctions, 93 yellow cards, 93 of 2-minute suspension and 2 red cards. The teams in the control group, Poland received 33 yellow cards and 39 2-minute sanctions, Croatia 32 yellow cards, 35 of 2-minute suspension and 1 red card, France 28 yellow cards, 19 of 2 minute suspension and 1 red card. Statistics show that the number of penalties accumulated by the first three teams of the general classification decreased with 9% in the 2011 edition of the World Championship compared to the World Championship in 2009.

4. Conclusions

1. The use of individual tactics of attack and defense has a high percentage in the game and efficacy in applying these tactics. From the study we see the tendency to give "controlled freedom" to the defender, in performing individual actions but following the established tactical plan.
2. Training in the game of the whole team of the collective actions primarily and on the individual actions occasionally complete the situational events, applying standardized collective actions takes place in a rational and creative way, especially when using advanced line defense (6:0) or attack in the system but whose efficiency depends on the physical, technical and mental possibilities of the players. Collaboration and networking between players in the defense situations aim the efficiency of certain areas of the field and thus they need to be trained for having a higher rate of success within the defense.
3. The increase of the physical ability has a essential role in supporting specific efforts imposed by the competitions, but also reduces the large number of sanctions in the game (18.8 for the control group and 17.3 for the experimental group) that occur because of the high physical fatigue, lack of decision and anticipation or because of the physical and technical training inconsistent with the athletes status.

5. Practical and methodological recommendations

1. The permanent concern of the coaches responsible for training national teams should be therefore to be updated with all the latest news of the specialized research that occur in the domain and which are currently published in journals of study abroad and beyond;
2. Without a high level of technical skill the established objectives can't be successfully resolved through the tactical plan. That is why an important point in training should be the continuous raising of the execution level of the technical content.
3. Questioning training is also a goal to pursue. Preparing tactical training must provide multiple ways to solve a task in direct confrontation with the opponents from the game.

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