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Original Article

Peculiar features of competitive activity of qualified wheelchair basketball players

ZHANNA GRASHCHENKOVA[1], MAKSYM MISHYN[1], ANDRIY OKOPNYY[2], MARYAN PITYN[2], YAROSLAV HNATCHUK[3]
[1] Kharkiv State Academy of Physical Culture, Kharkiv, UKRAINE
[2] Lviv State University of Physical Culture, Lviv, UKRAINE
[3] Khmelnitsky national university, Khmelnitsky, UKRAINE

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Abstract.

In wheelchair basketball, competitive activity is of complex character that is stipulated by players having different degrees of malfunctions of musculoskeletal system. Despite universalisation of technical and tactical actions in present-day basketball, players of different positions have different manners of running competitive activity and have different efficiency of competitive activity. ***Aim of research*** is to analyze peculiarities of competitive activity of qualified athletes in wheelchair basketball. ***Organization***. The research was done in two stages. At the first stage, we analyzed technical and tactical actions of 189 athletes (including 47 athletes of 1-1.5 functional class, 41 athletes of 2-2.5 functional class, 46 athletes of 3-3.5 functional class, 55 athletes of 4-4.5 functional class) listed in official statistics protocols of Men's World Championship games organized by International Wheelchair Basketball Federation. ***Results***. The most effective means related to handling a basketball wheelchair for players of all functional classes are actions done with two hands: pushing a wheelchair forward with both hands simultaneously, executing a stop with two hands (107 – 138 times), turns in motion done with two hands (112- 130 times), turns on the spot done by both hands (84 – 103 times). Use of other elements of basketball wheelchair handling technique is also rather important. It is related to the fact that players must master new range of required auxiliary actions when handling a basketball wheelchair, which will correspond to the volume of actions of each player. Increase o the number of motion actions related to handling a basketball wheelchair with one hand, allows increase of efficiency of technical actions with the ball. Quick and accurate execution of motion actions, ability to choose the most rational means of execution, and broadening of the range and variability of methods of handling a basketball wheelchair allows versatile use of a player's individual abilities and increase of athletes' professional growth.

Keywords: wheelchair basketball, players, analyze, competitive activity.

Introduction

A number of researchers assume that defining key components of implementation of competitive activity by players of various qualifications is one of topical trends in research of sports games. Competitive activity in wheelchair basketball has its own specific features, which calls for special analysis and pedagogical surveys (Perederiy, 2006; Pityn, 2011).

To define efficiency of basketball players' competitive activity, basic technical and tactical actions are evaluated. Despite universalisation of technical and tactical actions in present-day basketball, players of different positions have different manners of running competitive activity and have different efficiency of competitive activity (Beatriz, 2011; Doll-Tepper, 2001; Mishin, 2010; Molik, 2010; Pityn, 2004).

In wheelchair basketball, competitive activity is of complex character that is stipulated by players having different degrees of malfunctions of musculoskeletal system (Pityn, 2007; Herasymenko, 2016). This makes the process of evaluation of competitive activity more complicated and calls for search of criteria of defining its efficiency, players of various functional classes who are adequate to complexity and multi-factor nature of competitive activity. Objective evaluation of players' actions must be of a complex character that would take into account various aspects of the game and peculiarities of competitive activity, evaluation of which should be done after the tournament, not after each game (Sushko, 2014).

Aim of research is to analyze peculiarities of competitive activity of qualified athletes in wheelchair basketball.

Materials and methods

Methods of research: analysis of data taken from scientific and methodological references, pedagogical survey and analysis of competitive activity, methods of mathematical statistics. ***Organization***. The research was done in

Corresponding Author: MARYAN PITYN, E-mail: pityn@rambler.ru

two stages. At the first stage, we analyzed technical and tactical actions of 189 athletes (including 47 athletes of 1-1.5 functional class, 41 athletes of 2-2.5 functional class, 46 athletes of 3-3.5 functional class, 55 athletes of 4-4.5 functional class) listed in official statistics protocols of Men's World Championship games organized by International Wheelchair Basketball Federation (IWBF). A total of 62 game protocols were analyzed, of which 24 protocols of preliminary round, 24 protocols of the second leg, 6 protocols of games for 5th-16th places, 4 protocols of quarterfinals, 2 protocols of semifinals, 1 protocol of the game for 3rd place, and 1 protocol of the final game. Standard methods of statistical data processing were applied; average and standard deviation were determined.

Second stage envisaged research of indices of competitive activity by the classification of technical and tactical actions elaborated by us (Mishin, 2010; Molik, 2010). At this stage, indices of 48 qualified wheelchair basketball players were analyzed. To reveal specific features of competitive activity of players of different functional classes, 20 game indices of technical and tactical actions that can be relatively divided into two groups: 1) shooting indices; 2) offensive and defensive actions were used.

Results.

Analysis game-action indices showed dominance of players of 3-3.5 and 4-4.5 functional classes, which we believe to be related to lower degree functional damage to the body, compared to 1-1.5 and 2-2.5 classes (table 1).

Table 1

Comparative analysis of efficiency of the use of technical and tactical actions by players of different functional classes on average per game

	Technical and tactical actions	**Functional class**			
		1-1,5 (n=47) $\overline{x} \pm m$	**2-2,5 (n=41)** $\overline{x} \pm m$	**3-3,5 (n=46)** $\overline{x} \pm m$	**4-4,5 (n=55)** $\overline{x} \pm m$
1.	Number of points scored per game (points)	1,79±0,62	3,51±1,30	7,23±1,63	**7,52±1,57**
2.	Number of 2-point shot per game (shots taken)	1,97±0,56	3,38±0,87	6,50±1,34	**6,89±1,24**
3.	Number of successful 2-point shots (shots scored)	0,85±0,29	1,43±0,46	2,90±0,64	**3,12±0,65**
4.	Successful 2-point shots percentage (%)	32,64±6,96	37,66±6,36	43,39±5,30	**41,38±3,86**
5.	Number of 3-point shot per game (shots taken)	0,02±0,015	0,45±0,32	0,79±0,44	**0,58±0,30**
6.	Number of successful 3-point shots (shots scored)	0,003±0,005	0,10±0,09	0,21±0,13	**0,16±0,11**
7.	Successful 2-point shots percentage (%)	16,6±2,12	22,69±3,73	26,84±5,52	**27,58±5,79**
8.	Number of free throws per game (attempts)	0,21±0,12	0,66±0,35	1,38±0,33	**1,44±0,31**
9.	Number of successful free throws (shots scored)	0,08±0,06	0,35±0,27	0,81±0,21	**0,79±0,22**
10.	Successful free throws percentage (%)	39,47±6,99	54,69±10,46	58,97±9,39	**56,33±8,01**
11.	Percentage of shots scored from the game (%)	32,47±6,95	36,44±6,10	41,61±5,29	**40,31±3,73**
12.	Number of assists per game (assists made)	0,29±0,9	0,82±0,27	1,89±0,54	**1,39±0,43**
13.	Number interceptions per game (interceptions made)	0,30±0,08	0,36±0,10	0,70±0,19	**0,67±0,16**
14.	Number of blocks per game (blocks done)	0,019±0,023	0,042±0,025	0,08±0,04	**0,09±0,03**
15.	Number of rebounds per game (rebounds made)	1,11±0,24	1,76±0,51	3,60±0,66	**4,51±0,90**
16.	Number of defensive rebounds (rebounds made)	0,67±0,14	1,24±0,40	2,74±0,52	**3,48±0,73**
17.	Number of offensive rebounds (rebounds made)	0,44±0,14	0,52±0,14	0,86±0,20	**1,02±0,21**
18.	Number of fouls committed by a player during a game (fouls committed)	1,25±0,23	1,12±0,25	1,38±0,24	**1,39±0,23**
19.	Number of ball losses per game (number of times)	0,54±0,12	0,83±0,24	1,34±0,29	**1,19±0,28**
20.	**Playing time (minutes)**	**9:54±1:48**	**10:51±1:40**	**10:31±1:12**	**10:21±1:26**

The results of statistical analysis of the materials shows that average productivity of players varies between 1.79 and 7.52 points scored per game. At the same time, the lowest productivity was shown by players of 1-1.5 functional class (1.79), while the highest – by players of 3-3.5 (7.23) and 4-4.5 (7.52) classes as athletes of these functional classes play mostly as forwards or centers.

Indices of shooting stats were more informative. Thus, on average per game, athletes of 1-1.5 functional class attempt 1,97±0,56 2-point shots and 0,02±0,015 3-point shot, athletes of 2-2.5 class - 3,38±0,87 and 0,45±0,32 respectively, athletes of 3-3.5 class - 6,50±1,34 and 0,79±0,44, athletes of 4-4.5 class - 6,89±1,24 and 0,58±0,30. Significant differences in the number of shots from game show more efficient actions of athletes of 3-3.5 and 4-4.5 functional classes, who due to their better mobility compensate poor performance of athletes of 1-1.5 and 2-2.5 classes.

Analysis of 2-point shots and 3-point shots showed that athletes of all functional classes tend to shoot from middle and close range. Thus, for every 3-pointer in 2-2.5 and 3-3.5 classes, athletes attempt eight 2-pointers, while in class 4-4.5, athletes attempt 12 shots from middle and close range for every long –range shot. Therefore, the number of 2-point shots and their productivity (1-1.5 – 0,85±0,29, 2-2.5 – 1,43±0,46, 3-3,5 – 2,90±0,64, 4-4,5 – 3,12±0,65) directly depends on points scored during the game. This can be proved by practically identical indices of 2-pojnt shots percentage and overall shots from the game percentage. Athletes of 1-1.5 functional class have 32% efficiency on 2-pointers, athletes of 2-2.5 functional class – 38%, 3-3.5 class – 43 and 42%, 4-4.5 class – 41 and 40% respectively.

Indices of successful foul shots greatly depend on players' activity in opponent's paint and opponent's defense activity. Players of 3-3.5 and 4-4.5 class, compared to others, attempt more foul shots (1,38±0,33 and 1,44±0,31), at the same time players of 3-3.5 class show the best foul-shot percentage (59%). Specifics of offensive actions in wheelchair basketball leads to the fact that major number of fouls by the opponent is committed against players of 3-3.5 and 4-4.5 class. It should also be noted that players of 2-2.5 class attempt 0.7 foul shots on average but show high percentage of successful shot (55%).

Timely and accurate passing is characteristic to basketball. The number of assists resulting in scoring varies: players of 1-1.5 and 2-2.5 class – 0.3 and 0.8 on average per game, players of 3-3.5 and 4-4.5 class – 1.9 and 1.4 on average per game respectively.

Assessing the set of defensive actions done by athletes of different functional classes, it should be noted that the highest quantitative indices of players of 3-3.5 and 4-4.5 classes in this game component are determined by players' proximity to the board at the moment of opponent's attack, and by better functional abilities of their body compared to players of 1-1.5 and 2-2.5 classes.

Analysis of average interceptions stats showed that players of 3-3.5 and 4-4.5 functional classes have significant advantage over players of 1-1.5 and 2-2.5 classes. Players of 1-1.5 and 2-2.5 classes complete 0.3 and 0.4 interceptions respectively, while players of 3-3.5 and 4-4.5 classes – 0.7. Differences in the indices are related to the fact that athletes of 1-1.5 and 2-2.5 classes cannot lean sideways and sometimes turn around due to damaged spinal cord.

At present, construction of a basketball wheelchair enables certain high-class players to make block-shots. In general, wheelchair basketball players attempt this action rarely, which is proved by low average indices per game (class 1-1.5 – 0,02, 2-2.5 – 0,04, 3-3.5 – 0,08, 4-4.5 – 0,09).

Significant differences related to the specifics of players' functional points have been revealed by the number of rebounds per game. Rebounding on offense and defense is basically done by players of 3-3.5 class (3.6) and 4-4.5 class (4.5) whose advantage over class 1-1.5 (1.1) and class 2-2.5 (1.8) is obvious. Players of functional class 4-4.5 do 3.5 defensive rebounds on average per game, while offensive rebounds – 1. Players of 3-3.5 class have almost equal indices: 2.8 and 0.9 rebounds. Specific feature of 1-1.5 and 2-2.5 class players positioning in a basketball wheelchair tends to improve athlete's mobility and requires lowering their maximum height, which affects rebounding. Defensive rebounding done by players of these classes ranges from 0.7 to 1.2, while offensive rebounding ranges from 0.4 to 0.5.

Active defensive actions and high tempo in wheelchair basketball result in rules violations from both offense and defense. Errors conditioned by technical flaws (players do their actions incorrectly) occur almost equally for all groups of athletes within competitive activity. Thus, players of class 2-2.5 have 1.1 personal fouls on average per game, while players of 1-1.5, 3-3.5 and 4-4.5 classes – from 1,3 to 1,4. Standard deviation from average indices of fouls in all functional classes ranges within ±0,23–0,25. This shows that the level of technical preparedness of the best players in the world, regardless of the functional point, does not vary greatly.

Intense and high-tempo game in wheelchair basketball results in loss of the ball. Indices of ball losses on average per game ranging from 0.5 to 1.3 also prove high level of technical preparedness of wheelchair basketball players. Minimal number of losses - 0,54±0,12 is specific to players of 1-1.85 class, which is chiefly related to small amount of possession time. The biggest number of losses is specific to athletes of 3-3.5 class (1,34±0,29), which is related to fact that many athletes when sitting in the wheelchair pay more attention to maximum height to the detriment of body stability. Athletes of 2-2.5 and 4-4.5 classes lose the ball 0.83 and 1.19 respectively times on average per game.

Analysis of time on the floor did not show significant differences between athletes of different functional classes, which is related to the specifics of competitive activity in wheelchair basketball based on team balancing rule (14 points limit), according to which players of different classes must be on the floor at the same time. In general, players of different functional classes spend an average of: class 1-1,5 – 9:54±1:48 minutes, class 4-4,5 – 10:21±1:26, class 3-3,5 – 10:31±1:12, class 2-2,5 – 10:51±1:40 per game.

At the second stage of research, indices of the technique of handling a basketball wheelchair by 18 elements have been studied according to the formulated classification (Mishin, 2010). The analysis showed irregularity of using elements of handling a basketball wheelchair by players of different functional classes within competitive activity (table 2).

Data, given in table 2, show that distance that wheelchair basketball players cover ranges from 2915 to 3494 meters. Basic movement workload falls on players of 4-4.5 functional class (3494±426m) as they are always at the edge of attack, pick rebounds (both defensive and offensive), and on players of 1-1.5 class (3265±258m), whose job is to play on defense and start attacks. Players of 2-2.5 and 3-3.5 functional classes support attack and defense, provide connection between front and back lines of offense, which is why the distance they cover is 3240±353m и 2915±346m respectively.

Indices of the action, at which a basketball wheelchair moves forward by simultaneous two-hand pushes, depend on a number of factors, among which degree of malfunctioning of athletes' motor functions is one of the most important. Players of different functional classes use elements of wheelchair handling technique differently.

Pushing forward with both hands simultaneously is done primarily by players of 1-1.5 class, who, using this element, cover the distance of 2932±184m on average per game.

Table 2

Average value of using elements of technical and tactical handling of a basketball wheelchair within competitive activity by players of different functional classes per game

Elements of handling a basketball wheelchair	**Functional classification**			
	1-1,5 (n=10) $\bar{x} \pm m$	**2-2,5** (n=14) $\bar{x} \pm m$	**3-3,5** (n=11) $\bar{x} \pm m$	**4-4,5** **(n=13)** $\bar{x} \pm m$
Total (m)	3265±258	3240±353	2915±346	**3494±426**
	Pushing forward			
By two hands simultaneously (m)	**2932±184**	2369±151	2225±143	**2572±176**
By two hands variably (m)	116±24	274±77	203±58	**344±68**
Combined work of hands (m)	61±17	**197±38**	142±29	**180±34**
	Without using hands			
Octagonal body motion (m)	-	**280±54**	176±47	**198±56**
Impulse body motion (m)	-	14±6	28±10	**32±12**
	Pushing backwards			
By two hands simultaneously (m)	96±17	94±24	117±47	**136±64**
By two hands variably (m)	8±2	12±3	24±12	**32±16**
	Stop			
By two hands (number of times)	107,3±10,3	129,1±9,2	124,1±7,4	**137,8±8,2**
By one hand (number of times)	2,4±1,1	**8,9±3,5**	7,3±3,4	**8,7±3,7**
	Turn in motion			
By two hands (number of times)	122,4±16,7	**130,3±15,2**	112,7±12,7	**117,4±14,9**
By one hand (number of times)	13,9±5,6	**43,7±10,4**	32,1±9,6	**37,8±9,4**
Without using hands (number of times)	-	**16,3±5,1**	12,7±5,3	**13,2±4,8**
	Turn on the spot			
By two hands (number of times)	**103,3±14,3**	97,3±12,2	83,9±9,7	**88,8±11,3**
By one hand (number of times)	7,9±3,6	**21,4±9,6**	16,7±8,4	**17,2±9,1**
Without using hands (number of times)	-	**7,3±2,3**	6,3±2,6	**6,8±2,4**
	Wheelchair lifting			
On the spot (number of times)	-	1,1±0,4	4,7±1,7	**5,2±2,4**
In motion (number of times)	-	1,6±0,5	3,1±1,1	**3,7±1,5**
	Jump			
Jump (number of times)	**-**	**-**	**0,8±0,3**	**1,7±0,9**

It is related to the fact that athletes of this class have the highest degree of damage to their motor functions and, according to functional classification, cannot rotate their body, lean forward and sideways, and maintain balance without support of upper limbs. Due to these peculiarities, athletes must constantly have two-hand contact with the wheelchair, which makes body positioning more stable. Players of 4-4.5 class apply this element of handling a basketball wheelchair a bit less, 2572±176m. A rather big distance is related to big workload that falls on players of this class and the need to quickly move from defensive board to offensive one and back. Specifics of sitting in, construction of a basketball wheelchair, and the volume of balance of primary wheels allow players of 2-2.5 functional class to use various elements of wheelchair forward movement. Pushing their wheelchair with both hands simultaneously, players of 2-2.5 functional class cover more distance than players of 3-3.5 class, 2369±151m and 2225±143m respectively.

When controlling the wheelchair with both hands, players often use pushing the wheelchair forward with two hands variably. This way, they can accelerate due to constant impact of the player on primary wheels. This element is also sometimes used for ball handling. This element of handling a wheelchair is mostly used by players of 1-1.5 functional class, who cover 344±68m per game. Players of functional class 2-2.5 use pushing a wheelchair forward with two hands variably and maneuverability of their basketball wheelchair rather successfully and cover a total distance of 274±77m. Players of 3-3.5 functional class, who can fix their pelvis in the same spot and also demonstrate body movement in axial, frontal, and sagittal plane, often push their wheelchair forward with two hands variably when handling the ball. However, athletes of this class use this element to cover a total of 203±58m per game. Players of 1-1.5 class use pushing forward with two hands variably least often of all functional classes. Distance that these athletes cover is 116±24m.

As a rule, players who handle the ball use combined work of hands when moving forward. This element of a basketball wheelchair handling technique is pointed out due to quite rapid shift of methods of pushing forward using both hands simultaneously and variably and continuous control of the ball with one hand while pushing the wheelchair with the other. At the same, the player always changes hands that control the ball and the wheelchair. We assume that the advantage players of 2-2.5 functional class have over representatives of other classes who use the element of pushing forward with combined work of hands (197±38m) is related to a number of reasons. First of all, these players perform the function of delivering the ball into offensive zone; secondly, players of 2-2.5 class cannot handle the ball in front of the wheelchair due to its peculiarities. Players of 3-3.5 and 4-4.5 classes show rather similar indices in pushing forward using combined work of hands. These players can cover the distance of 142±29m and 180±34m respectively. Players of 1-1.5 functional class use this element the least (61±17m).

The same is observed at pushing the wheelchair forward using octagonal body movement, which is used, as a rule, when a player controls the ball with two hands while moving in order to make a pass or a shot. Using a low-sitting wheelchair with big wheel camber by players of 2-2.5 class, give the wheelchair better maneuverability and stability. This enables them to push forward using octagonal body movement even more often than combined work of hands. On average per game, by using this element, athletes cover the distance of 280±54m. Players of 4-4.5 class cover 198±56m when using this element, while players of 3-.35 class - 176±47m. Athletes of 1-1.5 class do not use octagonal body movement when pushing forward as they cannot rotate their body at all, even to a limited degree, without help of a hand supporting on the wheelchair.

Often, during a game, an athlete cannot make a pass and handle the ball because being blocked by opponents from two sides. In order to maintain control of the ball, a player starts to move the wheelchair forward with impulse body motions trying to get rid of the block, handle the ball, or get rid of it by making a pass or a shot. Pushing forward with impulse body motions is rarely used during a game. Players of 4-4.5 class cover the distance of 32±12m, class 3-3,5 - 28±10m and class 2-2,5 - 14±6m. Due to the lack of function of abdominal muscles, except for primary ones, players of 1-1.5 functional class must always lean on the back of the wheelchair, which is why they do not use impulsive body motions to push forward.

Pushing a wheelchair backwards can sometimes be very efficient when defending the board. Pushing a wheelchair backwards can be done in two ways: by both hands simultaneously (used more often), and by two hands variably. Players of 3-3.5 and 4-4.5 classes often use this element on defense to cover opponent more tightly. Players of functional class 4-4.5 use this element to cover the distance of 136±64m, while covering 32±16m when using two hands variably. Players of 3-3.5 class cover the distance of 117±47m and 24±12m respectively. Players of functional classes 1-1.5 and 2-2.5 have practically equal indices (96±17m and 94±24m respectively) at pushing a wheelchair backwards by both hands simultaneously. At the same time, players of these classes rarely use two hands variably to push backwards (8±2and and 12±3m respectively). Players of 1-1.5 and 2-2.5 classes use both hands simultaneously to themselves backwards in order to screen opponents quickly or block them when there is no possibility to turn around. The most effective method of stopping a basketball wheelchair is using two hands, while one-hand stop is used chiefly by players handling the ball. The number of two-hand stops made by players during a game ranged from 107,3±10,3 (1-1.5 class) to 137,8±8,2 (4-4.5 class). Athletes of 2-2.5 and 3-3.5 classes have rather equal indices; they make 129,1±9,2 and 124,1±7,4 stops respectively during a game. Players use one-hand stop rather rarely. Thus, players of 1-1.5 class make only 2,4±1,1 stops due to passive tilt of the body during one-sided braking. Players of 2-2.5 class dominate in this matter. Due to the construction of the basketball wheelchair, they make 8,9±3,5 stops, while players of 4-4.5 class make stops 8,7±3,7 times due to their physical abilities. The index for players of 3-3.5 functional class is 7,3±3,4. Playing process in wheelchair basketball envisages rather frequent change of movement trajectory. Due to this, turns that are done while moving and on the spot are a very important element of handling a basketball wheelchair. The biggest number of turns per game is done by players of 2-2.5 functional class. This can be explained by the use of maneuvering wheelchair that allow athletes to engage their opponents in force struggles and block them. Thus, players of 2-2.5 class execute 129,1±15,2 turns while moving with two hands, 43,7±10,4 turns while moving with one hand, and 16,3±5,1 turns while moving without using hands. Due to the highest degree of damage to motor functions that prevent players from rotating their body, players of 1-1.5 class do not execute turns while moving without using hands. Execution of a turn while moving using two hands is the most common for players of 1-1.5 class. It occurs 122,4±16,7 times per game. Players of this class execute turns with one hand only 13,9±5,6 times due to difficulty to maintain balance. Analysis of usage of various wheelchair turns in motion during a game by players of 3-3.5 and 4-4.5 classes showed significant differences in quantitative differences of different types of turns. Thus, players of 3-3.5 class execute 112,7±12,7 turns with two hands per game, while class 4-4.5 - 117,4±14,9 turns; using one hand - 32,1±9,6 and 37,8±9,4; without using hands - 12,7±5,3 and 13,2±4,8 respectively.

The same is observed when executing turns on the spot. However, it should be noted that there significant differences when it comes to execution of a turn on the spot with two hands. Here, players of 1-1.5 class lead in this matter. They execute 103,3±14,3 turns per game. However, they execute the least number of turns with one hand (7,9±3,6) compared to other classes. At the same time, players of 1-1.5 class do not execute turns without using hands. Players of functional class 2-2.5 execute 97,3±12,2 turns on the spot with two hands, while their indices of total number of turns executed on the spot with one hand and without using hands are higher than with representatives of other classes: 21,4±9,6 times with one hand and 7,3±2,3 times without using hands. When executing turns on the spot within competitive activity, no differences are observed between players of 3-3.5 and 4-4.5 functional classes. Thus, they execute turns 83,9±9,7 and 88,8±11,3 times on the spot with two hands; with one hand - 16,7±8,4 and 17,2±9,1 times; without using hands - 6,3±2,6 and 6,8±2,4 times respectively.

To establish advantage in competitive activity, regarding struggle for possession at throw-ins or rebounding, blocking or shooting, players use one the most difficult elements of wheelchair handling – lifting the wheelchair, which can be executed both in motion and on the spot. This element is chiefly used by players of 2.5-4.5 classes. Athletes of 3-3.5 and 4-4.5 classes execute more wheelchair lifts on the spot, which is related to their active struggle for possession under the boards. Players of 3-3.5 class use lifting on the spot 4,7±1,7 times; players of 4-4.5 class - 5,2±2,4. In motion, this index is practically equal: players of 3-3.5 class - 3,1±1,1 times and players of 4-4.5 class - 3,7±1,5 times. On the contrary, athletes of functional class 2-2.5 execute more wheelchair lifts in motion rather than on the spot, which is related to the peculiarities of the wheelchair. On average per game, players of this class execute 1,1±0,4 wheelchair lifts on the spot and 1,6±0,5 lifts in motion.

The most difficult element of a basketball wheelchair handling is jumping. A jump is a moment, at which wheelchair's primary wheels lose touch with the floor. As a rule, it is executed by players of 3-4.5 classes. Thus, players of 4-4.5 class execute jumps 1,7±0,9 times on average per game, which is primarily related to these players' minimum degree of damage and bigger capacity of motion actions, while athletes of functional class 3-3.5 execute jumps only 0,8±0,3 times.

Discussion

Quantitative analysis of game action under conditions of a competition allowed defining specifics of execution of basic technical and tactical actions of players of various functional classes.

Functional classification has significant importance in wheelchair basketball [Pityn, 2004; Molik, 2010; Beatriz, 2011). A coach must be clearly aware of players' functional abilities and understand basic points of the classification [Mishin, 2010). Each player can execute certain actions that are based on his functional capabilities. According to a number of specialists [Briskin, 2016; Doll-Tepper, 2001), athlete's functional capabilities need to be constantly controlled, i.e. his ability to execute various motion activities peculiar to a wheelchair basketball player. That is why a coach must focus on functional differences between players, which will allow preparing an athlete with consideration to his abilities to execute motion actions In their turn, athletes must realize their functional capabilities and thus utilize all possible muscle groups to execute motion actions (Beatriz, 2011; Pityn, 2011). Studies of native specialists (Pityn, 2004; Sushko, 2014) show importance of the issue of individualization of basketball players training. This issue has even bigger importance in wheelchair basketball. It is related to the degree of damage of musculoskeletal system and different functional capabilities of players from the same team. In order to increase quality of training process, a wheelchair basketball must have creative approach to planning of means and methods of training that are oriented on a group of athletes having different functional capabilities (Pityn, 2004). According to foreign researchers (Perederiy, 2006; Herasymenko, 2016), differences between athletes' functional peculiarities must be taken into account and must be viewed within the context of training and athlete development in order to utilize potential of each players.

In wheelchair basketball, during a game, players of different functional classes must execute game actions specific to them. Thus, players of 1-1.5 functional class execute mostly defensive actions and provide support for offense. Tactical role of these players lies in blocking their opponents and making screens providing support for their partners when battling against opponents. At the same time they do a lot of short-distance dashes. Players of 2-2.5 class support both offensive and defensive actions of their team. Due to peculiarities of basketball wheelchair and sitting position, players of this functional class are more speedy most of the times. Due to their speed, players often attempt dashes and engage in force battle, mostly in order to take the ball away.

Players of 3-3.5 functional class provide a link between front and back line of offense, which can be seen by their making a big number of assists, interceptions, and shots from middle and long range. Also, players of this class actively block their opponents when struggling for a rebound on offensive or defensive board, or when defending against opponent's attacks. Players of 4-4.5 functional class are team "scorers", which can be seen by their making the biggest number of shots, points scored, and movements within the process of competitive activity. A peculiar feature of players of this class is that they, due to their functional peculiarities, use a basketball wheelchair with maximum height, which is allowed by rules. Due to this, these players are most effective in middle and short range in the 3-second zone.

Conclusions

Analysis of technique of basketball wheelchair handling in competitive activity showed that quantitative indices of using various elements by players of different classes vary, mainly due to players' physical capabilities. The most effective means related to handling a basketball wheelchair for players of all functional classes are actions done with two hands: pushing a wheelchair forward with both hands simultaneously, executing a stop with two hands (107 – 138 times), turns in motion done with two hands (112-130 times), turns on the spot done by both hands (84 – 103 times). Use of other elements of basketball wheelchair handling technique is also rather important. It is related to the fact that players must master new range of required auxiliary actions when handling a basketball wheelchair, which will correspond to the volume of actions of each player. Increase o the number of motion actions related to handling a basketball wheelchair with one hand, allows increase of efficiency of technical actions with the ball. Quick and accurate execution of motion actions, ability to choose the most rational means of execution, and broadening of the range and variability of methods of handling a basketball wheelchair allows versatile use of a player's individual abilities and increase of athletes' professional growth. The obtained results will promote increased efficiency of the process of training taking into account functional capabilities of wheelchair basketball players.

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