

THE POSSIBILITIES OF EVALUATION OF GAME SKILLS AND GAME PERFORMANCE IN FRISBEE ULTIMATE

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ABSTRACT

In the study there are presented the possibilities of evaluation of game skills and game performance in frisbee ultimate. The aim of the study was to verify the reliability of the test of a game skill and of game, evaluation methods for physical education and sport. Specifically the reliability of the test of the game skill passing was verified, which had two alternatives – passing at the aim and passing for accuracy to scored areas. Furthermore there was verified the method of evaluation of game performance, based on critical cases. The research was carried out on grammar school students and players of frisbee ultimate. The reliability of the test of a game skill was verified in individual years of study of the grammar school and for boys and girls. The reliability of the method of the evaluation of game performance was verified in the group of frisbee ultimate players. Game performance was evaluated by three experts. The reliability of the test of the game skill was statistically evaluated by ICC and Kendall's coefficient of concordance were used for statistical analysis. The level of statistical significance was set at 5%. The results showed sufficient reliability of the test of the game skill passing. In case of an alternative passing at the aim the reliability values were from 0,67 to 0,94. In the alternative of passing for accuracy to scored areas the values were from 0,72 to 0,98. Evaluation of game performance was divided into three parts: positive critical cases ($W=1$), negative critical cases ($W=0,8$ - $p<0,05$) and total game performance ($W=1$). The observed reliability can be considered to be sufficient and the methods are considered to be sufficient and we recommend them for educational environment of physical and sport education.

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Key words: sport games, frisbee ultimate, game skills, game performance, testing, scaling, reliability.

INTRODUCTION

Recently, in relation to spreading of teaching a sport game frisbee ultimate, there have been discussed questions of evaluation of effects of this process. In this relation the key issue is evaluation of game skills and evaluation of game performance.

Because Frisbee ultimate is relatively new sport game reliable assessment Instruments are missing. Sporadically some attempts on standardization of skills tests have appeared. For instance Almesbergová (2009) verified the test battery of coordination and game skills.

Testing of the game skills as published by Almesberger (2009) contains 6 tests, which are focused on coordination skills. The tests focused on kinaesthetic – difference ability, dynamic balance, space orientation, accuracy shot, shot in movement, shot at target, accuracy shot under time pressure and hurdle race for evaluation of general coordination belong there.

Following "technical" competitive disciplines are possible to apply as tests of game skills in Frisbee Ultimate – Self Caught Flight (SCF), Maximum Time Aloft (MTA), Throw, run and catch (TRC), Accuracy and Distance (<http://www.wfdf.org/sports/field-events>). However because they require high level of game skills and coordination they would be appropriate only for advanced players.

On the other hand standardization of specific assessment method of game performance in Frisbee Ultimate does even not exist. But some experts suggest applying Critical Incident Technique (Flanagan, 1954, Válková, 1974, Argaj, 1995). Thus the aim of our work is to suggest and verify the reliability of the most important game skill in Frisbee Ultimate – pass, and of the assessment method of game performance based on Critical Incident Technique.

METHODS**Characteristic of the groups**

Researching group for verification of reliability of the test of the selected game skill, accuracy shot, was created from students of the 1st up to 4th year of Grammar school Michal Miloslav Hodža in Liptovský Mikuláš. 259 students took part in the research, out of that 176 girls and 83 boys.

Reliability of the method of game performance evaluation was evaluated based on the results of evaluation of 3 experts (teachers of frisbee ultimate and graduate of Faculty of physical education and sport). The experts evaluated competitions of American MAJOR ULTIMATE LEAGUE based on video records (5 players selected in 2 matches).

Methods of data obtaining

To verify the reliability of the test of accuracy we created the following test:

The task for the student being tested is to hit the target from the distance of 10 m from its middle. The target with the size 2x3 m is divided into 9 parts with assigned values from 1 to 5 (fig. 1). Individual score values were defined as following:

- 5 – The most suitable height of the shot for easy catching in the trunk area
- 4 – Acceptable height of the shot, which is directed to the height of the head (its catching is not difficult)
- 3 - Adequate height of the shot but out of the trunk area, it is catchable
- 2 – High shot, out of the trunk area, more difficult to catch it
- 1 – Low shot, out of the trunk area, hard to be caught

We evaluated number of hits in the individual target parts from 10 possible tries and at the same time number of achieved points from 50 possible. Each tested student had two tries. Performance in the better try is taken into account. The students took part in the test twice in one week (test - retest).

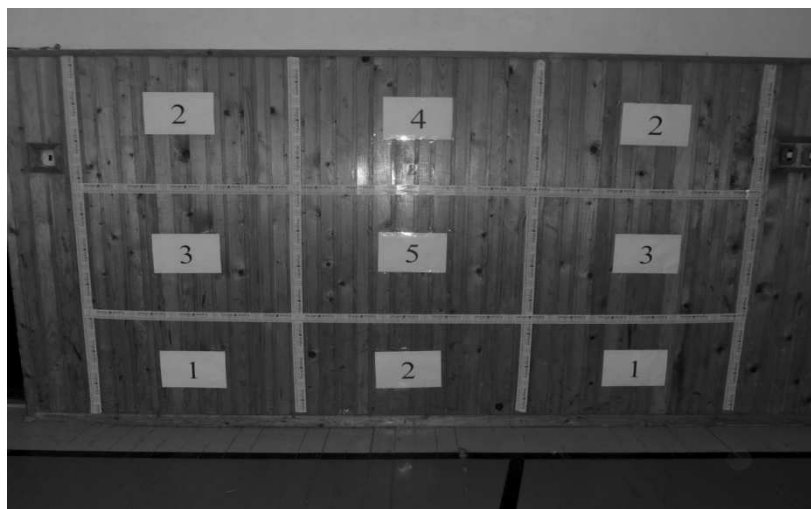


Fig. 1
Target for the test of accuracy shot in frisbee ultimate

Method of evaluation of game performance was based on the method of evaluation of critical cases by Flanagan (1954) with the index of importance of critical cases from -1 up to 1 (tab. 1). Game performance was evaluated by three experts based on a video record of American competitions MAJOR league ultimate. They evaluated 5 players in 2 competitions, into the record sheets which were subsequently evaluated according to tab. 1.

Table 1 Critical cases of the proposed method of game performance evaluation

Critical case	Definition	II
Achievement of a score	The player catches the disk in the final zone- obtaining of a score	1
Final pass (assistance)	A pass, which means score obtaining, caught in the final zone	0.85
Pass with tactic importance (successful)	A pass which helps to the team in the attack phase, a shot towards the final zone	0.5
Pass without tactic importance (unsuccessful)	A pass which does not solve anything in the attack phase, it does not help to the team to obtain a score, a shot for a very short distance, a shot towards back	0.25
Disk catch in a simple GS	The player catches the disk in a simple game situation	0.25
Disk catch in a complex GS	The player catches the disk in such way that is forced to jump up (he loses contact with the base)	0.5
Unsuccessful pass - caught	The pass is caught by the competitor	- 0.75
Unsuccessful pass - struck to the ground	The pass is struck to the ground by the competitor	- 0.5
Unsuccessful pass - flying out of the playground	A pass which flies out of the playground	- 0.25
Unsuccessful pass - inaccurate	A pass which is not caught by the competitor neither struck to the ground and it neither flies out of the playground	- 0.5
Uncaught pass with tactic importance	Uncaught pass that could have helped to the team in the attack phase	- 0.5
Uncaught pass without tactic importance	Uncaught pass that does not solve anything in the attack phase	- 0.5

Legend: II - index of importance

Methods of processing and evaluation of data

We used interclass correlation (r) for evaluation of reliability of the test of game skills and we used Kendall's coefficient of concordance (W) to evaluate reliability of evaluation of the method of game performance. Level of statistic importance was set at $p_{0,05}$.

RESULTS AND DISCUSSION

In the test of accuracy shots, i.e. in a shot in number of scores, the test reliability of the girls was from $r = 0.67$ up to $r = 0.91$. With the boys it was higher than with the girls, it is from $r = 0.81$ up to $r = 0.94$. Similar situation is for the other alternative as well, i.e. in the point expression of accuracy of the scores. Reliability of the girls is from $r = 0.72$ up to $r = 0.96$, with the boys from $r = 0.91$ up to $r = 0.98$. Reliability of the girls in the individual years is fluctuating, with the boys it is more similar (tab. 2).

Table 2 Reliability of evaluation of accuracy shot in the individual years

	Girls		Boys	
	Number of hit	Number of scores	Number of hit	Number of scores
1 st year	0.91	0.96	-	-
2 nd year	0.67	0.75	0.94	0.98
3 rd year	0.89	0.72	0.85	0.91
4 th year	0.75	0.72	0.81	0.92

By Cohen (1988) the correlation below 0.1 is trivial, 0.1 – 0.3 small, 0.3 – 0.5 middle and over 0.5 big. Correlation 0.7 – 0.9 is very often presented as very big and 0.9 - 1 as nearly perfect. The results of ICC (r) are, by Hand, Taylor (1987), presented as following $r > 0.9$ reliability is high, $r = 0.8 - 0.9$ reliability is average, $r < 0.8$ reliability is questionable for physiology and $r = 0.7 - 0.8$ reliability is not acceptable for the others than social sciences. Čelikovský (1967) says that with the values $r = 0.6 - 0.69$ the motive test can be accepted only under certain conditions, under standard conditions this result is insufficient. If we take into account interpretation by Cohen (1988), so the reliability of our tests is high, by Hand, Taylor (1987) it is at the limit of acceptance and by Čelikovský (1967) it is acceptable. Therefore we can state that the both alternatives of the test (evaluation of the accuracy shot) show sufficient reliability.

Evaluation of game performance by the three experts was in compliance in most critical and the rank was identical in all three experts. This was reflected in the values of Kendall's coefficient of concordance (W). Results are presented in tab. 3. We evaluated the correlation coefficient separately for positive and negative critical cases and the total game performance.

Table 3 Rank of players and values of W

NP	Positive critical cases				Negative critical cases				Total game performance				
	A	B	C	W	A	B	C	W	A	B	C	W	
6	1	1	1	1*	5	5	5	0.8*	1	1	1	1*	
8	2	2	2		2	2	2		2	2	2		2
29	5	5	5		2	2	2		5	5	5		
88	3	3	3		2	2	2		3	3	3		
99	4	4	4		4	4	4		4	4	4		

Legend: NP - number of player, A,B,C - experts, W - Kendall's coefficient of concordance, - * statistically significant

The results show us, that three experts in evaluating the total game performance and positive critical reviews cases agree a wholly conformity. Evaluation of negative critical cases was also identical. Conformity was not a wholly, perhaps because it was far more marked with the same rank. Negative critical cases during the match occurred rarely (for example - Unsuccessful pass flying out of the playground).

The largest differences were observed in the positive critical cases, which also occurred more frequently in the game, specific: in a shot with tactical importance (successful) - in a shot without tactical importance (successful, catching of the disc in a simple GS - catching of the disc in a complex GS. These discrepancies do not affect the overall evaluation of game performing, whereas in the three experts occurred a wholly conformity and Kendall's coefficient of concordance value entered 1.

CONCLUSION

Reliability of the test of evaluation of accuracy shot is good for both alternatives. In number of scores it is from $r = 0.67$ up to $r = 0.94$ and in the test with point expression of the scores it is from $r = 0.72$ up to $r = 0.98$ (point expression of the shot accuracy).

Evaluation of reliability of game performance evaluation method was: positive critical cases ($W=1$), negative critical cases ($W=0.8$) and total game performance ($W=1$). The results represent high to good concordance of experts.

We recommend the tests and the method of game performance evaluation for practical utilisation in the physical education, especially in the game education and for research purposes. For repeated evaluation of game performance we would recommend to involve in the evaluation also catching or not catching the disc during throw-in of the disc in the game and we would recommend to assign to this critical case the index of importance 0.5 (positive critical case) or - 0.5 (negative critical case).

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