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HANDBALL ASSESSMENT MODEL FOR 5TH GRADE STUDENTS IN A REAL AND REMOTE ENVIRONMENT

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ABSTRACT
In relation to the growing challenges of our time, the research is dictated by the needs of teachers in the subject "Physical Education and Sport" and in particular to the objective assessment in a real and remote environment of the sports game of handball. Our research is aimed at creating normative tables for assessing the technical abilities of students in a real environment. To check the level of theoretical knowledge, a structured test is used to assess students' knowledge of handball in distance learning situations. For the purposes of the study, 100 boys and 100 girls studying in the 5th grade of secondary school were tested.

Keywords: assessment, physical education, handball, real and remote learning environment

INTRODUCTION

The teaching of the subject "Physical Education and Sports" is carried out according to curricula approved by the Ministry of Education and Science, which mention the areas of competence as well as the knowledge, skills and attitudes that students must acquire as a result of their education. An integral part of the curriculum for the respective grade are the areas of learning content (mandatory and elective). The game of handball falls into the mandatory area of learning content, as part of sports games. The requirements for the 5th grade students in terms of the sports game, as a result of their education, are the implementation of technical and tactical actions and group interactions in attack and defense (1). In addition to mastering the technical and tactical skills, they are also expected to acquire theoretical knowledge about the origin, development and current state of the respective sport. Part of the overall educational process in the 5th grade is the control and assessment of the level of theoretical knowledge, physical capabilities, and technical and tactical skills of students (2).

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In this regard, according to T. Simeonova, "*One of the ways to increase the effectiveness of the educational process in physical education and sports is the appropriate choice of means and the opportunity for combined application of specific knowledge and experience in the form of a mastered model of the technique, which can be skillfully applied in a game.*" (3).

The sport of handball is a varied motor activity, in which the individual actions and technical mastery of each participant are of utmost importance. The actions of the individual players are subordinated to the team idea of the game, which is of a distinctly collective nature. In its essence, handball is a dynamic game in which naturally applied movements such as walking, running, jumping and throwing predominate. E. Avramov defines the game as: "…suitable for boisterous and naughty children – it regulates their intemperance. It is also suitable for the more timid ones, provoking them to action." (4).

The constantly changing game situation and dynamics of the game require and educate students in rapid thought processes. This requires them to quickly make game decisions, adequate to the respective motor situation and demonstrate resourcefulness and quick orientation in the game environment.

The game is dominated by work with maximum and submaximal power. The actions of the players are mainly acyclic or mixed from a biomechanical point of view. All this requires a high level of functional capabilities from those involved. S. Bazelkov notes that the systematic application of handball exercises has a positive effect on the adaptive abilities of the body and in this regard improves the activity of all systems, including the activity of the analyzers (5).

The technique of the handball game is considered in two parts – offensive technique and defensive technique. In **Figure 1** we graphically present the main techniques:

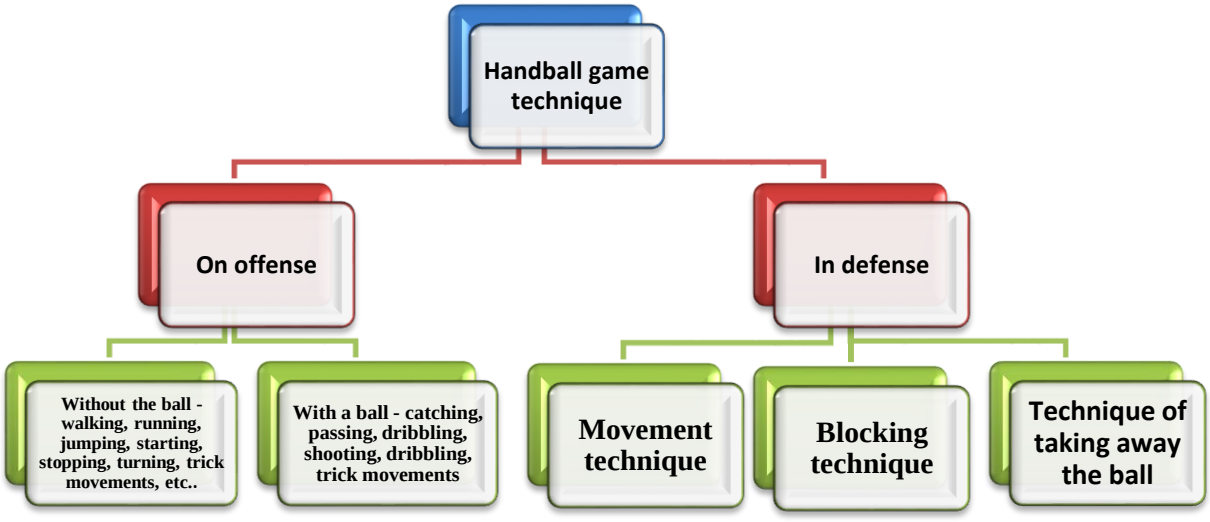

Figure 1. Handball game technique

Over the past few years, as a result of the complex epidemiological situation, new challenges have been presented to teachers. The educational process has had to adapt to the new conditions of remote learning. It has become necessary to use new technical devices that are not typical for normal conditions. Training in "Physical Education and Sports" began to take place in a completely different way. The challenges facing teachers took on new, different dimensions resulting from the extraordinary circumstances.

Authors who have worked on the topic (Yordanov, V.) note the positive and negative features of online learning in the subject. As part of the negatives, they point out: the lack of live contact, difficulties in terms of student control, asynchrony of the learning process due to various reasons, as well as additional costs for ensuring a good internet connection and the student's technical device. The most important positive features of the education they outline are: the opportunity to train anywhere, students are not required to wear special clothing or specific sports equipment, building self-discipline and a desire to achieve the set goals, increasing their literacy in terms of theory and rule knowledge of various sports (6).

METHODOLOGY

The purpose of this study is to create a model for assessing the technical abilities and theoretical knowledge of handball of 5th grade students, through normative tables created by us for assessment in a real environment and a test for assessing their knowledge when working in a remote environment.

To achieve the goal, we set the following tasks:

1. Study of literary sources and regulatory documents relevant to the educational process in the subject "Physical Education and Sports".
2. Conducting specialized motor tests for 5th grade students.
3. Creation of an assessment normative table with specialized handball tests differentiated by gender.
4. Creating a test for assessing work in a remote environment.

The subject of the study is assessing the knowledge and skills of 5th grade students in handball in a real (face-to-face) and remote (distance) learning environment.

The object of the study is the educational process in physical education and sports in the 5th grade.

Study contingent: Specialized practical tests were conducted with 200 students (100 boys and 100 girls) from grade 5. The study was conducted during the 2020/2021 school year in two districts - Shumen, Dobrich.

ANALYSIS OF RESULTS

Referring to our sociological survey conducted among teachers of the subject "Physical Education and Sports" in the Republic of Bulgaria, our attention was focused on specific difficulties faced by teachers (7). It is clear from the answers that the greatest difficulties in teaching teachers are in the sports game handball (41%). Findings were made regarding the material base, as it was found that only 6.2% have adequate conditions for teaching handball. Timely control and evaluation of training results is a factor that largely contributes to obtaining positive training results. The main question related to the topic was also asked - how do they assess the preparation of students in handball. Of the respondents who answered, only 28% use special handball standards. The rest make an assessment using the subjective factor based on participation in bilateral games or general motor activity.

To the question how do they assess students' knowledge of the sport of handball when working in a remote environment, 52% indicated that they assess handball through a test as part of the field of sports games. We note that 48% of respondents answered that they do not assess students' knowledge of the sport in any way.

As a logical follow-up to the previous question, we asked whether participants would like to have written tests for remote work. 61% responded "yes." Of course, there are also teachers for whom preparing a test is not a difficulty, as 29% of the respondents answered this way. 10% of the respondents answered the question that they could not judge.

Based on the survey analysis, we establish the need to offer teachers options for assessing handball in grade 5. The development of normative tables based on the conducted sports and pedagogical tests would find application in applied scientific activities in school Physical Education. The proposed normative table with practical handball tests aims to eliminate subjective evaluation based on unclear criteria during education in a real environment. The need to offer a test for assessing knowledge in a remote environment for 5th grade students was also identified.

The motor tests we propose to assess the technical abilities of students are: “Throwing a handball ball at a distance (from a place)” “Handball passing in pairs”, “Dribbling the ball”, “Jumps over obstacle”. **(Table 1)**

Table 1. *Performance Indicators and Measurement Parameters*

№	Indicators	Units of measurement	Measurement accuracy	Direction of increase
1.	Throwing a handball ball at a distance (from a place)	meters	0,1	+
2.	Handball passing in pairs	repetitions	1	+
3.	Ball Dribbling	seconds	0,01	-
4.	Jumps over obstacle	repetitions	1	+

Test description:

Test № 1 Throwing a handball ball at a distance (from a place): The tested person took a starting position of standing. The ball is held with both hands in front of the chest, the weight of the body is evenly distributed on both legs, which are placed parallel (the legs must be stationary). The performer throws the ball with one hand ove the shoulder. The result is recorded from the line on which the performer stood to the point where the ball touched the support. Two attempts are made. The better achievement is recorded with an accuracy of 0.1 m.

Test № 2 Handball passing in pairs: The subjects take a position in pairs facing each other at a distance of 3 meters. Each pair has one handball ball (No. 1). After a signal from the teacher, the pairs pass the ball to each other with one hand over the shoulder, trying to make the maximum number of passes in 60 seconds. The

result of each student is counted individually, in number of passes of the ball. No other type of passes is allowed except those indicated, as well as shortening the distance between the students during the passes.

Test № 3 Ball Dribbling: Performed on a flat, non-slip, hard or hard-elastic surface. The subject takes a starting position on the start-finish line, holding a handball ball (No. 1) in his hands. After the signal, the performer starts and dribbles the ball with one hand (leading hand). After running the first 15 m. the student must cross the line (located 15 m from the start) with at least one foot. He has the right to control the ball with both hands, then turns and runs the second 15 m backwards. The stopwatch is stopped after the student crosses the start/finish line. The fast and rhythmic dribbling of the ball is monitored. The result is recorded in seconds with an accuracy of 0.01.

Test № 4 Jumps over obstacle: The subject stands sideways to a bar/rope 30 cm high. After a signal, the student jumps over it, jumping with both feet simultaneously. The number of jumps per time period – 30 seconds – is recorded.

The data obtained from the students' testing were processed with the Microsoft Office program (Excel) using the variation analysis method. The results are presented in **Tables 2 and 3.**

Table 2. *Analysis of variance of test results in 5th grade boys*

№	Test	N	X min	X max	R	Av	S.D.	V%
1.	Throwing a handball ball at a distance (from a place)	100	5,0	17,5	12,5	12,26	3,20	10,25
2.	Handball passing in pairs	100	10	25	15	17,35	4,18	17,44
3.	Ball Dribbling	100	18,69	8,62	10,07	12,30	2,47	6,08
4.	Jumps over obstacle	100	4	34	30	17,12	7,15	51,18

Table 3. *Analysis of variance of test results in 5th grade girls*

№	Test	N	X min	X max	R	Av	S.D.	V%
1.	Throwing a handball ball at a distance (from a place)	100	2,8	18	15,2	8,79	3,14	9,88
2.	Handball passing in pairs	100	8	30	22	19,62	4,71	22,18
3.	Ball Dribbling	100	26,11	7,40	18,71	13,20	3,82	14,50
4.	Jumps over obstacle	100	2	36	34	18,88	6,68	44,61

After the variation analysis of the data in test № 1 we observe an average result = 12.26 m for boys and Av = 8.79 m for girls. Both groups are homogeneous in this indicator, with the coefficient of variation for boys being V% = 10.25, and for girls V% = 9.88. It is clear from the results that the representatives of the male gender are superior to those of the female gender, and the average result achieved is 3.47 m better.

In test № 2, we observe that girls have better technical skills and dexterity than boys. The average score achieved by boys is Av = 17.35, with a minimum score of only 10 passes in 60 seconds (X min = 10), and the maximum is X max = 25. Girls achieved a better average score with ≈ 2 passes more or Av = 19.62. The two groups are approximately homogeneous with a coefficient of variation V% = 17.44 (respectively R = 15) for boys and V% = 22.18 (respectively R = 22) for girls.

The third test provides information about the mastery of the technique of handball play with a ball, namely dribbling the ball. The average result of the boys in this test is Av = 12.30, and for the girls Av = 13.20. It becomes clear that the boys covered the distance 1 sec. faster than the girls and coped with this technical element more successfully. The sample of the boys is distinguished by strong uniformity V% = 6.08, while that of the girls is approximately uniform with V% = 14.50.

In the test carrying information about the explosive power of the lower limbs (№ 4), we observe atypically better results achieved by the female gender. Their result is Av = 18.88, and

the boys' Av = 17.12. Both samples are highly heterogeneous in this indicator, as we observe minimum results of only X min = 2 and X min = 4 rebounds in 30 seconds and maximum X max = 34, X max = 36 for the same time. We attribute this positive difference in favor of girls to the fact that it is at this age that girls physically outperform boys, as they are already in the middle of the puberty period. In contrast, boys are just entering the puberty period and physical growth is still to come.

From the perspective of developing normative assessment tables, a study conducted in 2021 by Ch. Stoychev and N. Yordanova registered certain weaknesses in the preparation of norms on a five-point scale. They point out that hat Stefko's five-point scale is insufficiently precise for the preparation of assessment standards. The authors suggest using a more precise scale that will reduce the range between different scores (8). As an example, we would point out that with the five-point scale, 68.27% of students would fall within the range of the average grade. With the seven-point scale, only 38.29% of cases would fall within the average grade. According to what has been said so far, we have prepared the normative tables according to the Martin method using a seven-point scale, in order to be more precise in the assessment. The prepared assessment norms are presented in **Table 4 -** boys and **Table 5 -** girls.

Table 4. *Handball tests – boys*

Boys (♂)						
№		Poor (2)	Satisfactory (3)	Good (4)	Very good (5)	Excellent (6)
1.	Throwing a handball ball at a distance /from a place/ **(meters)**	under 9.1	9.1 – 10.7	10.8 – 13.9	14 – 15.5	above 15.5
2.	Handball passing in pairs **(repetitions)**	under 13	13 – 15	16 – 19	20 – 22	above 22
3.	Ball Dribbling **(seconds)**	over 14.77	14.77 – 13.54	13.53 – 11.06	11.05 – 9.83	under 9.83
4.	Jumps over obstacle **(repetitions)**	under 10	10 – 14	15 – 21	22 – 24	above 24

Table 5. *Handball tests – girls*

Girls (♀)						
№		Poor (2)	Satisfactory (3)	Good (4)	Very good (5)	Excellent (6)
1.	Throwing a handball ball at a distance /from a place/ **(meters)**	under 5.7	5.7 – 7.2	7.3 – 10.4	10.5 – 11.9	above 11.9
2.	Handball passing in pairs **(repetitions)**	under 15	15 – 17	18 – 22	23 – 24	above 24
3.	Ball Dribbling **(seconds)**	over 17.02	17.02 – 15.11	15.10 – 11.29	11.28 – 9.38	under 9.38
4.	Jumps over obstacle **(repetitions)**	under 12	12 – 16	17 – 22	23 – 26	above 26

In our proposed test, which can be used for assessment in a remote environment, we have included basic questions about the game of handball. Given the nature of work in such an environment, teachers usually introduce students to the game with video materials, which include not only historical references about it, but also rule knowledge. The 15 basic questions we have proposed, tailored to the age of the students, are:

Handball Quiz

Instructions: Mark the correct answer by choosing one of the given options (A, B, C, D). Each question has only one correct answer.

1. **What is the country of origin of handball?**
   A) Sweden B) Denmark C) Germany D) USA
2. **Which of the following are the correct dimensions of a handball court?**
   A) 12 × 24 m B) 18 × 36 m C) 20 × 40 m D) 25 × 50 m

3. **What are the dimensions of the handball goal?**
   A) 3 × 3 m B) 2 × 3 m C) 2.50 × 3.50 m D) 2.20 × 2.80 m
4. **How many players are there in a handball team (including substitutes)?**
   A) up to 12 B) up to 14 C) up to 13 D) up to 16
5. **What is the most commonly used pass in handball?**
   A) Bounce pass B) Two-handed chest pass C) With one hand over the shoulder D) One-handed underhand pass
6. **At what distance from the goal is the goalkeeper area line?**
   A) 6 m B) 6.5 m C) 7 m D) 9 m
7. **How many players from each team can be on the playing court at the same time?**
   A) 6 B) 8 C) 7 D) 11
8. **What is the maximum number of steps a player can take while holding the ball?**
   A) 4 B) 3 C) 5 D) 2
9. **How many substitutions can a team make during one half?**
   A) 3 B) 5 C) Unlimited D) 4
10. **Is the goalkeeper allowed to leave the goal area?**
    A) Yes B) Yes, but not while holding the ball C) No D) Only during attack
11. **How many referees officiate a handball match on the court?**
    A) One head referee and one assistant B) Two referees with equal authority C) Four D) One
12. **When is a goal counted in handball?**
    A) When the entire ball crosses the goal line B) When half of the ball crosses the goal line C) When the ball touches the goal line D) When the ball touches the net
13. **Is it allowed to transfer the ball from one hand to the other?**
    A) Yes B) No C) Only while moving D) Only when standing still
14. **What is the maximum time a player can hold the ball without performing any action?**
    A) 5 seconds B) 4 seconds C) 3 seconds D) 1 second
15. **Can a handball match end in a draw?**
    A) Yes B) No C) Only after extra time

To evaluate students when solving the test, we propose a 15-point scale for converting point scores into numerical grades. **(Table 6)**

Table 6. *Score conversion scale*

Points	Grade (Text)	Grade (Numeric)
15	**Excellent**	**6,00**
14	**Excellent**	**5,75**
13	**Excellent**	**5,50**
12	**Very good**	**5,25**
11	**Very good**	**5,00**
10	**Very good**	**4,75**
9	**Very good**	**4,50**
8	**Good**	**4,25**
7	**Good**	**4,00**
6	**Good**	**3,75**
5	**Good**	**3,50**
4	**Satisfactory**	**3,25**
3	**Satisfactory**	**3,00**
0 – 2	**Poor**	**2,00**

CONCLUSIONS

The effectiveness of teaching in the subject "Physical Education and Sports" is directly dependent on the means and methods used by the teacher, as well as on the active and conscious participation of the students.

Regardless of the type of learning environment (real or remote), there is a need to assess the knowledge and skills acquired by the learners. In this regard, to achieve the goal of objectively assessing the sports and technical skills and knowledge of handball students, it is imperative to use an appropriate assessment system. One of the main motivators of students is objective and reliable assessment, as well as clear goal setting. To assess the sports and technical skills of students, we propose the use of normative tables differentiated by gender, with the tests themselves covering the most important elements that students must master, consistent with the curricula and learning content.

When conducting practical tests in an emergency (epidemiological) situation cannot

be implemented, we offer a sample test for assessing students' knowledge when working in a remote environment.

The model we propose can be used for ongoing control, as well as for forming a handball assessment for fifth-grade students.

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