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Original article

Development of a game model for mini-handball

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Abstract

Mini-handball is a particular form of handball, along with street-handball and beach-handball. This type of game appeared from the need to lower the age of first contact with handball. As a result, the rules of the game were adapted to the capabilities of children aged between 8 and 10 years. Mini-handball has been successfully implemented, leading to an increase in the number of competitions for this age group. Although at this age the aim is not to achieve sports performance but only to rigorously train the basic technique of the game, the development of a game model is still necessary. This requirement derives from the need to know the training content for this age level. Therefore, when the game model is known, the training can be adapted to the exigencies of the model without wasting precious time with training actions that are not found in the game pattern. From the age of 8 to 10 years, the bilateral game as a means of training gradually increases in importance. Consequently, the training of these children involves participation in more and more games. Initially, the games will be played during Cup competitions with a small number of participating teams (3-4), but towards the end of the time interval, children will participate in festivals with a large number of teams (25-30).

Keywords: mini-handball, game model, competition, age group.

Introduction

"The game of handball is constantly experiencing an exponential increase in the level of play, dynamics, training methods, technical structures, physical involvement and personal touch on specific technical elements, aspects that need to be treated with interest so that players can maintain their performance at a high level." (Muntianu & Abălașei, 2021, p. 579)

Throughout life, the human body changes from birth to old age. There are three stages in the development of a child's body between the ages of 0 and 18 years. The first stage of growth is characterised by changes in organs, body segments, weight gain and volume. The second step involves the differentiation process, which is characterised by physiological and morphological changes; during this stage, the body helps the child to perform physical and intellectual activities. The third stage encompasses the development process, which is the sum of the growth and differentiation processes. The growth and development of a child occur at the same time but not uniformly. (Negulescu et al., 2017) Children aged 4-6 years identify with other people and thus the "relational ego" emerges. Between the ages of 8 and 12, with the development of thought and volition, the "personalised self" is shaped. (Romila & Macovei, 2018)

Mini-handball is a relatively recent form of handball, which has adapted the game rules to the capabilities of children aged 6-10 years. Thus, the playing time is shorter (4 x 10 minutes with a 2-minute break between periods 1 and 2, 3 and 4, and a 5-minute break between periods 2 and 3), the playing field is smaller (20 m long, 16 to 18 m wide), the goal area is reduced (two half-circles with a 5 m radius), the ball has a smaller size (48 cm in circumference and 290 grams in weight) and the handball goal has smaller dimensions (1.6 m in height and 2.4 m in length). According to the training strategy for children aged 6-10 years, "the specific rules, methods and means for adult training have nothing to do at this level" (Hantău & Manolescu, 2016, p. 37). Therefore, the development of a game model will help us to clearly delimit the training content for children in this age group.

In Romania, both men's and women's handball is a sport with a long tradition, which has known periods of European, world and Olympic glory at all training levels. However, today's reality points out stagnation in performance, which is largely due to the training methodology. (Alexandrescu & Morari, 2012)

The game model development is a very important step towards achieving training efficiency, because all participating students will go beyond the minimum acceptable level of performance according

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to the learning abilities of each individual, in conditions of mental comfort and with economy of effort and time (Jinga & Negreţ, 1994).

Modelling in physical education and sports training is taken over from cybernetics. An effective model must meet certain conditions, namely to be simple, isomorphic (to accurately reflect the original), relevant (to highlight the main features of the original) and generalising (Hantău, 2004).

The four years devoted to coaching children in order to develop the planned game model are divided into two major stages:

- 6 - 8 years - the basic training stage;
- 8 - 10 years - the guided basic training stage.

In the basic training stage, the main objectives consist in getting used to the ball (6-7 years old) and to the partner (7-8 years old). At this stage, the training is primarily focused on movement games and practical routes, which include basic technical elements.

In the guided basic training stage, the main objective consists in getting used to the opponent (8 to 10 years old). At this stage, the movement games and practical routes are gradually replaced by means specific to the game of handball, but they do not completely disappear (Igorov-Bosi et al., 2014). This stage coincides with the start of participation in mini-handball competitions. In the first year, this is more reduced, being represented by the participation in Cup competitions together with 3-4 other teams, all games taking place during one day.

Hantău (2021), a specialist in the field, reports from his own experience that all athletes, regardless of age, participate with much more involvement in workouts where movement games are used as training exercises. These types of means manage to integrate all the factors of training at the same time, but more importantly, the emotional participation of athletes is incomparably higher than in the case of analytical exercises for learning-strengthening-improving specific skills. Another idea put forward by the same author is that athletes trained through movement games have a greater ability to apply the skills built during the game than children trained through analytical exercises, and this is more obvious at young ages.

In the field of sport, thinking gets particular connotations because players are sometimes put in extreme situations for which they must promptly find the best solutions. From this perspective, the game of handball, as a heuristic discipline and a team sport, requires players to quickly think and respond to tactical situations arising during the game. The player's motivational reactions must be creative to defeat the opposing team and collaborate with teammates. Players need to be heuristic, sociable and cooperative. (Romila & Macovei, 2018)

From the second year of this stage, the importance of games with an unknown opponent increases, and players can participate in mini-handball festivals gathering 20-25 teams, which are held over 2-3 days.

Increasing the importance of games should be seen as a way of assessing the children's progress rather than a way of achieving sports performance. For this reason, the development of a game model provides coaches working with children aged 8-10 with a control tool for their progress. In the long-term training planning, the mini-handball game model is actually an intermediate one compared to the final model of elite handball.

In co-educational terms, school handball should be approached with respect to its potential to develop social and civic skills, which include respect for the game rules, teamwork, solidarity, fair play, commitment and responsibility (Arias et al., 2021).

We will also take into account the views of other specialists on the training of mini-handball athletes. Thus, in setting the training and selection criteria for this sport, the following recommendations are made by Simion et al. (2011):

- Establishing the optimal selection age at which individual motor skills and qualities can be developed with maximum efficiency to ensure the achievement of performance in the chosen sports branch.
- The rejection process is not advisable in the first selection stage, because sometimes individuals who might reach superior results in their future activity are eliminated; thus, a continuous selection process should take place to avoid this scenario.
- Specific selection tests in the field of sport will be applied according to the individual's age, gender, level of performance, experience and development.
- Selected athletes must comply with the regional sports characteristics, sports tradition, training conditions and sports facilities but also the social, economic and professional environment conditions, which can lead to the improvement of motor qualities and skills. (Simion et al., 2011)

Analysing the ways of achieving the sports selection and training in Romania and other countries such as Spain, Poland and France, some similarities and differences can be found. As similarities, we can list: the selection basis, the selection age for initiation in the game of handball, the game concept and the basic material conditions. In 2019, France had about 55,000 professional athletes, while our country had only 6,000 professional athletes. Another very important aspect is the financial support, which is clearly superior in other countries compared to Romania. The professional level of handball coaches is also higher in the other analysed countries, which has led to an extremely efficient system of continuous training. (Simion et al., 2011)

Even other older studies (Ghervan, 2014) report and describe a decrease in the age of sports selection compared to the existing model for children. Thus,

the average age of recruiting players for men's handball teams is 11.6 years (Leuciuc, 2018; Massuça, 2011).

A study by Hantău (2016) highlights the characteristics of the first training stage in modern handball, which is called the general preparation stage and lasts a very long time. This stage is intended for children aged between 6 and 10 years; the main objective of this stage is the learning of basic motor skills that will be used later, when children will start playing the game of handball. (Hantău & Manolescu, 2016)

Methods

The mini-handball game model primarily aims at developing a control tool for coaches who work with children aged between 8 and 10 years.

The main objective of this research is the quantitative and qualitative description of the mini-handball game.

The research participants are children engaged in the National School Sport Olympiad – Mini-handball, the Municipal Mini-handball Championship and the National Mini-handball Championship. A total of approximately 300 children were registered during the research and 22 games were recorded.

The research methods used are observation and mathematical statistics (to interpret the results obtained from the observation method). The observation was systematic and was performed with the help of video cameras. In this regard, the "EIA" (efficiency in action) video analysis system belonging to the "ORTEC Sports" Company was used. This system works as follows: during the game, analysts collect real-time data on players' positions, actions and efficiency. The results generate statistics that can provide a real analysis of the game content and efficiency.

Results

The recorded data are divided into two categories: team data and player data.

Team data

Table 1. Passes and possession of the ball

Passes					Possession				
Total	Wrong	Decisive	Backwards	Forward	Time	Moments	0-5 s	5-15 s	15-45 s
104	23	14	11	70	5'30"	50	26	22	2

Table 2. Contact with the opponent, shots, fouls and free throws

Contact with the opponent				Shots				Fouls	Free throws
Defensive	Won %	Offensive	Won %	Total	Goal	Into the goal	Outside		
32	29%	31	71%	22	8	18	5	20	20

Player data

Table 3. Attack game data

Ball touch	Passes	Shots	Goals	Attack duels		Fouls received
				Total	Won	
23	12	4	2	5	3	2

Table 4. Defence game and other data

Playing time (min)	Actions	Defence duels		Fouls committed
		Total	Won	
18	8	5	2	3

Discussions

The data presented above reflect the average scores of all recorded game actions. Each monitored team has one, two or even three children who clearly exceed the average, but also children whose scores are below the average calculated by us. In our opinion, these are the minimum values that a child should reach during a game because, at this level, we are not interested in making a rigorous selection and achieving sports performance, but our purpose is to train children and attract them to the game of handball.

Through this study, we ask ourselves what aspects of the sports training need to be improved at this age:

What are the most common technical elements in mini-handball?

What is the minimum tactical knowledge required for mini-handball?

What are the main mistakes made by children during the mini-handball game?

Conclusions

The selection age or the age at which the child has the first contact with handball has decreased a lot, reaching 6 years old. As proof, the mini-handball and baby-handball competitions for children aged 6-10 have also appeared in our country 6 years ago, although they have been present in Eastern European countries for a very long time. Defining all this, we emphasise again the need to develop a mini-handball game model, whose main purpose is to develop a control tool for coaches working with children aged between 8 and 10 years. The main objective of this research is the quantitative and qualitative description of the mini-handball game.

Analysing the tables above and observing a lot of games at this level, we propose the following game model for this stage:

ATTACK:

Technical: on-field movement, simple and multiple dribbling, catching and passing the ball while moving in different directions, simple change of direction (right and left) followed by a pass or shot on goal, throwing on goal (while running and jumping)

Tactical: catching the ball while moving towards the goal, direct demarcation

There is no attack system.

Defence

Technical: on-field movement, stopping the dribble (from the front, lateral and rear sides), blocking high balls thrown on goal

Tactical: placement between the opponent and the own goal, ball interception, direct attack to the opponent, tight marking

We also propose the man-to-man defence all over the court.

The data collected by us highlight the following aspects:

- children are more attracted to attack than defence, which is proven by the number of actions (23 in attack and 8 in defence);
- in defence, children hesitate to make a foul when in contact with the opponent and lose many direct duels (out of 5, they lose 3 and make 3 fouls per game);
- at this level, it is easy to notice the children's insecurity when catching and passing the ball (out of 104 passes made by a team during a game, 23 are wrong); therefore, we recommend paying more attention to the training of this technical element;
- out of the average 104 passes made during a game, 70 are in the attack direction and 11 in the direction of the own goal; this shows the children's natural predisposition to attack the opponent's goal;
- out of the 40 minutes of play, the team has possession of the ball for only 5 min 30", and the moments of possession are 50 in number; due to the children's age and lack of experience, it is observed that the moments of possession are short: up to 5 s (26) and between 5-15 s (22), while the longest in duration, namely 15-45 s (2), are very few; this is explained by the fact that many mistakes are made at this age, which leads to losing possession of the ball, or by the fact that these children are anxious to complete the attack;
- the imbalance between attack and defence is given by the percentage of successful duels during a game: in attack, 32 duels, of which 71% are won, and in defence, 31 duels, of which 29% are won;
- the average playing time for a child during a 40-minute game is 18 minutes.

In conclusion, at this level, the emphasis should be placed on:

- strengthening the catch and pass of the ball;
- extending the duration of the attack;
- strengthening the defence-specific technical elements.

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