Study on the optimization of children's initiation into the practice of the handball game

Mihăilă Ion*, Crețu Marianb, Popescu Daniela Corinac, Gionea Bogdanb
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*University of Pitesti, str. Târgu din Vale, nr. 1, Pitești-110040, Romania
bUniversity of Pitesti, str. Târgu din Vale, nr. 1, Pitești-110040, Romania
cUniversity of Pitesti, str. Târgu din Vale, nr. 1, Pitești-110040, Romania
dUniversity of Pitesti, str. Târgu din Vale, nr. 1, Pitești-110040, Romania

Abstract

The purpose of this paper is to present a number of methods and means to help children in practising the handball game. The research was conducted in a sports club during a school year and aimed to assess the level of training for 32 children beginners in practising the handball game. There were performed a series of somatic and movement measurements recommended by the specialized federation. The volume of training hours met the requirements of the professional federation for children beginners echelon, namely 400 hours / year.

Problem Statement

The movement structure of the current handball game requires from teachers and coaches working in the teams of children, undertaking new studies and research in accordance with the training and competition news published internationally. How young handball players will learn the secrets of the game is one of the main factors in obtaining future performance. The content of the tactical and technical echelon of beginners is related to their possibilities and increases both quantitatively and in terms of difficulty at the level of junior teams.

Purpose of Study

The purpose of this paper is to present a number of methods and means to help children in practising the handball game. In this respect, the game model was much simplified, both in terms of tactical and technical content and in terms of running the game in attack and defense phases in order to adapt the children's potential to the means used and to create favorable conditions for the game.

To achieve maximum results of performance echelon, today's young man will play performance handball over 10-12 years, so it must be constantly assessing the level of development of the game, the type of player and the quality value imposed by the qualitative mutation of the game.

* Mihăilă Ion, Tel.: 040723298288
E-mail address: paulmihaila@yahoo.com
Methods

The research was conducted in a sports club during a school year and aimed to assess the level of training for 32 children beginners in practising the handball game. There were performed a series of somatic and movement measurements recommended by the specialized federation. The operation methods were adjusted and measured according to the children's age and level of training and in full accordance with the movement structure of the current handball game. The research methods were: bibliographic study method (the study of professional and interdisciplinary works with a high degree of applicability to the research topic), observation method (in games and training of departmental and private teams that comprise groups of beginners in practicing the handball game); the experiment (carried out during a school year which included the initial and final testing after a training period that lasted about 9 months), statistical and mathematical (the statistical indicators used were: arithmetic mean, standard deviation, coefficient of variation and “t” tests) and graphics (graphics of performance obtained within the two tests).

Findings and Results

In order to achieve the required training and performance objectives, the weight training factors during one school year were: 40% physical training, 50% technical training, 10% tactical training.

The volume of training hours met the requirements of the professional federation for children beginners echelon, namely 400 hours / year.

The somatic measurements were made on the main indicators in order to achieve superior results in the handball game, respectively: height 173.2 cm ± 3.42 cm, scale 145.02 ± 4.12, palm length 17.68 ± 0.87; ratio of height and weight 1.09 ± 0.02.

The results obtained by the research subjects at the beginning of training (600 m resistance running – 600 m standing long jump - SLJ, 50 m speed running- 50m vertical lift of the trunk - VLT, shuttle - shuttle, 20 m round dribbling through the cones -dribbling, agility test - agility) are listed in table 1.

<table>
<thead>
<tr>
<th>Statistical indicator</th>
<th>600m</th>
<th>SLJ</th>
<th>50 m</th>
<th>VLT</th>
<th>Shuttle</th>
<th>Dribbling</th>
<th>Agility</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>2.87</td>
<td>146.56</td>
<td>9.07</td>
<td>19.31</td>
<td>12.23</td>
<td>17.70</td>
<td>5.68</td>
</tr>
<tr>
<td>SD</td>
<td>0.25</td>
<td>6.04</td>
<td>0.17</td>
<td>2.06</td>
<td>0.36</td>
<td>0.73</td>
<td>0.37</td>
</tr>
<tr>
<td>Cv</td>
<td>8.66</td>
<td>4.12</td>
<td>1.88</td>
<td>10.65</td>
<td>2.91</td>
<td>4.11</td>
<td>6.47</td>
</tr>
</tbody>
</table>

After completing the training stage by using a number of ways specific to the handball game, the research subjects underwent the same control tests, the results being listed in table 2.

<table>
<thead>
<tr>
<th>Statistical indicator</th>
<th>600m</th>
<th>SLJ</th>
<th>50 m</th>
<th>VLT</th>
<th>Shuttle</th>
<th>Dribbling</th>
<th>Agility</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>2.49</td>
<td>153.56</td>
<td>8.44</td>
<td>22.94</td>
<td>11.71</td>
<td>17.21</td>
<td>5.36</td>
</tr>
<tr>
<td>SD</td>
<td>0.15</td>
<td>5.11</td>
<td>0.19</td>
<td>1.98</td>
<td>0.23</td>
<td>0.52</td>
<td>0.28</td>
</tr>
<tr>
<td>Cv</td>
<td>5.99</td>
<td>3.33</td>
<td>2.25</td>
<td>8.64</td>
<td>1.93</td>
<td>3.04</td>
<td>5.18</td>
</tr>
</tbody>
</table>

The analysis of the results for the 600 m resistance running (figure 1) showed that the performance of the research subjects in the initial testing had an arithmetic mean of 2.87 minutes, with a standard deviation of 0.25 minutes within normal limits and a coefficient of variation of 8.66% which shows a high degree of homogeneity. The final testing recorded an increase of 0.38 minutes, with an arithmetic mean of 2.49 minutes with a lower standard deviation (0.15 minutes) and a higher coefficient of variation (5.99%), showing the same high threshold of homogeneity. The “t” test values in the initial and final testing indicated a value of 7.43, emphasizing significant differences with 99% certainty (p<0.01).
The standing long jump (figure 2) in the initial testing had an arithmetic mean of 146.56 cm with a standard deviation of 6.04 cm which is within normal limits and a coefficient of variation of 4.12% which denotes a high degree of homogeneity. In the final testing, the subjects of the experimental group recorded an increase of 7 cm, with an arithmetic mean of 153.56 cm with a lower standard deviation (5.11 cm) and a higher coefficient of variation (3.33%), falling within a high homogeneity threshold. The „t” test had a value of 15.99 which indicated significant results with a certainty of 99% (p < 0.01).

The 50 m running test (figure 3) in the initial testing had an arithmetic mean of 9.07, a standard deviation of 0.17 s and a coefficient of variation of 1.88% (high degree of homogeneity). The final testing recorded an increase of 0.63 s, with an arithmetic mean of 8.44 s cm, standard deviation of 0.19 s and coefficient of variation of 2.25%, within a high homogeneity threshold. The “t” test had a value of 20.19 within the significance threshold of p < 0.01.
In the vertical lift of lying dorsal trunk test (figure 4), the performance was 19.31 repetitions ± 2.06, and a coefficient of variation of 10.65% (average homogeneity). The final testing recorded an increase of 3.63 repetitions, with an average of 22.94 repetitions ± 1.98 and a coefficient of variation of 8.64%. \( t' = 12.64 \) for \( p < 0.01 \).

![Figure 4. Vertical lift of lying dorsal trunk test](image)

The analysis of the shuttle test (figure 5) showed that the performance value was 12.23 s ± 0.36 s and a coefficient of variation of 2.91% (high homogeneity). The final testing recorded an increase of 0.52 s with the average 11.71 s ± 0.23 and a coefficient of variation of 1.93%. \( t' = 10.41 \) for \( p < 0.01 \).

![Figure 5. Shuttle test](image)

The dribbling through cones test (figure 6) in the initial testing recorded an average of 17.70 s ± 0.73 s and a coefficient of variation of 4.11% (high homogeneity). The final testing recorded an increase of 0.49 s with an average value of 17.21 s ± 0.52 s and a coefficient of variation of 3.04%. \( t'' = 8.20 \) for \( p < 0.01 \).

![Figure 6. Dribbling through cones test](image)
The agility test (figure 7) results in the initial testing had a value of 5.68 s ± 0.37 and a coefficient of variation of 6.47% (high homogeneity). The final testing recorded an increase of 0.32 s, with an average of 5.36 s ± 0.28 s and a coefficient of variation of 5.18%. \( t^* = 9.99 \) for \( p < 0.01 \).

**Figure 7. Agility test**

**Conclusion and recommendations**

We should find those favoring predispositions of beginner children which lead to the development of skills needed to obtain performance. The general objectives of the training should be consistent with the perspective achievement of the performance handball requirements.

The performance differences of the research subjects in the control tests carried out by the professional federation within initial and final testing are representative in terms of statistical significance threshold \( p < 0.01 \), which indicates the effectiveness of resources used during the research.

The somatic and movement measurements include the research subjects within the model imposed by the professional federation.

The use of various means and in full compliance with the peculiarities of age and training of children as well as the structure of the handball game lead to superior results in training and competitions. Games in all their forms must be promoted continuously in training beginner children to practice the handball game, since it gives them unprecedented resolution and ever-changing situations that will be a positive transfer in obtaining superior results.

**References**

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