

**CONTRIBUTIONS REGARDING PHYSICAL TRAINING IN HANDBALL
AT THE LEVEL OF JUNIOR IV BOYS, WITH EMPHASIS ON
DEVELOPING THE MOTOR QUALITIES OF SPEED AND DEXTERITY**

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Abstract

The aim of the study was to evaluate the effectiveness of an eight-week structured physical training program focused on the development of speed and dexterity in junior IV handball players. The sample consisted of 25 fourth-grade pupils enrolled at the Sports Highschool in Piatra Neamț, who regularly attended handball training sessions. The research used a quasi-experimental design with two assessments (pre- and post-intervention). Performance was evaluated through specific tests (dribbling on an obstacle course, passing and catching, standing start at an auditory/visual signal, complex sprint–dribbling–throw test) and through a questionnaire regarding athletes’ perceptions of progress and motivation. The results showed a significant increase in the “Very good” and “Good” marks in all tests, with the disappearance of the “Sufficient” mark and the constant absence of the “Insufficient” mark. For example, in the passing and catching test, the “Very good” mark increased from 12% to 60%, and in the standing start test from 4% to 40%. The questionnaire also indicated increased motivation, collaboration, and communication within the team. These results confirm the effectiveness of the proposed program and support the need for the systematic integration of speed- and dexterity-oriented drills in the training of young handball players.

Introduction

Junior handball represents a privileged context for building a solid general motor base and for the progressive development of technical-tactical skills. At the level of junior IV, physical training does not only play the role of supporting immediate performance but also of creating the premises for harmonious long-term development. The increasing demands of competition, even in the younger age categories, require coaches to move from general, predominantly intuitive programs to structured approaches based on clear methodological principles and objective evaluation.

The specialized literature underlines that effective physical training in handball must integrate the development of fundamental motor qualities – especially speed and dexterity – with the continuous practice of technical-tactical elements [1,2]. Modern programs designed for children emphasize varied, game-like exercises that combine fast running, dribbling, changes of direction, and passing–catching actions, precisely in order to increase both physical capacity and interest in activity. Recent studies show that, between 9 and 11 years of age, the capacity to improve reaction speed, coordination, and ball control is very high, and well-structured interventions can produce visible progress in a relatively short time [2, 4, 5].

In practice, however, at the level of schools and clubs with limited resources, training programs are often focused almost exclusively on technical-tactical elements, while the systematic development of speed and dexterity remains secondary. The objective evaluation of progress is frequently reduced to the coach’s subjective assessment and competition results, without the use of standardized tests. This situation makes it difficult to finely adjust training content and to quickly identify weaknesses [3].

The present study aims to respond to these limitations by implementing and evaluating an eight-week program focused on speed and dexterity, applied to a group of junior IV players. The research combines motor tests and a perception questionnaire in order to capture both objective changes in performance and the way athletes experience the intervention in terms of motivation, collaboration, and satisfaction with training. The general objective is to provide a realistic and easily replicable working model, adapted to the conditions of a sports high school, which can be used as a benchmark in the training of young handball players.

Material-method

Research design. The study used a quasi-experimental design with a single group and two assessment moments (initial – pre-experiment and final – post-experiment), without a control group. The intervention consisted of implementing a specific physical training program integrated into the regular handball training sessions over a period of eight weeks.

Participants. The sample consisted of 25 male pupils from the fourth grade, enrolled at the Sports High School in Piatra Neamț and registered in the junior IV handball team. All participants regularly attended handball training and had a similar initial level of preparation, corresponding to the primary school cycle. Only athletes without medical conditions limiting physical effort and who took part in both assessments were included.

Training program. The intervention was structured over eight weeks and was integrated into the usual training sessions. The content combined:

- sprint exercises over short distances, with and without the ball;

- dribbling in a straight line and on courses with changes of direction, among cones;
- passing and catching exercises in pairs and small groups, performed at speed;
- complex sequences (sprint + dribbling + throw at goal) designed to simulate real game situations.

The intensity and complexity of the exercises were increased gradually, respecting the principles of progressive adaptation and specificity for the 10–11-year-old age group.

Instruments and evaluation tests

Motor performance was evaluated through the following control tests:

1. ***Passing and catching test*** – a preset number of passes between teammates within a limited time interval; the number of successful executions and technical quality were monitored, and the results were classified on a four-level scale: “Very good (V.G.)”, “Good (G)”, “Sufficient (S)”, “Insufficient (I)”.
2. ***Standing start at auditory/visual signal*** – a test of reaction speed; the time from signal to covering a set distance was recorded.
3. ***Complex test (sprint, dribbling, and throwing)*** – integration in a single test of sprinting, dribbling among cones, and a final throw at goal; the total time and execution quality were recorded.

In addition to these tests, a structured questionnaire was administered, developed in accordance with the research objectives and applied before and after the intervention. The questionnaire evaluated:

- perceived progress in ball control, fast dribbling, and reaction to signals;
- motivation for training and participation in matches;
- collaboration and communication with teammates;
- the level of satisfaction with the training program.

Methods of analysis. Data were processed by means of descriptive statistics (number of cases and percentages for each mark category, comparison of pre–post distributions, and narrative description of trends). The questionnaire responses were summarized in percentages and interpreted in correlation with the evolution in motor tests.

Results

Passing and catching test. The distribution of marks showed a clear improvement between the initial and final assessments. In the pre-experimental stage, only 3 pupils (12%) obtained “Very good”, 10 pupils (40%) obtained “Good”, and 12 pupils (48%) were classified as “Sufficient”, with no “Insufficient” marks. After the eight-week program, 15 pupils (60%) reached “Very good”, 10 (40%)

remained at “Good”, and the “Sufficient” mark disappeared. This redistribution indicates a net increase in technical quality and execution speed in passing and catching.

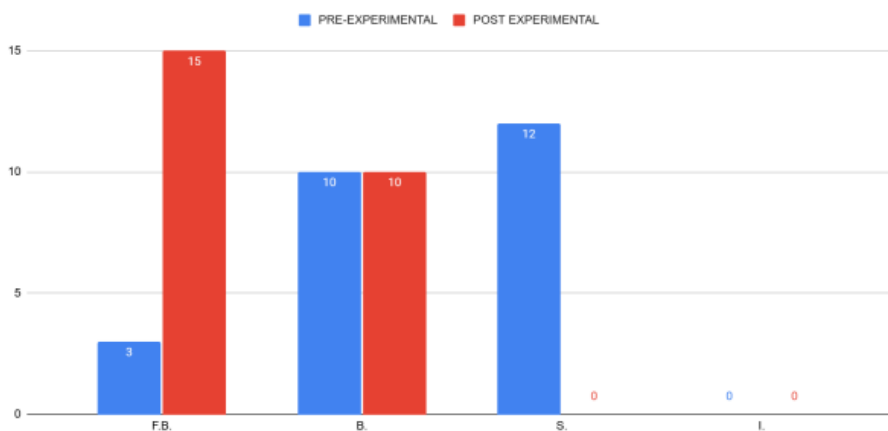


Fig. 1 Results of the passing and catching tests, pre-experimental and post-experimental

Standing start at auditory/visual signal test. Initially, only 1 pupil (4%) was classified as “Very good”, 12 pupils (48%) as “Good”, and 12 pupils (48%) as “Sufficient”, with no “Insufficient”. Post-intervention, 10 pupils (40%) obtained “Very good”, 10 (40%) “Good”, and only 5 (20%) remained at “Sufficient”. The large number of higher marks and the marked reduction in “Sufficient” show clear improvement in reaction speed and neuromuscular coordination.

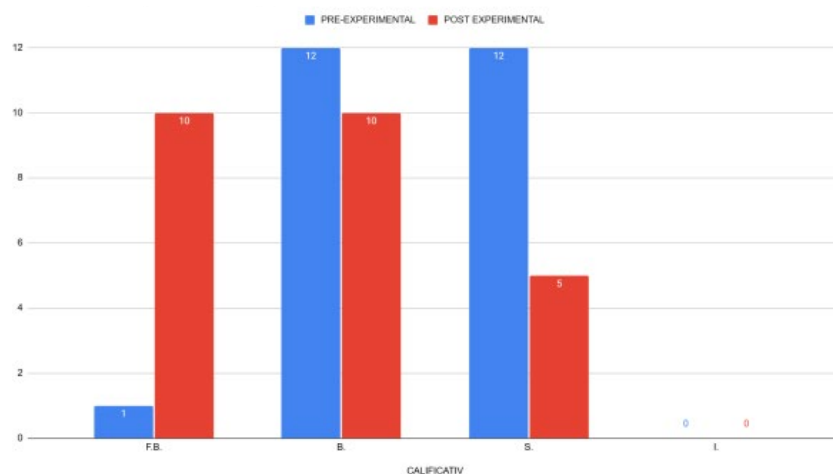


Fig.2 Results for the standing start test at auditory/visual signal

Complex test (sprint, dribbling, and throwing). The comparative analysis of the tests showed more than a threefold increase in the number of pupils classified as “Very good”, along with a constant decrease in lower marks. The pupils managed to integrate more effectively the sequences of sprinting, dribbling, and finishing at goal, which indicates a positive transfer of specific training to situations close to real game conditions.

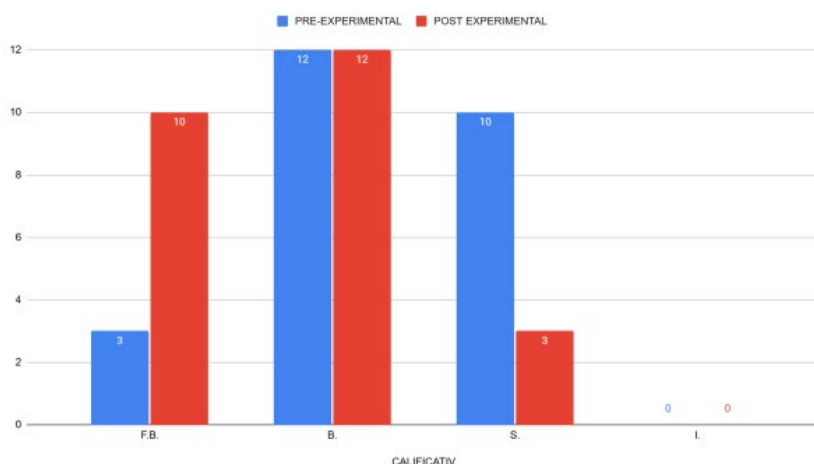


Fig.3 Results for the complex test

Overall motor tests. In all tests, no “Insufficient” marks were recorded either before or after the intervention, confirming an adequate basic level in the group. However, at the initial evaluation, a significant proportion of pupils were at the “Sufficient” level, whereas after the implementation of the program the distribution shifted towards “Good” and “Very good” in both dexterity-oriented and speed and reaction tests.

Questionnaire results. Analysis of the responses showed that:

- over 60% of participants reported maximum perceived progress in fast dribbling;
- 96% stated that the program improved collaboration with teammates;
- 100% indicated an increase in the quality of communication during training and matches;
- the vast majority of pupils reported increased motivation for training and a high level of satisfaction with the content of the exercises.

Discussions

The results obtained confirm the hypothesis that a structured physical training program explicitly oriented towards the development of speed and dexterity can

produce significant improvements in junior IV players. The increase in the proportion of “Very good” marks in the passing and catching test, as well as in the complex test, shows that the exercises allowed consolidation of eye–hand coordination and ball control in dynamic contexts, which are essential aspects for handball [6, 7].

The observed trends are consistent with the literature emphasizing the importance of specific speed and agility training at young ages, when neuromuscular plasticity and receptivity to motor learning are at their peak. Likewise, the improvement in reaction speed in the standing start test is in line with studies showing that repeated reaction-to-signal drills, combined with short sprints, can significantly reduce response times in young athletes [8-10].

The original contribution of this study lies in the integration of motor tests with subjective evaluation through a questionnaire. The fact that over 60% of the athletes report maximum progress in dribbling and almost all indicate improved collaboration and communication suggests that the program acted simultaneously on individual competences and on the team climate. In handball, where success depends on synchronizing actions and on fast mutual understanding between players, these aspects are just as important as physical parameters and are essential for a good efficiency during de matches [10-12].

The research hypothesis is largely confirmed: the program focused on reaction speed, dribbling, and passing led to quantifiable increases in motor performance and positive effects on motivation and collaboration. However, several limitations should be noted. First, the absence of a control group does not allow for completely ruling out the influence of other factors (natural maturation, experience gained in matches, out-of-school influences). Second, the sample is relatively small (25 pupils) and comes from a single sports high school, which limits the generalization of the results.

Another limitation is related to the fact that the statistical analysis was predominantly descriptive; no inferential tests (such as t-tests or ANOVA) were used to quantify the statistical significance of pre–post differences. Nevertheless, the magnitude of the changes (for example, the increase from 12% to 60% “Very good” in the passing and catching test or from 4% to 40% “Very good” in the standing start test) suggests an important practical effect.

Overall, the results support the idea that, in the context of junior handball, the systematic inclusion of exercises for speed and dexterity, combined with game-like tasks and cooperation drills, is an effective direction for optimizing physical training.

Conclusions

The study demonstrated that an eight-week structured physical training program focused on the development of speed and dexterity leads to significant improvements in motor performance among junior IV handball players. The

distribution of marks in the passing and catching test, standing start test, and complex test clearly shifted towards the “Good” and “Very good” levels, while the “Sufficient” marks decreased or disappeared.

The questionnaire results simultaneously highlighted increased motivation, collaboration, and communication within the team, suggesting that the intervention had a global impact – not only physical but also psychosocial. The initial hypothesis, according to which a specific training program focused on speed and dexterity improves performance and team cohesion, is thus confirmed.

For practice, the main conclusion is that coaches working with junior IV players should consistently integrate tests and exercises for reaction speed, dribbling, and passing into the weekly training structure, using both objective evaluations and athletes’ feedback.

Future research perspectives include extending the program to larger groups and other clubs, introducing a control group, and using inferential statistical analyses so that the observed effects can be quantified and generalized with greater rigor. It would also be useful to investigate the relationship between the development of these motor qualities and actual competition performance (number of goals, counterattack efficiency, number of technical errors) in order to fully validate the usefulness of the program in the competitive context.

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