

STRUCTURE AND PHYSICAL TECHNICAL AND TACTICAL TRAINING HANDBALL PLAYERS AGED 10-11 YEARS

Palagin A.A.
Belarusian State University

Annotation. *Purpose:* to study the structural and functional relationships, physical, technical and tactical training handball aged 10-11 years. *Material:* the study involved 20 handball players aged 10-11 years. *Results:* isolated and subjected to review 55 correlations between speed, speed-strength, coordination skills and basic technical and tactical methods of the game. Consider the correlation matrix structure level of physical, technical and tactical training to handball pedagogical experiment. Found that 55 of the 15 correlations calculated (27.3%) positive and 12 (21.81 %) of negative relationships were statistically significant. It is 49.08 % of the linkages ($r = 0.54$ to 0.85). Correlations allow to evaluate the effectiveness of the training process under the influence of specific funds targeted at individual components of motor abilities and techniques of the game. *Conclusions:* methodological recommendations, technology and program start-up phase of preparation of young handball players. The program aims at the development of the dual physical and technical and tactical training.

Keywords: handball, physical, technical, tactical, training, correlation structure, techniques, game.

Introduction

Modern handball significantly differs from handball of 80-90-s, which was characterized, mainly, as slow and power kinds of sports; on modern stage of its development, with evolution and changing of game's character scope and intensity of motion activity increased significantly and it is realized in probabilistic game situations of competition character. That is why potential players shall meet higher requirements to physical, technical-tactic and in general integral fitness, videlicet: they shall be able to demonstrate conditional and coordination skills in space-time accuracy of technical tactic actions and their bio-mechanic rationality. In this connection we have to admit that system of handball players' training is not able to satisfy completely increased demands of domestic handball in young skillful sportsmen, because in modern conditions it is not sufficient both in respect to scope and quality of training [1, 2, 14, 15-19, 21 et al.].

This circumstance witnesses about demand in searching of scientifically grounded approach to building, planning and managing of system of junior handball players' training, which would consider tasks, conditions of training, continuation, new achievements and innovative prospects.

One of promising direction in improvement of system of handball players' training is combined influence on physical and technical-tactic fitness of players that, in its turn, will permit to ensure coordination, quickness and variety of technical-tactic potential, facilitating to effectively and rationally fulfill competition's movements under influence of different disturbing factors [5, 6, 7 et al.].

The problem of interconnection of physical and technical-tactic indicators is theoretically and methodically important for psychological-pedagogic direction of sport training [2, 3, 5 et al.]. For theory of sport it is very important to have answer about interconnection of these indicators, characterizing different levels of sportsman's biological individuality.

Interconnection of physical fitness and technical-tactic actions is based on functional complex of movements' coordination, on accumulation and realization of life experience, elements of programming and mechanisms of correction as well as on general, executive (physical) components of coordination process [9].

In works by V.G. Manolaky, V.I. Liakh there is information that interconnection of some components in sportsmen's organism in structure of physical and technical-tactic fitness is, in general, not important. Little quantity of interconnections in structure of fitness is explained by both authors by existing of high individual distinctions [11, 12 et al.] For example, depending on the fact if there exists interconnection between certain components of holistic physical and technical-tactic fitness or not, selection of means, applied for their development and improvement depends on. Presence of strong connections implies using of exercises of integrated influence and on the contrary: their absence implies searching of new means of targeted influence.

A number of authors [7, 8, 9, 20 et al.] think that with age authenticity of correlation links reduces; high positive correlation dependence is present at age of 10-12 years old.

However, in spite of evident character of usefulness of such researches, the problem of physical and technical-tactic fitness of potential sportsmen, namely, 10-11 years old junior handball players at initial stage of training, still remains to be insufficiently studied.

As far as works of our predecessors showed that correlation interconnections in different age periods were far from being synonymous by level of fitness then problem of the research of interconnection of physical and technical fitness of 10-11 years old handball players is an urgent task.

The present work has been fulfilled in compliance with SRW work of physical education and sports department of Byelorussia state university.

Purpose, tasks of the work, material and methods

The purpose of the work was to study structural-functional interconnections between physical and technical-tactic fitness of 10-11 years old handball players before and after pedagogic experiment.

The methods and organization of the research: analysis and generalization of literature sources; for determination of physical and technical-tactic fitness's level we applied control tests, which, as per requirements of sport metrology, were reliable and valid. The battery of tasks included: **technical-tactic fitness** "snake run with dribbling" and "complex exercise"; **conditional fitness** - "side motion (40 meters)" and "jumps on one and two legs"; **coordination fitness** - "throwing of tennis ball for distance from initial position - sitting, legs apart" and shuttle run (3x10 m)".

The received results were statistically processed in standard way: we used calculation of mean arithmetic (\bar{x}); error of mean arithmetic (m); mean square deviation (σ); coefficient of multiple correlation. Mathematical processing was carried out with the help of computer program STATISTIKA 6.0.

The researches were conducted in center of Olympic reserve "Viktoria", Brest, at trainings, in period from September to December 2011. In the researches junior handball players of 10-11 years old age ($n=20$) participated.

Results of the research

Correlation analysis of current state of inter-correlation links between technical-tactic and physical fitness of 10-11 years old handball players permits to mark out their important and background components.

In the course of pedagogic experiment before and after research we analyzed interconnections between 11 indicators of 6 tests for quickness, speed-power, coordination abilities and main technical-tactic methods of game. In total we regarded 55 correlations between mentioned above indicators before and after experiment.

Correlation matrix of physical and technical-tactic fitness of 10-11 years old handball players **before pedagogic experiment** permits to say that from 55 calculated correlations 15 (27.3%) positive and 12 (21.81%) of negative links were statistically confident that made up only 49.08% of all links (r = from 0.54 to 0.85).

In correlation structure of physical and technical-tactic fitness of junior handball players we registered **confident positive links** (r = from 0.54 to 0.85) between:

- Quickness and ability to adapt and reconstruct movements of test task "shuttle run 3x10 m" ($r=0.77$; $P<0.01$);
- Absolute (ability to adapt and reconstruct movements of test task) and relative (latent) indicators (difference between 30 meters' run and shuttle run 3x10 m) coordination abilities ($r=0.82$; $P<0.001$);
- Right and left arms with fulfillment of ballistic movements accentuated for distance ($r=0.63$; $P<0.05$);
- Special condition skills (side movement) and absolute (quickness ($r=0.55$; $P<0.05$) and ability to adapt and reconstruct movements ($r=0.74$; $P<0.01$)) and relative (latent) indicators (difference between 30 meters' run and shuttle run 3x10 m ($r=0.61$; $P<0.05$)) of coordination abilities;
- Indicators, which characterize special condition skills - jumps on two legs and jumps on right leg ($r=0.77$; $P<0.01$) and left leg ($r=0.76$; $P<0.01$);
- Indicators of special condition skills - jumps on left and right legs ($r=0.84$; $P<0.001$), side movements with sidestep ($r=0.68$; $P<0.01$), and left hand's ballistic movements, accentuated on distance ($r=0.65$; $P<0.05$);
- Techniques of game (snake run with dribbling) and absolute (quickness ($r=0.75$; $P<0.01$) and ability for adaptation and reconstruction of movements ($r=0.85$; $P<0.001$)) and relative (latent) indicators (difference between 30 meters' run and shuttle run 3x10 m) ($r=0.59$; $P<0.05$)) of coordination skills;
- Techniques of game (snake run with dribbling) and special condition abilities (side movement with sidesteps) ($r=0.73$; $P<0.01$).

Negative confident links (r = from -0.54 to -0.86) were found between the following:

- Techniques of game (snake run with dribbling) and special condition abilities jumps on right ($r=-0.67$; $P<0.01$), left ($r=-0.76$; $P<0.01$) on two legs ($r=-0.76$; $P<0.01$);

– Special condition abilities jumps on right leg and absolute (quickness ($r=-0.56$; $P<0.05$) and ability to adapt and reconstruct movements ($r=-0.72$; $P<0.01$)) and relative (latent) indicators (difference between 30 meters' run and shuttle run 3x10 m) ($r=-0.57$; $P<0.05$)) coordination abilities;

– Special condition abilities – jumps on left leg and absolute (quickness ($r=-0.59$; $P<0.05$) and ability to adapt and reconstruct movements ($r=-0.86$; $P<0.001$)) and relative (latent) indicators (difference between 30 meters' run and shuttle run 3x10 m) ($r=-0.75$; $P<0.01$)) coordination abilities;

– Special condition abilities – jumps on two legs and absolute (quickness ($r=-0.67$; $P<0.05$) and ability to adapt and reconstruct movements ($r=-0.77$; $P<0.01$)) and relative (latent) indicators (difference between 30 meters' run and shuttle run 3x10 m) ($r=-0.56$; $P<0.05$)) coordination abilities.

After pedagogic experiment matrix of correlation structure of physical and technical tactic fitness of 10-11 years' handball players had a number of changes in quantity of links that witness that from 55 of calculated correlations 17 (30.90%) positive and 10 (18.18%) negative were statistically significant that made up only 49.08% of all links ($R =$ from 0.54 to 0.85).

In correlation structure of physical and technical tactic fitness of handball players we determined confident positive links ($r =$ from 0.54 to 0.85) between the following:

– Quickness and ability to adapt and reconstruct movements of test “shuttle run 3[10 m” ($r=0.74$; $P<0.01$);

– Absolute ability to adapt and reconstruct movements and relative (latent) indicators (difference between 30 meters' run and shuttle run 3x10 m) coordination abilities ($r=0.84$; $P<0.001$);

– Right and left arms in ballistic movements accentuated on distance ($r=0.61$; $P<0.05$);

– Left arm in ballistic movements accentuated on distance and indicators of special condition abilities – jumps on right ($r=0.54$; $P<0.05$) and ($r=0.63$; $P<0.05$) left hand and relative (latent) indicators (difference between 30 meters' run and shuttle run 3x10 m) coordination abilities ($r=0.65$; $P<0.05$);

– Special condition abilities (side movements with sidesteps) and absolute (quickness) ($r=0.56$; $P<0.05$) and ability to adapt and reconstruct movements ($r=0.74$; $P<0.01$)) relative (latent) indicators (difference between 30 meters' run and shuttle run 3x10 m) ($r=0.62$; $P<0.05$)) coordination abilities;

– Indicators of special condition abilities – jumps on left and right legs ($r=0.84$; $P<0.001$), side movement with sidestep ($r=0.65$; $P<0.01$);

– Indicators, characterizing special condition abilities- jumps on two legs and jumps on right ($r=0,73$; $P<0,01$) и левой ($r=0,71$; $P<0,01$);

– Techniques of game (snake run with dribbling) and absolute (quickness ($r=0.72$; $P<0.01$) and ability to adapt and reconstruct movements ($r=0.65$; $P<0.001$)) and relative (latent) indicators (difference between 30 meters' run and shuttle run 3x10 m) ($r=0.59$; $P<0.05$)) coordination abilities;

– Techniques of game (snake run with dribbling) and special condition abilities (side movement with sidesteps) ($r=0.74$; $P<0.01$).

Negative confident links ($r =$ from -0.54 to -0.84) we registered between the following:

– Special condition abilities – jumps on right leg and absolute (quickness ($r=-0.54$; $P<0.05$) and ability to adapt and reconstruct movements ($r=-0.66$; $P<0.05$)) and relative (latent) indicators (difference between 30 meters' run and shuttle run 3x10 m) ($r=-0.52$; $P<0.05$)) coordination abilities;

– Special condition abilities – jumps on left leg and absolute (quickness ($r=-0.58$; $P<0.05$) and ability to adapt and reconstruct movements ($r=-0.84$; $P<0.001$)) and relative (latent) indicators (difference between 30 meters' run and shuttle run 3x10 m) ($r=-0.74$; $P<0.01$)) coordination abilities;

– Special condition abilities – jumps on two legs and absolute (quickness ($r=-0.66$; $P<0.05$) and ability to adapt and reconstruct movements ($r=-0.75$; $P<0.01$)) and relative (latent) indicators (difference between 30 meters' run and shuttle run 3x10 m) ($r=-0.54$; $P<0.05$)) coordination abilities;

– Techniques of game (snake run with dribbling) and special condition abilities – jumps on two legs ($r=-0.76$; $P<0.01$).

Comparative analysis of changes of control tests' results permitted for us to determine that after pedagogic experiment:

– junior, 10-11 years old handball players showed statistically significant improvement ($P< 0.05$) in tests “shuttle run 3x10 m” and “throw of tennis ball for distance – only with right hand”, which characterize coordination abilities as well as in control tests for technical fitness “run with dribbling” and “complex test”.

– increments of indicators, which characterize condition abilities in tests “side 40 meters’ movement” and “jumps on one and two legs”, for coordination abilities in “throw of tennis ball for distance – only with left hand” were statistically insignificant ($P>0.05$).

Thus, comparative analysis of results after pedagogic experiment, which were received in control tests, permits for us to say about significant reserves in improvement of motion abilities and technical fitness of 10-11 years old handball players. This matter witnesses that it is necessary to implement means of combined influence, oriented on development of coordination abilities and on forming of game’s techniques, in training process of junior handball players; it would permit to raise physical and technical tactic fitness of 10-11 years old handball players.

Conclusions:

1. Analysis of 55 correlations between 11 indicators of condition, coordination abilities and technical tactic fitness permitted to determine that junior 10-11 years old handball players showed before experiment 15 (27.3%) of positive and 12 (21.81%) of negative links and after pedagogic experiment – 17 (30.90%) of positive and 10 (18.18%) of negative links, which were statistically significant.

2. The found positive and negative correlation links in structure of physical and technical tactic fitness of 10-11 years old handball players permit to evaluate effectiveness of training process before experiment and after targeted pedagogic influence on separate components of interacting abilities.

3. Results of correlation analysis prove recommendations on using of means of combined and integrated influence, oriented on development of special condition, coordination abilities and forming of technical-tactic methods of playing game in training process of junior, 10-11 years old, handball players.

4. The fulfilled researches should be regarded as modern principles with working out of program-methodic maintenance of initial stage of junior handball players’ training in children-junior sport schools and centers of Olympic reserve, oriented on increasing of their physical and technical-tactic fitness in process of intensive and integral training.

Further researches imply searching of new modern approaches of sport trainings, which would be oriented on discovering of reserves of physical and technical-tactic components of handball players on different stages of sport training.

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Information about the author:

Palahin A.A.: ORCID:0000-0002-1265-674X; palagi85@yandex.ru; Belarusian State University; Independence Ave 4, Minsk, 220030, Republic of Belarus.

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