

Nonspecific development means of coordination abilities of handball players at the stage of basic preparation

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Abstract. *Purpose of the research* is to raise indicators of coordination abilities of young handball players using nonspecific means of sports training (exercise on skates). **Material and methods of the research:** the analysis of references was carried out for the purpose of establishment of features of using nonspecific means of sports training in the course of preparation of handball players; the following tests were used for determination of the level of coordination preparedness: 1) performance of the maximum quantity of turns on a gymnastic beam. 2) walking on the line backwards with eyes closed, putting a heel of one leg to a sock of another. 3) Romberg's test (s). 4) Run of 30 m in the corridor measures 4 m across with performance of five turns through a full 360°. The pedagogical experiment with the participation of 2 groups was organized for establishment of influence of specially selected running exercises on skates on changes of indicators of coordination abilities of handball players: control group – 14 sportsmen and experimental group – 12 sportsmen. Skating classes – once a week lasting 45 minutes were entered in addition in the educational-training process of experimental group. The pedagogical experiment lasted 10 weeks, and then changes in indicators of coordination abilities of handball players of both groups were established. The received data were analyzed by means of statistical methods; the reliability in differences was established by the method of Student t-criterion. **Results of the research.** Reliable changes in results of three test exercises from four handball players of experimental group after the pedagogical experiment are established. **Conclusions.** Addition of training process of 14-15 year old handball players by physical tasks, which are performed on skates, has positive impact on development of coordination abilities, especially as for dynamic and static balance.

Keywords: handball players; specific; nonspecific; loads; indicators; means; trainings.

Introduction. Each coach faces the solution of the questions connected with determination of content and volume of physical activity for the pupils in the creative process of creation of trainings. Process of creation of trainings needs from the coach not only knowledge in dispensing of these or those exercises, but also knowledge, in that which is expected influence from these exercises on the sportsman's organism. Physical activities have a number of characteristics. Considering their actions on

organism of sportsmen and achievement of training effect, we have to determine specificity as one of these characteristics. It displays degree of responsibility of the offered load to characteristics of competitive activity in motive structure, in power supply and in the operating mode of motor apparatus (Nesen, & Chervona, 2018). It should be noted that nonspecific loads haven't this compliance, but give to the sportsman the chance to have a rest psychologically due to switching of attention to other activity.

Using nonspecific means of physical activity for the solution of various tasks of sports preparation was found by the display in

many works. So, Yuriy Briskin with coauthors suggest to use nonspecific means of sports training, such as exercises of other sports and difficult coordination exercises for improvement of technical training of the qualified handball players (Pityn, & Bilyk, 2014). Martynenko A. N. with coauthors used nonspecific means of training for assimilation of self-insurance on ice by hockey players (Martynenko, Konovalov, & Zlobin, 2014). Strelnykova Ye. Ya. with coauthors investigated influence of nonspecific means of physical activity in volleyball during sports preparation depending on game role of players (Strelnykov, Strelnykova, & Nikolaieva, 2015). Strelnykov H. L. used nonspecific acrobatics exercises (Strelnykov, & Strelnykova, 2016) in the course of training of swimmers for the improvement of performance the technique of turns when swimming "the crawl" and "the crawl backstroke". Authors established the improvement in results of performance the technical element that is a hypothesis of positive transfer of skills at improvement of the technique of turns, applying acrobatic exercises, was confirmed.

Use of nonspecific means is considered also in aspect of development of certain physical qualities. So, Horkavyi B. with coauthors recommend to use, both specific exercises inherent in football players, and nonspecific acrobatics, gymnastics exercises and other sports and outdoor games for development of dexterity. Authors also emphasize in their work that transferring of methodical approaches from other sports on their (considering football) has to have auxiliary character, that is exercises have to coincide behind the biomechanical structure or the mode of power supply with the main kind of activity in the chosen sport (Horkavyi, Oherchuk, & Koloboch, 2017). The question of using sports as one of nonspecific means of load in training of track and field athletes was considered in the work of Shuteieva T.M.

with coauthors. Authors point to increase in efficiency of the training process of high jumpers on the general-preparatory stage of an annual cycle of training as a result of using nonspecific means. They consider that complex-coordination activity during the playing volleyball positively influences training of high jumpers and also gives to sportsmen the chance of receiving psychological rest against the background of additional physical activity (Shuteieva, & Strelnykova, 2015).

Using nonspecific means of preparation also takes place in physical training of handball players. Authors (Serdyuk, Chernenko, 2009; Bykova, 2005; 2006) emphasize the role of acrobatics in training process of handball players of different age and qualification and suggests using various acrobatic and complex-coordination exercises in educational-training process of sportsmen. Also it is pointed out efficiency of using hopping exercises with application of a coordination ladder in development of coordination abilities (Nesen, 2016).

In the works some experts (Trojanovska, 2012; Kushnir, 2014), analyzing means of physical training and their orientation concerning development of physical qualities, point that skating is one of types of activity of the person who demands preservation of a resistant condition of a body. It follows from this that doing this sport will positively influence the balance development of sportsmen that was put by us in the research hypothesis.

Communication of the research with scientific programs, plans, subjects. The research was conducted according to the subject of the plan of the research of Kharkiv state academy of physical culture "Psychosensory regulation of motor activity of sportsmen of situational sports" (2016-2020).

The purpose of the research is to raise indicators of coordination abilities of

young handball players using nonspecific means of sports training (exercise on skates).

Research task:

1. To analyze scientific-methodical sources concerning application of nonspecific means of sports training in the course of preparation of handball players.
2. To define indicators of coordination abilities of handball players at the stage of basic preparation.
3. To prove experimentally efficiency of using running exercises on skates for improvement of coordination preparedness of handball players.

Material and methods of the research: two groups of sportsmen at the age of 14-15 years in total number of 26 persons took part in the research. The analysis of references was carried out for the purpose of establishment of features of using nonspecific means of sports training in the course of preparation of handball players. The following tests were used for determination of the level of coordination preparedness (Romanenko, 2005): 1) Performance of the maximum quantity of turns on a gymnastic beam. The sportsman had to pass a gymnastic beam from the beginning till its end, carrying out at the same time turns on 360°. The quantity of turns (N) and time (t) of exercise performance were registered. If the sportsman ascended from a beam, without having reached its end, time stopped. Exercises were measured in conventional units. 2) Walking on the line backwards with eyes closed, putting a heel of one leg to a sock of another. The passed distance (l) and time (t) were registered. A sock and a heel of both legs had to be on the line if a heel, or a sock ascended from the line, time stopped. Exercise was measured in conventional units. 3) Romberg's test (s). The athlete had to stand in a pose on one leg, hands forward – aside, eyes are closed, a sole of other leg concerns knees of a support foot. Duration of performance of exercise was estimated in seconds and was

assessment of static balance, at the corresponding tension of preservation of a pose. 4) Run of 30 m in the corridor measures 4 m across with performance of five turns through a full 360°. Time of performance of the test task (t_1) was compared to time performance of flat race on 30 m (t_2). Exercise was estimated in seconds.

The pedagogical experiment with the participation of 2 groups was organized for establishment of influence of specially selected running exercises on skates on changes of indicators of coordination abilities of handball players: control – 14 sportsmen and experimental – 12 sportsmen. Skating classes were entered additionally in educational-training process of experimental group – once a week lasting 45 minutes. Content of classes on skates:

1) Piaffe – s.p. standing on two legs, legs are bent, straight back, arms extended sideward. Left-right legs swing with a pause in the top point. The sportsman begins to slide forward at the correct execution of exercise. The main mistakes: feet tumble on an internal/external edge that interferes with sliding; unstable situation i.e. is observed fluctuation of a body of the sportsman forward, back.

2) "Heron" – s.p. standing on two legs, legs are bent, straight back, arms extended sideward. Sliding on one leg after 3 steps of dispersal. After three take-off the sportsman accepts a static pose on one leg, the second leg is bent in a knee, a boot is pressed to a knee of a supporting leg, arms extended sideward. The main mistakes - feet tumble on an internal/external edge that interferes with sliding, unstable situation - is observed fluctuation of a body of the sportsman forward, back, involuntary movements by hands.

3) "Scooter" – s.p. standing on one leg, arms extended sideward, pushing away by an internal edge of the skate with the subsequent hire on the plane of the skate of a supporting leg. The main mistakes – feet tumble on an

internal/external edge that interferes with sliding, fluctuation of a body of the sportsman forward/back, involuntary movements by hands, very short hire after pushing away.

4) "Flash-lights" – s.p. standing on two legs, heels in toes out, straight back, legs are half-bent, arms extended sideward. The sportsman releases skates in a setup on an arch in different directions and in the top point of an arch, directs skates to a meeting each other. In this exercise pushing away alternation by an internal edge of the skate with sliding on the plane is important.

5) "The eight by the scooter" – s.p. standing on one leg, arms extended sideward, pushing away by an internal edge of the skate with the subsequent hire on an outside edge of the skate of a supporting leg around a counter. The sportsman does pushing away by a leg making a detour of counters on the trajectory reminding the eight in a point of intersection of trajectories, the take-off foot becomes the supporting and the supporting - take-off foot. The main mistakes - feet tumble on an internal/external that interferes with sliding, fluctuation of a body of the sportsman forward/back, involuntary movements by hands, very short hire after pushing away.

6) "Shifts by an added step with a detour of counters" – s.p. standing on one leg, legs are bent, straight back, arms extended sideward. The sportsman makes added steps between two counters (cones) on reaching one of cones he goes round it, using the technique "scooter" making a hire on an outside edge of the skate which is closer to a cone.

7) "The scooter on internal edges around counters" – s.p. standing on one leg, legs are bent, straight back arms, extended sideward. The sportsman stands between two counters (cones), makes pushing away with the subsequent sliding on an internal edge around a cone, at achievement of a starting point there is a change of legs. The main mistakes - fluctuation of a body of the sportsman

forward/back, involuntary movements by hands, very short hire after pushing away.

8) "Roll" – s.p. feet apart, a little bit bent, and straight back, arms extended sideward. The sportsman makes transfer of body weight from a leg on a leg. The sportsman begins to slide at the correct execution of the movement. The main mistakes - fluctuation of a body of the athlete forward/back, involuntary movements by hands.

2–3 exercises on 2–3 series of repetitions were carried out on each class. Content of the main trainings of both groups of sportsmen who participated in the research, answered the handball program for sports school and provided the solution of identical tasks in mesocycles of training (development of coordination abilities wasn't included into the task of trainings). The pedagogical experiment lasted 10 weeks then changes in indicators of coordination abilities of handball players of both groups were established. The obtained data were analyzed by means of statistical methods; the reliability in differences was established by the method of t-criterion Student.

Results of the research and their discussion. At the beginning of our research indicators of coordination abilities of handball players were established, namely static and dynamic balance and orientation in space were defined (tab. 1).

After carrying out the pedagogical experiment which essence were additional classes by exercises on skates sportsmen of experimental group we received the repeated results of test exercises.

Indicators of coordination abilities of handball players of control group after the experiment had some improvements, but they hadn't reliable character (tab. 2).

So, the result of walking on a gymnastic beam with turns improved by 2.24 %; walking on the line backwards with eyes closed – by 0.63 %; Romberg's tests blindly – by 3.73%; the difference of flat race by 30 m

and run on 30 m with performance of 5 turns around itself was reduced by 3.59 %. Analyzing changes in results of test exercises of handball players of experimental group

after the pedagogical experiment, it is visible (tab. 3) reliable positive shifts are established that in three of four test exercises.

Table 1

Indicators of coordination abilities of 14-15 year old handball players at the beginning of the pedagogical experiment (n=26)

	Walking on a beam with turns, con. units	Walking on the line backwards, con. Units	Romberg's test with eyes closed, s	Difference of flat race and run with 5 turns, s
\bar{X}	79,82	3687,58	22,34	1,53
m	3,78	112,25	0,57	0,06

Table 2

Indicator of coordination abilities of handball players of control group before and after the pedagogical experiment (n=14)

Statistics, experiment term	Walking on a beam with turns, con. units	Walking on the line backwards, con. units	Romberg's test with eyes closed, s	Difference of flat race and run with 5 turns, s
	Indicators $\bar{X} \pm m$			
The beginning of the pedagogical experiment	71,22±3,38	3763,53±102,25	21,54±0,67	1,73±0,06
The end of the pedagogical experiment	73,82±3,78	3787,58±112,25	22,34±0,57	1,67±0,06
t	0,513	0,158	0,909	0,707
p	>0,05			

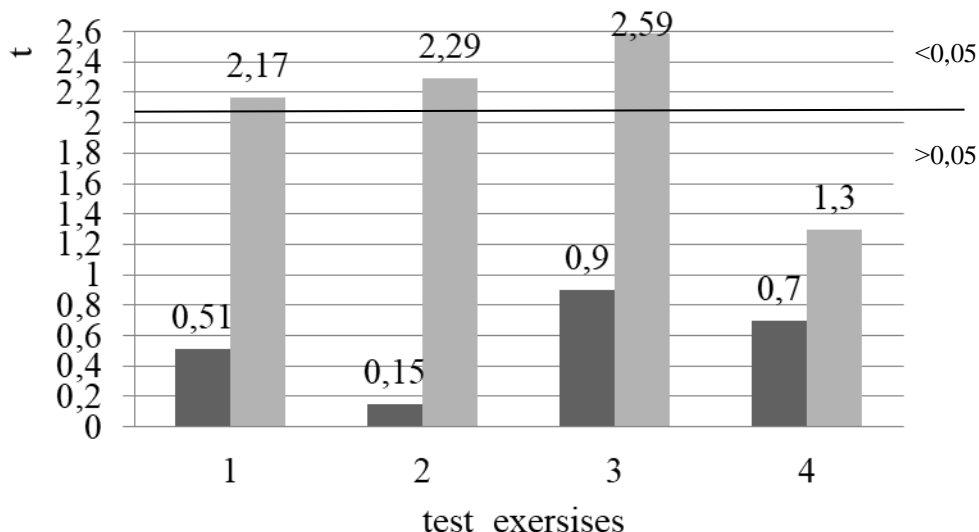
Table 3

Indicator of coordination abilities of handball players of experimental group before and after the pedagogical experiment (n=12)

Statistics, experiment term	Walking on a beam with turns, con. units	Walking on the line backwards, con. units	Romberg's test with eyes closed, s	Difference of flat race and run with 5 turns, s
	Indicators $\bar{X} \pm m$			
The beginning of the pedagogical experiment	87,76±2,78	3586,28±122,25	23,87±0,64	1,43±0,06
The end of the pedagogical experiment	95,22±2,02	3948,18±104,05	26,01±0,52	1,31±0,07
t	2,170	2,254	2,595	1,301
p	<0,05			>0,05

So, the result in walking of a beam with performance of turns improved by 8.5%, result in walking on the line backwards with eyes closed - by 10.09% ; result of Romberg's test- by 8.96% and the difference between run on 30 meters and run on 30 meters with performance of 5 turns around itself was reduced by 9.16%.

Comparing changes in results of test exercises of handball players of control and experimental groups after carrying out the pedagogical experiment (fig. 1), it is visible that sportsmen who systematically performed certain physical tasks on skates have more significant gain of coordination abilities, especially as for dynamic and static balance.



Note:

- 1 - Walking on a beam with turns, con. units.
- 2 - Walking on the line backwards, con. units.
- 3 - Romberg's test with eyes closed, s
- 4 - Difference of flat race and run with 5 turns, s

Fig. 1. Meaning t in changes of indicators of coordination preparedness of handball players after the pedagogical experiment

Conclusions:

1. The search of nonspecific means of sports training is relevant in many sports. Acrobatics, track and field athletics exercises, and other nonspecific exercises are widely used in sports, as well as elements of sports in training of martial artists, ice skating runners on a short track, athletes, and so forth.

2. For the beginning of the experiment the results of test exercises were: walking on a gymnastic beam with turns – 79.82 ± 3.78 con. units; walking on the line backwards with eyes closed – 3687.58 ± 112.25 con. units; Rombeqr's test – 22.34 ± 0.06 s; difference of

flat race on 30 m and run on 30 m with performance of 5 turns – 1.53 ± 0.06 s.

3. It is established that addition of training process of 14-15 year old handball players with physical tasks which are performed on skates has positive impact on development of coordination abilities, especially as for dynamic and static balance.

We consider **prospect of the subsequent researches** in the search of nonspecific means of improvement of other parties of physical fitness of handball players.

Conflict of interests. The authors note that there is no conflict of interests.

Financing sources. This article didn't get financial support from the state, public or commercial organizations.

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Statte received the editorial office: 01.05.2019 p.

Posted on: 02.02.2019

Анотація. *Олена Несен, Сергій Кугаєвський, Гліб Стрельников. Неспецифічні засоби розвитку координаційних здібностей гандболістів на етапі базової підготовки. Мета дослідження – підвищити показники координаційних здібностей юних гандболістів за допомогою неспецифічних засобів спортивного тренування (вправи на ковзанах). Матеріал та методи дослідження: аналіз літературних джерел проводився з метою встановлення*

особливостей застосування неспецифічних засобів спортивного тренування у процесі підготовки гандболістів; для визначення рівня координаційної підготовленості використовувались наступні тести: 1) виконання максимальної кількості обертів на гімнастичній лаві. 2) ходьба по лінії із зав'язаними очима спиною вперед, приставляючи п'яту однієї ноги до носка іншої. 3) проба Ромберга (с). 4) Біг 30 м в коридорі шириною 4 м з виконанням п'яти обертів на 360°. Для встановлення впливу спеціально підібраних бігових вправ на ковзанах на зміни показників координаційних здібностей гандболістів був організований педагогічний експеримент за участю 2 груп: контрольна – 14 спортсменів та експериментальна – 12 спортсменів. У навчально-тренувальний процес експериментальної групи були додатково введені заняття з бігу на ковзанах – 1 раз на тиждень тривалістю 45 хвилин. Педагогічний експеримент тривав 10 тижнів, після чого були встановлені зміни у показниках координаційних здібностей гандболістів обох груп. Отримані данні були проаналізовані за допомогою статистичних методів, достовірність у відмінностях встановлювалась методом t-критерію Ст'юдента. **Результати дослідження.** Встановлено достовірні зміни у результатах трьох тестових вправ з чотирьох гандболістів експериментальної групи після педагогічного експерименту. **Висновки.** Доповнення тренувального процесу гандболістів 14-15 років фізичними завданнями, що виконуються на ковзанах має позитивний вплив на розвиток координаційних здібностей, особливо що стосується динамічної та статичної рівноваги.

Ключові слова: гандболісти; специфічні; неспецифічні; навантаження; показники; засоби; тренування.

Анотація. Елена Несен, Сергей Кугаевский, Глеб Стрельников. *Неспецифические средства развития координационных способностей гандболистов на этапе базовой подготовки. Цель исследования – повысить показатели координационных способностей юных гандболистов с помощью неспецифических средств спортивной тренировки (упражнения на коньках). Материал и методы исследования:* анализ литературных источников проводился с целью установления особенностей использования неспецифических средств спортивной тренировки в процессе подготовки гандболистов; для определения уровня координационной подготовленности использовались следующие тесты: 1) выполнение максимального количества поворотов на гимнастической лаве. 2) ходьба по линии с завязанными глазами спиной вперед, приставляя пятку одной ноги к носку другой. 3) проба Ромберга (с). 4) Бег 30 м в коридоре шириной 4 м с выполнением пяти поворотов на 360°. Для установления влияния специально подобранных беговых упражнений на коньках на изменения показателей координационных способностей гандболистов был организован педагогический эксперимент при участии 2 групп: контрольная – 14 спортсменов и экспериментальная – 12 спортсменов. В учебно-тренировочный процесс экспериментальной группы были дополнительно введены занятия бегом на коньках – 1 раз в неделю длительностью 45 минут. Педагогический эксперимент длился 10 недель, после чего были установлены изменения показателей координационных способностей гандболистов двух групп. Полученные данные были проанализированы с помощью статистических методов, достоверность различий устанавливалась методом t-критерия Стьюдента. **Результаты исследования.** Установлено достоверные изменения в результатах трех тестовых упражнений из четырех у гандболистов экспериментальной группы после педагогического эксперимента. **Выводы.** Дополнение тренировочного процесса гандболистов 14–15 лет физическими заданиями, которые выполняются на коньках, имеет позитивное влияние на

развитие координационных способностей, особенно это касается динамического и статического равновесия.

Ключевые слова: гандболисты; специфические; неспецифические; нагрузка; показатели; средства; тренировка.

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