

**THE EFFECTIVENESS OF CURRICULAR METHODS AND MEANS IN
THE CONSTANT DEVELOPMENT OF THE PSYCHOMOTOR
POTENTIAL OF 14-15-YEAR-OLD HANDBALL WOMEN PLAYERS
ACCORDING TO THEIR SPECIALIZATION WITHIN TEAM**

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Abstract.

In this article, there was presented information regarding the significance of handball womenplayers' specialization in playing positions in their competitive performances at the current stage of handball development.

The types of playing positions in handball, their sports-motor characteristic and the need for athletes' specialization at an earlier age were also revealed. Thus, the effectiveness of the game activity of the handball team in general and of each individual player is characterized by the degree to which the individual psychological personality traits of the athlete correspond to the character of the function or position occupied by the handball womanplayer[6,8,16].

If the personality traits do not correspond to the activity performed, it affects the state of the player and directly influences the quality of the performance of the sports activity[1,8,10,12]. The review of the specialized literature revealed that little research has been done on the specifics of how personality traits affect the outcomes of the actions of handball womenplayers with different specialties. Additionally, it is well established that an athlete's personality, which is shaped by their sport, controls their activism, efficacy, and outcomes.

Introduction.

The problems regarding sports training in handball are related to the technical-sports training of young people in order to assimilate motor-coordinative capacities, as well as to achieve team success in competitive activity [1,4,9,10,11]. The traditional system of sports training in handball is outdated and no significant progress is observed towards the achievement of goals, a fact that prompts specialists to look for new approaches, methods and means of training [14,20].

These factors led us to the conclusion that, in the current environment, improving the handball women players' sports training processes requires the use of other potential reserves, which calls for restructuring the way games are currently organized, including the specialization of athletes in game positions at younger ages,

which will result in the effective manifestation of individual technical-sports characteristics in circumstances of competition.

Thus, in our opinion, the provided problem's resolution is pertinent and significant for handball's advancement as a sport in the current context of the sport's growth in the Republic of Moldova.

The purpose of the research: the scientific defense of the training characteristics and early specialization of handball women players between the ages of 14 and 15.

Research objectives: 1.To study the theoretical and practical aspects of the researched problem. To argue the necessity of restructuring the game specialization according to age for 14-15-year-old handball women players. 2.To scientifically argue the model characteristics specific to the roles of 14-15-year-old handball players and the features of their specialized development in the training process. 3.To design a fragment of the program, which reflects the specialized training in an annual cycle of 14-15-year-old handball women players according to their specialization. 4.To determine the effectiveness of the training process based on the developed program of 14-15-year-old handball women players.

Scientific research methodology. In the works of various coaches, the potential for focused adjustment of the handball training method was noted[1,7,12,15,17,19 ș.a.]. The necessity for structural, organizational, and content changes to the training process is scientifically and factually demonstrated by enthusiastic specialists, scientists, and other sports industry workers[2,5,8,18,21].

The novelty and originality of the research consists in the scientific argumentation of the need and realization of the restructuring of the sport specialization of handball women players starting from the age of 14-15-years for a more successful concordance of women players in competitive activities.

Results. The basic pedagogical experiment was carried out, in which two groups of handball women players - control and experiment - participated. The control group trained according to the traditional sports training methodology, and the experimental group underwent training in accordance with a unique program that entails positioning handball women players for their respective game positions. An examination of comparability was performed on the data collected during the initial and final tests. In order to assess the morphological and psychomotor condition of the handball women players' bodies that were involved in the experiment, the respective tests were applied, the results of which are presented in Table 1.

Thus, the training process organized by us in the experimental group had a positive influence on the development of the morphofunctional and psychomotor capacities of the subjects. At the same time, it is observed that no significant changes were registered in the control group.

Table 1. Comparative analysis of the results of testing the morphological and psychomotor parameters of 14-15-year-old handball women players from the control and experimental groups during the basic research period ($n_c=16$, $n_e=16$)

No. ct.	Types of testing	Groups and statistical indices	Initial indices $\bar{X} \pm m$	Final indices $\bar{X} \pm m$	t	P
1	Weight (kg)	C	61,93±1,52	63,49±1,49	1,06	> 0,05
		E	62,74±1,50	65,74±1,49	3,02	> 0,05
		T	1,01	1,58	—	—
		P	> 0,05	> 0,05	—	—
2	Height (cm)	C	170,99±4,69	174,71±4,67	0,84	> 0,05
		E	172,46±4,64	176,50±4,62	0,95	> 0,05
		t	0,20	0,31	—	—
		P	> 0,05	> 0,05	—	—
3	Tapping test (number of beats in 40 sec)	C	321,05±10,53	328,73±10,35	0,75	> 0,05
		E	323,73±10,50	358,89±10,21	3,49	< 0,01
		T	0,20	1,99	—	—
		P	> 0,05	< 0,05	—	—
4	CVP spirometry (l)	C	2,61±0,06	2,67±0,05	1,02	> 0,05
		E	3,02±0,07	2,84±0,04	3,02	< 0,05
		t	0,35	1,95	—	—
		P	> 0,05	< 0,05	—	—
5	Sensorimotor reaction to sound (sec)	C	0,35±0,04	0,33±0,04	0,68	> 0,05
		E	0,33±0,04	0,24±0,03	3,98	< 0,001
		t	1,02	1,95	—	—
		P	> 0,05	< 0,05	—	—
6	Sensorimotor reaction to light (sec)	C	0,38±0,04	0,36±0,03	1,01	> 0,05
		E	0,39±0,04	0,31±0,02	2,68	< 0,05
		t	0,34	2,26	—	—
		P	> 0,05	< 0,05	—	—

The physical characteristics of the handball women players in the experimental groups during the reference period are reflected in the dynamics of the basic physical training level, is presented in Table 2.

As can be seen from Table 2, all data recorded at initial testing are relatively homogeneous and comparatively insignificant ($P > 0.05$). Towards the end of the baseline experiment, the outcomes of the handball women players changed unevenly. Thus, during the calendar year, handball women players from the 2 groups (C and E) improved their indices in all tests, but the final indices of subjects in the control

group show statistically insignificant differences compared to the initial indices ($P > 0.05$). At the same time, the experimental group's final results in all tests are much higher than the initial ones, the differences being statistically significant: $P < 0.05 - 0.01$. In addition, the athletes in the experimental group improved their quickness of movements, speed symptoms, speed-force capabilities and flexibility. It should also be mentioned that the results recorded at the final test in the experimental group are superior to those of the subjects in the control group, the differences being statistically significant: $P < 0.05$.

Table 2. Comparative analysis of motor capacity testing results of 14-15-year-old handball women players from the control and experimental groups during the basic research period

No. crit.	TESTS	Groups and statisti- cal indices	Initial indices	Final indices	t	P
			$\bar{X} \pm m$	$\bar{X} \pm m$		
1	Gymnastic bench push-ups (no. reps.)	C	8,24±0,44	10,34±0,44	1,18	> 0,05
		E	8,26±0,43	11,85±0,43	4,07	< 0,001
		t	0,02	1,95	—	—
		P	< 0,05	< 0,05	—	—
2	30m distance running (sec)	C	5,40±0,22	4,89±0,22	0,87	> 0,05
		E	5,33±0,19	3,81±0,19	3,51	< 0,01
		t	0,23	1,94	—	—
		P	< 0,05	< 0,05	—	—
3	Trunk bending from sitting on the gymnastic bench (cm)	C	6,01±0,30	6,33±0,29	1,09	> 0,05
		E	6,17±0,32	7,21±0,29	3,46	< 0,01
		t	0,34	1,99	—	—
		P	> 0,05	< 0,05	—	—
4	Standing triple jump (cm)	C	543,78±7,31	548,78±7,31	0,78	> 0,05
		E	546,31±7,01	565,31±7,01	3,45	< 0,01
		t	0,32	2,14	—	—
		P	< 0,05	< 0,05	—	—
5.	Dynamometry of passive palm (kg)	C	16,42±0,43	16,92±0,42	1,21	> 0,05
		E	16,59±0,44	18,19±0,39	4,00	< 0,01
		t	0,26	2,14	—	—
		P	> 0,05	< 0,05	—	—
6.	Dynamometry of the dominant palm (kg)	C	18,77±0,27	19,17±0,25	1,59	> 0,05
		E	18,88±0,29	20,08±0,26	4,24	< 0,001
		t	0,26	2,45	—	—
		P	> 0,05	< 0,05	—	—

As a result, the accomplishments recorded by the experimental group's handball women players show that the means and techniques of specialized

development proposed by us in the experimental program were effective in developing the age-specific motor capacities of the individuals participated in the experiment.

The basic pedagogical research undertaken by us also involved studying the degree of development of handball womenplayers' coordination abilities in the annual experiment cycle.

Thus, the handball players in the control group trained according to the traditional program, while in the experimental group the program developed by us was applied, oriented towards the development of the coordinative-applicative capacities specific to the game positions.

The initial and final outcomes of testing the handball womenplayers in the coordination tests and their comparison with the model characteristics are presented in Table 3.

Table 3. Comparative analysis of the results of the coordinative capacity testing of 14-15-year-old handball women players from the control and experimental groups during the basic research period

No. crit.	TESTS	Groups and statistical indices	Initial indices $\bar{X} \pm m$	Final indices $\bar{X} \pm m$	t	P
1	Throwing the handball ball up, support sitting, lifting and catching the ball, 30 sec (no. reps.)	C	5,90±0,38	6,19±0,36	0,86	> 0,05
		E	6,01±0,35	7,25±0,31	4,14	< 0,001
		t	0,23	2,31	—	—
		P	> 0,05	< 0,05	—	—
2	Throwing the handball into a vertical target, 10 sec (no. reps.)	C	5,87±0,42	6,19±0,39	0,81	> 0,05
		E	6,09±0,43	7,64±0,34	4,07	< 0,01
		t	0,35	2,73	—	—
		P	> 0,05	< 0,05	—	—
3	3x8m shuttle running with handball ball (sec)	C	5,79±0,23	5,58±0,21	1,06	> 0,05
		E	5,71±0,22	4,99±0,19	3,80	< 0,01
		T	0,27	2,19	—	—
		P	> 0,05	< 0,05	—	—
4	Double jump rope for 1 min (no. reps.)	C	24,89±1,81	26,95±1,73	1,22	> 0,05
		E	24,21±1,79	31,95±1,65	4,67	< 0,001
		t	0,28	2,11	—	—
		P	> 0,05	< 0,05	—	—
5	Standing distance handball ball throwing (rep. no.)	C	22,82±0,77	23,46±0,75	0,90	> 0,05
		E	23,18±0,78	26,62±0,73	3,40	< 0,01

		t	0,34	2,11	—	—
		P	> 0,05	< 0,05	—	—
6	Lying down push-ups with hand release and beats, 10 sec (no. reps.)	C	5,14±0,46	5,65±0,44	1,18	> 0,05
		E	5,16±0,49	7,00±0,43	4,07	< 0,001
		t	0,02	2,13	—	—
		P	> 0,05	< 0,05	—	—

From Table 4 it can be seen that the indices recorded at the initial test reflect a homogeneity of both groups included in the experiment, the statistical differences being $P > 0.05$. However, the subsequent development of these capacities was uneven: following the influence of the training means, the handball women players in the control group demonstrated an improvement in the indices, the differences being, however, statistically insignificant ($P > 0.05$), while, in experimental group, these improvements are statistically significant ($P > 0.05-0.001$).

The most important increases in technical parameters were recorded in the tests: throwing the handball, at the target, throwing the tennis ball at a distance ($P < 0.001$).

Table 4. Comparative analysis of the results of testing the technical capabilities of 14-15 years old handballwomen players from the control and experimental groups during the basic research period

No. crit.	TESTS	Groups and statistical indices	Initial indices	Final indices	t	P
			$\bar{X} \pm m$	$\bar{X} \pm m$		
1	Throwing the tennis ball at distance (m)	C	34,01±0,89	35,75±0,85	2,11	> 0,05
		E	34,81±0,87	38,50±0,78	4,68	< 0,001
		t	0,66	2,42	—	—
		P	> 0,05	< 0,05	—	—
2	Complex exercise for field players (sec)	C	35,02±0,48	34,69±0,47	0,77	> 0,05
		E	34,80±0,49	33,47±0,40	3,19	< 0,05
		t	0,35	2,09	—	—
		P	> 0,05	< 0,05	—	—
3	Throwing the handball ball to the target from the 6 m line (no. reps.)	C	8,01±0,45	8,51±0,43	1,21	> 0,05
		E	8,26±0,42	9,91±0,39	4,24	< 0,001
		t	0,43	1,97	—	—
		P	> 0,05	< 0,05	—	—
4	Complex exercise for goalkeeper (sec)	C	20,01±0,62	19,52±0,59	0,85	> 0,05
		E	19,87±0,64	17,84±0,55	3,92	< 0,01
		t	0,17	2,14	—	—
		P	> 0,05	< 0,05	—	—
5	Carrying the ball between the cones	C	37,02±1,05	36,27±1,02	0,79	> 0,05
		E	36,37±1,06	33,39±0,98	3,09	< 0,01

	over a distance of 30m (sec)	t	0,46	2,09	—	—
		P	> 0,05	< 0,05	—	—
		C	11,02±0,76	11,61±0,74	0,85	> 0,05
6	From free throwing line, 15 ball throwing into gate (no. reps.)	E	11,45±0,77	13,72±0,68	3,31	< 0,01
		t	0,43	2,17	—	—
		P	> 0,05	< 0,05	—	—

Thus, it can be inferred that the specialized training process of the experimental group's 14-15-year-old handball women players, targeted at early specialization in game positions, had a good influence on the process of mastering sportsmanship.

Sports training, particularly game-specific training, with a positive emotional component improves the operation of all bodily systems and assures the intellectual growth of athletes of all ages [13].

Thus, the data presented in the tables above show that training the motor, psychomotor, coordination-technical, and intellectual capacities of the experimental group's 14-15-year-old handball women players, based on their specialization according to the game positions they occupy, determined to increase their sporting potential and corresponds to their age level.

Conclusions

1. The effectiveness of the activity of the handball team as a whole and of each individual woman player is characterized by the degree to which the individual psychological traits of the athlete's personality correspond to the character of the function or game position that he performs within the team. When the particularities of the athlete do not correspond to the activity performed, this leads to an unfavorable state of the player and influences the quality of the execution of the interdependent sports activity [19,24].

2. The study of the degree of training handball women players according to the game positions highlighted the fact that these aspects were analyzed more extensively only at the level of superior sportsmanship [22,23].

3. The critical analysis of the traditional training methods in handball allows us to find that training abilities and skills needed by athletes, currently, is a difficult process to coordinate, a fact that also determines the extension of the training terms of these abilities and skills, and the assimilation of the material acquires a insufficiently stable and aware character [19,20,21].

4. The complex training methodology of 14-15-year-old handball women players is not reflected in sufficient detail in specialist research, and the existing data are not systematized and do not form a unified whole regarding the initial sports training of handball women players of that age [3,4,25].

5. According to the opinions of the practitioner - specialists in the field of handball, at the contemporary stage of sports improvement, it is possible and even necessary for the early specialization of handball women players on game positions

within the team, starting from the age of 14-15 years, which allows to more effectively implement the diversity creative sports and technical-tactical combinations [5,20,23].

6. The traditional sports training program of handball womenplayers is outdated and does not reflect the full volume of instructional and training material and game procedures, especially under the position of the game at an early age [7,22,24].

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