

Original Article

Qualified women epee fencers technical and tactical training using of highly qualified sportsmen model indicators

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Abstract

Variable conditions of competitive activity in fencing set the priority in the training structure of qualified sportsmen and the effectivity of technical and tactical training realization. Aim of the research is to determine the effectiveness of the technical and tactical training program of women epee fencers at the stage of specialized basic training with consideration of model indicators of competitive activity and training of high qualified sportsmen. The experimental program was used in preparation macrocycle period, which lasted from January to September 2013 (32 weeks). Into pedagogical experiment were attracted 32 qualified women epee fencers (16 sportsmen in the control and 16 sportsmen in experimental group) during the stage of specialized basic training. Application of an authorial training program has an authentic ($p \leq 0,05-0,01$) positive (up 35.91%) impact on intragroup indicators of technical training. Methodological approaches of the authorial training program have effectiveness on improvement of technical and tactical training of qualified women epee fencers related with the qualified consideration of model indicators of competitive activity and training of high qualified sportsmen and preservation of existing priorities in the other part of training, ability of an urgent technical training correction.

Key words: effectiveness, program, technical and tactical training, qualified women epee fencers.

Introduction

The current need for effective training of qualified sportsmen who in future will be able to realize their individual abilities at national and international levels can be solved by correction of the specific training loads content during the stage of specialized basic training (Keller, 1983; Rovnyy. 2001).

Variable conditions of competitive activity in fencing set the priority in the training structure of qualified sportsmen and the effectivity of technical and tactical training realization. Its effective formation according to basic research should be conducted focusing on current trends sport, model indicators of training and competitive activities of more qualified sportsmen athletes. It gives preference during the match in respect of quality and adequate selection of technical and tactical actions arsenal in response to opponents actions or their anticipation, match algorithm creation (total and for match sections) etc. (Keller, 1983; Tyshler, 1993; Briskin, Pityn, Antonov and Vaulin, 2014). Main attention of specialists in fencing is concentrated on questions that are related to the structure and content of competitive activity in different kinds of weapon, training improvement of different sides fencers and their control, that mainly reveal questions of sportsmen training touch theoretical and methodological aspects of fencing training (Keller, 1983; Lopatenko, 2012; Rovnyy 2001; Semeryak, 2013a; Tyshler 1993, 1985, 2010; Briskin, Pityn, Zadorozhna, Smyrnovsky and Semeryak, 2013).

Lack of proper scientific and methodological component account of the model indicators of leading sportsmen training and competitive activity in the training of qualified women epee fencers form the actual scientific and practical task of improving technical and tactical sportsmen training at the stage of specialized basic training. This research is performed in according to topic 2.8. "Training process individualization of qualified combat sport sportsmen" of scientific research work consolidates plan in field of physical culture and sport on 2011-2015 years. Ethics committee of Lviv State University of Physical Culture confirm that the research of Yuriy Briskin, Zoryana Semeryak, Maryan Pityn and Oleksandr Vaulin about training of qualified women epee fencers that was conducted from January to September 2013 (32 weeks) with 32 qualified women epee fencers has received more benefits and overweighed the risks of the research.

All participants (including parents) of the research were notified and understood all features of the experiment. Research was conducted at the territory of Lviv State University of Physical Culture at fencing base of Lviv Academy of Fencing. All participants at the fencing base have followed all rules and all requires during the experiment. Aim of the research: determine the effectiveness of the technical and tactical training program of

women epee fencers at the stage of specialized basic training with consideration of model indicators of competitive activity and training of high qualified sportsmen.

Methods & material

Theoretical analysis and generalization, pedagogical observation, pedagogical experiment, methods of mathematic statistic.

In earlier stages of the study (2011-2013 years) was conducted scientific study of literature, pedagogical observation of competitive activity and high qualified and qualified women epee fencers and their comparison, the formation of authorial technical and tactical improvement program of women epee fencers at the stage of specialized basic training based on the model indicators of competitive and training activity of high qualified sportsmen that was achieved by use of the authorial training device; conducting of pedagogical experiment (Briskin, 2012; Semeryak 2013b, 2013c).

The experimental program was used in preparatory macrocycle period, which lasted from January till September 2013 (32 weeks) and provided training for participation in the international fencing tournament Kozitskogo. Into pedagogical experiment were attracted 32 fencers qualified women epee fencers (16 sportsmen in control and 16 in experimental groups) that were at the stage of specialized basic training and were in the respective groups in sport schools of Lviv, Ternopil and Uzhhorod. Average training experience and participation in competitions at various levels of qualified women epee fencers that were involved into the pedagogical experiment fluctuated in the range of 4.2 to 6.7 years (average 5.6 years).

Results

We studied the absolute and relative indicators changes of qualified sportsmen technical training of control and experimental groups in two identical parts of the pedagogical experiment to determine the advantages and disadvantages of the author and traditional training programs, under which women epee fencers engaged.

Note that during the first part of the pedagogical experiment recorded eight significant changes ($p \leq 0,05-0,01$) in indicators of qualified women epee fencers technical training in the control group (Table. 1). However, most of them related to control exercise "hits frequency by body sector" (an increase from 3.41% to 24.65%) and one case in exercise "attacks from sitting with target hit" (3, 68%). For other indicators significant differences were not observed, except for the hits minimum accuracy value, which in sector 4 (control exercises " hits frequency by body sector, 40 s") decreased to 7.34%. Obtained during the first part of the pedagogical experiment data confirm the orientation of the traditional technical and tactical training program on power manner of duel conduction, which is effective at this stage of women epee fencers training, but with the skills growth, as showed our competitive activity analysis, changes in favor of expanding arsenal of technical and tactical actions.

Along with that, control group sportsmen training with use of the traditional improvement of technical and tactical training program during the second part of the pedagogical experiment indicated the possibility of accumulation and imposition of training effects, as evidenced is the significant increase in the indicators number of technical training from seven to fourteen. Thus in the second part of the pedagogical experiment negative significant changes were not observed.

During the second part of the pedagogical experiment control group sportsmen managed to improve their indicators at two levels of reliability and ($p \leq 0,05$ $p \leq 0,01$). First group includes all set of indicators "Jump, lunge with target hit" (6,10-8,89%). This improvement can be seen from two perspectives. First, changes relationship with the training process variation and lack of systematic improvement of technical and tactical actions accuracy. Second, changes relationship in other sections (especially specialized physical) training of qualified women epee fencers and imperfection of technical and tactical training. This accuracy or inaccuracy of these positions may be found out in comparing with other indicators of control exercises. This comparison indicates that other significant changes have occurred in the hits amount for certain sectors (1 and 2, all together) – 7.19%-17.49% at $p \leq 0,05$. However, we can state that the cumulative effect of the program in improving hits maximum accuracy in sector 1 and 2 (6.17% and 3.66% respectively at $p \leq 0,05$), increasing the hits minimum value accuracy in sectors 3 and 4 (24.49% and 13.86% respectively at $p \leq 0,05$) and while reducing the range hits values (sector 3 – 27.94% and sector 4 – 15.15 $p \leq 0,05$ in two cases) .

Observed changes of qualified women epee fencers technical training qualified of control group in first and second parts of the pedagogical experiment also reflected in generalized indicators. Thus their number also significantly increased from 7 and 14 in the first and second parts to 17 by the results of all pedagogical experiment, and the content has not undergone any significant changes.

The reliability of the results increase set by indicators of exercise "jump, lunge with target hit " (10,27-10,45%), results of control exercises "attacks from sitting with target hit" (5.02% at $p \leq 0,01$) "lunge, second lunge in two targets" (3.41 at $p \leq 0,05$) and several indicators of control exercises related with the hits frequency (from 6.25 to 30.99% at $p \leq 0,05$ -0.01).

Following whole training period is recorded a steady negative dynamic of hits accuracy in control exercises "jump, lunge with target hit" (15.63% at $p \leq 0,05$) and "hits frequency by sectors", sector 2 (21.28 % at

$p \leq 0,05$). Variety of indicators by sector and separate exercises indicates that on lack of targeted actions aimed at correction of technical and tactical actions of qualified women epee fencers.

Along with this for qualified women epee fencers were engaged by the author's program was shown a different situation with indicators of technical training and their dynamics during pedagogical experiment (Table 2). We saw that in the end of first part of the pedagogical experiment there are significant improvements for most technical training indicators (27 out of 35 positions). As in the case of control group sportsmen much of the positive changes are related to the performance of control exercises on the frequency of application of successful hits, where the growth of indicators fluctuates in the range of 3.09 to 30.88% at $p \leq 0,05-0,01$. Positive changes in technical training of qualified sportsmen of experimental group also recorded by other indicators. They are found in groups of indicators of control exercise "lunge from sitting with target hit" (7,64-21,51% at $p \leq 0,05-0,01$); "Jump, lunge with target hit" (9,15-16,67% at $p \leq 0,05$) and "lunge, second lunge in two targets" (4,55-17,85% at $r \leq 0,05$). With it gained in the first part of pedagogical experiment training level not by all indicators was improved further (in second part). Stand dynamics to improve indicators by control exercise about technical training exercises in the second part was seen for sixteen indicators. Among them, there has traditionally been a group related to the control exercises of effective hits frequency (3,23-15,00% at $p \leq 0,05-0,01$) and such indicators as the maximum hits accuracy value "lunge, second lunge in two targets" (4,35% at $p \leq 0,01$); control exercise results "lunge from sitting with target hit" and "Jump, lunge with hit target" (5,53 and 11,09%, respectively, at $p \leq 0,05$) and their minimum hits accuracy values (7,96 and 11,09%, respectively, at $p \leq 0,05$).

Positive significant changes in absolute majority (34 from 37) of studied indicators of control exercises, observed in the technical training of qualified women epee fencers of experimental group during first and second parts of the pedagogical experiment allowed the author to affirm about the effectiveness of training programs. The most pronounced they were in minimum hit accuracy in exercises "attack from sitting with target hit", "jump, lunge with target hit"; hits frequency by sectors (sectors 2, 3 and 4) - 27,35-35,91% at $p \leq 0,01$ and slightly lower in other exercises (increments from 4.29 to 23.44 at $p \leq 0,05-0,01$). Exceptions were indicators of the range of hits in control exercises "lunge, second lunge in two targets", "hits frequency for 10 seconds", "hits frequency by sector" (sector 1), where significant changes have been recorded (4.08 -6.67 at $p > 0,05$). Received indicators of experimental group sportsmen indicate that the author program of technical and tactical training improvement of qualified women epee fencers on the stage of specialized basic training has significant shifts in their own technical skills. The basic training effect is observed after four mesocycles. However, it has not denied further growth of training level that in the outcome of the preparatory macrocycle period shown positive changes in the dominant number of indicators ($p \leq 0,05-0,01$).

With consideration of the specificity of our research are interesting not only domestic but also intergroup changes of technical training. As a result of pedagogical observation in beginning of pedagogical experiment found that between both groups of sportsmen are thirteen existing significant differences. Of these, the majority (eleven) was recorded for qualified women epee fencers of control group and two for experimental. According to such indicators as the minimum accuracy value in control exercise "lunge from sitting with target hit" (4.27% $p \leq 0,05$), effectiveness in the control exercise "Jump, lunge with target hit" (3.66 % $p \leq 0,01$), the result of separate hits and generally in exercises "lunge, second lunge in two targets" (4,19-4,64% $p \leq 0,05-0,01$); hits frequency in exercise "Hits frequency from place for 10 s" (8.72, $p \leq 0,05$); averages exercise quantities in general, the number of hits in sectors 2 and 3, the minimum value of the range and accuracy in the control exercise in sector 2 "Hits frequency by body sector, 40 s" (6,92-25,53% at $p \leq 0,01-0,05$). Thus the benefits of the experimental group were recorded in maximum quantity of hits accuracy in exercise "hits frequency from place for 10 seconds" and minimum hits accuracy by sector 1 (8.74 and 10.28% at $p \leq 0,05$).

During the first part of pedagogical experiment sportsmen of both groups managed to achieve changes in their intragroup results described above. Along with that, the comparison of technical training indicators of experimental group sportsmen and control group in the middle of pedagogical experiment demonstrated positive dynamics for the experimental group. In general, recorded 22 testimony advantages of both groups of qualified women epee fencers. Of these, 20 related to significantly better results of women epee fencers on the stage of specialized basic training of experimental group in comparison with control group. They are mostly related with accuracy indicators of control exercises: the average results, the minimum hits accuracy value and their range in control exercises "lunge from sitting with target hit" "Jump, lunge with target hit" "lunge, second lunge in two targets" (5,29-31,34%, while $p \leq 0,05-0,01$); effectiveness of first and second hit in exercise "lunge, second lunge in two targets" (8,44 and 6,83 at $p \leq 0,01$) and a number of indicators that reflect hits accuracy in exercises related to the frequency of their application (8,33-30,88% at $p \leq 0,05-0,01$). It should be noted that sportsmen in the control group showed better results ($p \leq 0,05$) caused by the amount of hits into sector 3 and in total in control exercise "Hits frequency by body sector, 40 s" (5.80 and 3,46% at $p \leq 0,05$ respectively).

Discussion

This approach has been confirmed in a number of prior studies (Tyshler, 2010; Keller, 1983; Pityn, Briskin and Zadorozhna, 2013). Thus achieving the maximum level of special physical training to a lesser extent can guarantee higher results in comparison to the effective assimilation of movement system inherent to the kind of sport (in our case – epee fencing). We can affirm about the improvement of existing scientific data related with the effective combination of tasks on improvement of technical training and parallel maintenance of the

development level of special physical qualities of qualified women epee fencers at the stage of specialized basic training, demonstrated in the first part of the pedagogical experiment (Semeryak, 2013b; Tyslker, 2010).

Received data are confirmed by the results of the second part of the pedagogical experiment. Established that for sportsmen of the control and experimental groups in the final pedagogical observation within the pedagogical experiment inherent a significant number ($p \leq 0,05-0,01$) of differences. They deepened in such indicators of control exercises as an average result, minimum and maximum hits accuracy values, and their range ("Lunge from sitting with target hit") - 6,21-20,79%; the average result of the minimum hits accuracy value and range ("jump, lunge with target hit") - 12,53-28,38%; effectiveness in total (first and second) hits, minimum hits accuracy value and range ("lunge, second lunge in two targets") - 6,55-17,19%, and the result in sector 3, the minimum hits accuracy value in sectors 2 and 4 ("Hits frequency by body sector, 40 s") - 5,65-7,83%.

However, the preserved benefit athletes controls applied by the size of injections in sector 1 in the control entitled "Frequency of injections by sector body, with 40" (8.99 at $r \leq 0,01$). This is what we associate with the best special physical preparedness and the development of explosive strength that allowed sportswomen in the first leg demonstrate significantly higher rates. Thus the advantage that existed in the sword-women-fencers qualified in the first stage was neutralized pedagogical observation in all but one case.

However, benefits of control group sportsmen were preserved by such indicators as amount of applied hits in sector 1 in control exercise "Hits frequency by body sector, 40 s" (8.99 at $p \leq 0,01$). This we relate to better specialized physical training and the development of explosive strength that allowed sportsmen in the first leg demonstrate significantly higher rates. Thus the advantage that existed in qualified women epee fencers in the first stage of pedagogical observation was neutralized in all cases, except one.

Conclusion

Application of the authorial program of technical and tactical training improvement of qualified women epee fencers at the stage of specialized basic training in preparatory macrocycle period has significant ($p \leq 0,05-0,01$) positive (up to 35.91%) impact on intragroup indicators of technical training.

Effective are methodological approaches of the authorial program of technical and tactical improvement of qualified women epee fencers related with qualified consideration of model indicators of competitive activity and training of high qualified sportsmen and preservation of its priorities in providing of parts of training, ability of immediate correction of technical training.

Prospects for further research related with the impact of authorial program of technical and tactical training improvement of qualified women epee fencers on indicators of other parts of training on stage a specialized basic training.

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Table 1 Amendments of technical training indicators of women epee fencers in pedagogical experiment control group (n=16)

a	Control exercise, indicator	At the beginning of pedagogical experiment	In the middle of pedagogical experiment	At the end of pedagogical experiment	First part		Second part		In total	
					Absolute value	%	Absolute value	%	Absolute value	%
	«Lunge from sitting with target hit» (10 times), conv. units	7,98±0,23	8,27±0,45	8,38±0,20	0,29*	3,68	0,11	1,28	0,40**	5,02
	A	6,00±0,63	6,00±0,75	6,31±0,60	0,00	0,00	0,31	5,21	0,31	5,21
	B	10,25±0,47	10,25±0,66	10,06±0,47	0,00	0,00	-0,19	-1,83	-0,19	-1,83
	C	4,25±0,69	4,25±0,91	3,75±0,78	0,00	0,00	-0,50	-11,76	-0,50	-11,76
	«Jump, lunge with target hit» (10 times), conv. units	7,00±0,26	7,10±0,30	7,73±0,31	0,10	1,43	0,63**	8,89	0,73*	10,45
	A	5,13±0,22	5,13±0,33	5,44±0,60	0,00	0,00	0,31*	6,10	0,31	6,10
	B	9,13±0,56	9,38±0,52	10,06±0,23	0,25	2,74	0,69*	7,33	0,94*	10,27
	C	4,00±0,63	4,25±0,72	4,63±0,56	0,25	6,25	0,38*	8,82	0,63*	15,63
	«Lunge, second lunge in two targets», 10 times, conv. units	8,07±0,26	8,19±0,17	8,34±0,30	0,13	1,55	0,15	1,83	0,28*	3,41
	A	6,38±0,78	6,00±0,50	6,19±0,53	-0,38	-5,88	0,19	3,13	-0,19	-2,94
	B	10,00±0,63	10,19±0,30	10,19±0,51	0,19	1,88	0,00	0,00	0,19	1,88
	C	3,63±0,75	4,19±0,73	4,00±0,63	0,56	15,51	-0,19	-4,48	0,38	10,34
	Effectiveness of first lunge	8,08±0,48	8,15±0,41	8,40±0,43	0,07	0,93	0,25	3,07	0,33	4,02
	Effectiveness of second lunge	8,06±0,36	8,24±0,39	8,29±0,42	0,17	2,17	0,05	0,61	0,23	2,79
	«Hits frequency from place, 10 s» (amount)	20,06±1,58	20,44±1,49	21,19±1,36	0,38	1,87	0,75	3,67	1,13	5,61
	A	6,69±0,89	6,75±0,72	6,81±0,51	0,06	0,93	0,06	0,93	0,13	1,87
	B	10,00±0,38	10,25±0,38	10,63±0,47	0,25	2,50	0,38*	3,66	0,63*	6,25
	C	3,31±0,94	3,50±0,88	3,81±0,71	0,19	5,66	0,31	8,93	0,50	15,09
	«Hits frequency by body sector, 40 s» (amount)	63,19±2,59	70,38±2,38	75,44±3,95	7,19**	11,37	5,06*	7,19	12,25**	19,39
	Sector 1 (amount)	18,31±1,43	18,94±1,44	22,25±1,59	0,63**	3,41	3,31*	17,49	3,94**	21,50
	A	6,44±0,81	6,44±0,69	7,00±0,88	0,00	0,00	0,56	8,74	0,56	8,74
	B	9,75±0,56	10,13±0,33	10,75±0,38	0,38*	3,85	0,63*	6,17	1,00*	10,26
	C	3,31±0,77	3,69±0,81	3,75±0,88	0,38	11,32	0,06	1,69	0,44	13,21
	Sector 2 (amount)	16,06±0,84	17,44±0,94	19,75±1,44	1,38**	8,56	2,31*	13,25	3,69**	22,96
	A	7,06±0,59	6,75±0,56	7,06±0,47	-0,31	-4,42	0,31	4,63	0,00	0,00
	B	10,00±0,38	10,25±0,47	10,63±0,47	0,25	2,50	0,38*	3,66	0,63*	6,25
	C	2,94±0,84	3,50±0,63	3,56±0,69	0,56	19,15	0,06	1,79	0,63*	21,28
	Sector 3 (amount)	15,38±1,00	17,25±0,94	17,69±1,27	1,88**	12,20	0,44	2,54	2,31**	15,04
	A	5,94±0,59	6,13±0,56	7,63±0,47	0,19	3,16	1,50*	24,49	1,69**	28,42
	B	10,38±0,47	10,38±0,47	10,69±0,43	0,00	0,00	0,31	3,01	0,31	3,01
	C	4,44±0,94	4,25±0,59	3,06±0,47	-0,19	-4,23	-1,19*	-27,94	-1,38*	-30,99
	Sector 4 (amount)	13,44±2,06	16,75±2,22	15,75±1,28	3,31**	24,65	-1,00	-5,97	2,31**	17,21
	A	6,81±0,51	6,31±0,52	7,19±0,61	-0,50*	-7,34	0,88*	13,86	0,38	5,50
	B	10,06±0,23	10,44±0,49	10,69±0,43	0,38	3,73	0,25	2,40	0,63*	6,21
	C	3,25±0,69	4,13±0,44	3,50±0,81	0,88	26,92	-0,63*	-15,15	0,25	7,69

Notices: * – $p \leq 0,05$, ** – $p \leq 0,01$; A – minimal hits accuracy value, conv. units.; B – maximal hits accuracy value, conv. units; C – range quantities of hits, conv. units

Table 2 mendments of technical training indicators of women epee fencers in pedagogical experiment experimental group (n=16)

a	Control exercise, indicator	At the beginning of pedagogical experiment	In the middle of pedagogical experiment	At the end of pedagogical experiment	First part		Second part		In total	
					Absolute value	%	Absolute value	%	Absolute value	%
	«Lunge from sitting with target hit» (10 times), conv. units	7,77±0,34	8,71±0,27	9,19±0,23	0,94**	12,07	0,48*	5,53	1,42**	18,26
	A	5,81±0,51	7,06±0,47	7,63±0,47	1,25*	21,51	0,56*	7,96	1,81**	31,18
	B	9,81±0,51	10,56±0,49	10,69±0,43	0,75*	7,64	0,13	1,18	0,88**	8,92
	C	4,00±0,75	3,50±0,81	3,06±0,47	-0,50	-	-0,44	-	-0,94**	-
	«Jump, lunge with target hit» (10 times), conv. units	6,74±0,26	7,83±0,35	8,70±0,28	1,09*	16,13	0,87*	11,09	1,96**	29,01
	A	5,25±0,38	6,13±0,66	7,06±0,23	0,88*	16,67	0,94**	15,31	1,81**	34,52
	B	8,88±0,44	9,69±0,60	10,38±0,55	0,81*	9,15	0,69*	7,10	1,50**	16,90
	C	3,63±0,63	3,56±0,94	3,31±0,52	-0,06	-1,72	-0,25	-7,02	-0,31*	-8,62
	«Lunge, second lunge in two targets», 10 times, conv. units	7,71±0,30	8,82±0,24	8,91±0,22	1,11*	14,34	0,08	0,85	1,20**	15,56
	A	6,13±0,66	7,19±0,61	7,19±0,41	1,06*	17,35	0,00	0,00	1,06**	17,35
	B	9,63±0,59	10,06±0,23	10,50±0,50	0,44*	4,55	0,44*	4,35	0,88**	9,09
	C	3,50±0,88	2,88±0,66	3,31±0,55	-0,63*	-	0,44	15,22	-0,19	-5,36
	Effectiveness of first lunge	7,70±0,40	8,84±0,29	8,95±0,33	1,14*	14,77	0,09	1,06	1,25**	16,23
	Effectiveness of second lunge	7,73±0,40	8,80±0,33	8,88±0,32	1,08*	13,92	0,11	1,27	1,15**	14,89
	«Hits frequency from place, 10 s» (amount)	18,31±1,60	20,19±1,76	21,50±1,19	1,88*	10,24	1,31*	6,50	3,19**	17,41
	A	7,38±0,75	7,75±0,47	8,00±0,25	0,38	5,08	0,19	1,80	0,63*	8,47
	B	10,19±0,41	10,44±0,49	10,63±0,47	0,25	2,45	0,25*	3,23	0,44*	4,29
	C	2,81±0,66	2,69±0,52	2,63±0,55	-0,13	-4,44	-0,06	-2,33	-0,19	-6,67
	«Hits frequency by body sector, 40 s» (amount)	58,81±3,26	67,94±2,92	75,19±3,31	9,13**	15,52	7,25**	10,67	16,38**	27,84
	Sector 1 (amount)	17,44±1,81	18,69±1,19	20,25±1,13	1,25*	7,17	1,56*	8,36	2,81**	16,13
	A	7,00±0,38	7,50±0,56	7,44±0,63	0,50*	7,14	-0,06	-0,83	0,44*	6,25
	B	10,06±0,23	10,38±0,47	10,63±0,47	0,31*	3,11	0,25	2,41	0,56**	5,59
	C	3,06±0,35	2,88±0,55	3,19±0,73	-0,19	-6,12	0,31	10,87	0,13	4,08
	Sector 2 (amount)	14,88±1,52	17,44±1,12	19,06±1,44	2,56*	17,23	1,63*	9,32	4,19**	28,15
	A	6,44±0,55	7,31±0,43	7,50±0,56	0,88*	13,59	0,19	2,56	1,06**	16,50
	B	10,13±0,55	10,50±0,50	10,63±0,47	0,38	3,70	0,13	1,19	0,50*	4,94
	C	3,69±0,64	3,19±0,51	3,13±0,45	-0,50**	-	-0,06	-1,96	-0,56*	-
	Sector 3 (amount)	13,75±1,06	16,25±1,16	18,69±1,09	2,50*	18,18	2,44**	15,00	4,94**	35,91
	A	6,00±0,50	7,44±0,55	7,69±0,55	1,44**	23,96	0,25	3,36	1,69*	28,13
	B	10,25±0,47	10,38±0,47	10,75±0,38	0,13	1,22	0,38*	3,61	0,50*	4,88
	C	4,25±0,66	2,94±0,71	3,06±0,59	-1,31**	-	0,13	4,26	-1,19**	-
	Sector 4 (amount)	12,75±1,31	15,56±1,33	17,19±0,96	2,81**	22,06	1,63**	10,44	4,44**	34,80
	A	6,63±0,55	7,38±0,47	7,75±0,38	0,75*	11,32	0,38*	5,08	1,13**	16,98
	B	10,13±0,33	10,44±0,49	10,81±0,30	0,31*	3,09	0,38*	3,59	0,69*	6,79
	C	3,50±0,56	3,06±0,23	3,06±0,35	-0,44*	-	0,00	0,00	-0,44*	-
						12,50				12,50

Notices: * – $p \leq 0,05$, ** – $p \leq 0,01$; A – minimal hits accuracy value, conv. units.; B – maximal hits accuracy value, conv. units; C – range quantities of hits, conv. units