

KINETICS OF DEVELOPMENT OF SELECTED MOTOR CAPACITY OF CHILDREN AGED 8-18 YEARS COVERED SPORTS TRAINING PERSONNEL WITHIN THE PODKARPACKIE PROVINCE

Stanisław CIESZKOWSKI

*Faculty of Physical Education, University of Rzeszow, Rzeszow, Poland
cieszko@onet.eu*

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- coordination,
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Abstract:

The purpose of this work is an attempt to determine the level and dynamics of the development of selected coordination motor abilities (CMA) talented young people in sport at the age of 8-18 years. The study included 417 players including 173 women and 244 men included in the training as part of staff Podkarpackie Province. We evaluated the agility (coordination of the entire body), simple reaction time, spatial orientation and frequency of movement. So for boys and girls were calculated - next to the basic statistical measures - the rate of growth rate (WTRIII). We also calculated the rate of sexual dimorphism (WD) The collected material is entered in tabular form and depicted graphically.

INTRODUCTION

In the process of selection of children and young people to competitive sports a very important role play - next to the test of fitness - also trying to assessing the level of coordination of motor skills [1,19]. Sufficiently high output level of these properties, is essential for quick and easy traversing a complex structure of coordination [1,19]. As shown by the results of tests with increasing levels of athletic increases not only the level of coordination motor abilities but also increase the links between the various components of the coordination and preparation of technical players [12, 16, 18, 22, 24]. Depending on the specific sport during training is as different profile of coordination [4, 6, 10, 11, 13, 16, 20, 21]. Formed in younger school age appropriate foundation for coordination motor abilities remained in the later stages of training and is an essential prerequisite to quickly and accurately mastering new types of motor activities [3, 5]. There is also an inverse relationship. It means that the greater the number of multilateral and diversified human motor skills mastered and thus richer experience is its movement the higher the level of its coordination motor abilities [7, 18, 23].

The results showed that coordination motor abilities are characterized by significant trained. Trained is quite varied depending on the specialization of sports as well as independent of age [15, 17]. Mynarski and Prus [12, 14] have shown that already the period of 6 weeks significantly affect the dynamics of the specific coordination motor abilities. The aim of this study was to determine the dynamics of the development of selected coordination motor abilities of children and adolescents aged 8-18 years covered sports training within the staff of Podkarpackie Province.

MATERIAL AND METHODS

The material for this work is the study of children and adolescents aged 8-18 years covered sports training within the staff Podkarpackie Province. A total of 417 players including

173 girls and 244 boys. The study was conducted in May 2013. In organizing and carrying out measurements helped students of physical education UR - members of SKN Theory of Sport and Anthropometrics. The study included an evaluation of physical and motor development. In the present study were used measurements of selected coordination motor abilities. It was evaluated using the following tests:

1. Agility (coordination of the whole body) - run service 4x10 m moving blocks (according to the instructions MTSF [25])
2. The frequency of movement - hand tapping efficient (time recorded 25 touches each disc) (according to the instructions of Eurofit's) [2]
3. Simple reaction time - the camera was used to measure the response time (measured response to visual stimuli only in green)
4. Spatial orientation - Cross-used camera (recorded time of 49 pulses)

The collected material was subjected to statistical analysis. So for boys and girls were calculated basic statistical measures, ie. Arithmetic mean, standard deviation and coefficient of variation. For all tests were also calculated indicator of sexual dimorphism. In order to capture the dynamics of the respondents coordination motor abilities index was calculated growth rate WTRIII. The whole test results entered in tabular form and depicted graphically.

RESULTS

1. Spatial Orientation

Spatial orientation as for boys and girls exhibit a substantially constant progression and stands at girls from 118.5 sec (8-year-olds) to 62.4 seconds (18-year-olds) among boys and from 124.53 (9-year old) to 55.41 (18-year-olds) (Table. 1). The biggest kinetics of the development of this ability is noted among girls between 10 and 11 years and in boys about a year before, ie. between 9 and 10 year. Between 9 and 10, 14 and 15 and 17 and 18 years old level of spatial orientation in a series of girls is characterized by a decrease in the rate of development within 2.5-3% .In boys category, in turn, points to the regression only between 8 and 9 year (Table . 5). The analysis of the coefficient of variation shows that in almost all age groups among athletes there is a far greater diversity of intra. Except for athletes aged 10 and 18 years in other age categories the level of spatial orientation is higher in comparison to competitors.

Table 1. Characteristics of respondents' numerical spatial orientation

Age	Girls			Boys			d	WD
	x	s	v	x	s	v		
8	118,50	25,74	21,72	119,63	28,18	23,56	-1,13	-0,04
9	102,06	28,34	27,77	124,53	38,27	30,73	-22,47	-0,67
10	105,05	19,42	18,49	96,82	33,40	34,50	8,23	0,31
11	81,50	9,68	11,88	85,14	11,37	13,36	-3,64	-0,35
12	76,03	13,36	17,57	79,31	12,40	15,63	-3,28	-0,25
13	68,84	11,16	16,21	73,46	12,31	16,76	-4,62	-0,39
14	66,25	14,21	21,45	71,27	11,88	16,67	-5,02	-0,38
15	67,90	10,78	15,87	68,94	29,49	42,78	-1,04	-0,05
16	63,81	10,38	16,27	63,84	12,73	19,95	-0,03	0,00
17	60,55	6,57	10,85	61,42	9,45	15,38	-0,87	-0,11
18	62,40	5,24	8,40	55,41	5,99	10,81	6,99	1,24

2. Simple reaction time

Numerical characteristics of simple reaction time is included in the table. Second highest level of the coordination motor skills present in both categories riders aged 16 and 17 years and the lowest 8-year-olds. Both series of boys and girls is essentially constant progression of responsiveness of the highest rate of increase between 8 and 9 years. Between 7 and 18 years are noted in both of those groups, the ability regression (Table. 5). The analysis of the coefficient of variation shows that, in principle, athletes are characterized by a greater diversity of intra-average in all age classes. In the age groups 12, 13, 15 and 16 years the level of capacity is slightly higher among girls.

Table 2. Characteristics of respondent's numerical reaction rate

Age	Girls			Boys			d	WD
	x	s	v	x	s	v		
8	43,49	14,73	33,88	38,77	0,96	2,48	4,72	0,60
9	37,05	4,81	12,97	30,53	2,64	8,65	6,52	1,75
10	34,48	4,73	13,73	33,53	5,97	17,80	0,95	0,10
11	30,07	4,46	14,83	31,07	4,37	14,05	1,00	0,23
12	28,51	3,89	13,65	30,35	3,54	11,68	-1,84	-0,50
13	28,19	5,35	18,98	29,12	4,98	17,11	-0,93	-0,18
14	28,67	5,99	20,91	27,78	3,05	10,97	0,89	0,20
15	26,81	3,65	13,61	27,99	4,37	15,62	-1,18	-0,29
16	24,79	2,84	11,47	24,83	2,95	11,88	-0,03	-0,01
17	24,76	3,74	15,10	24,67	2,21	8,97	0,00	0,00
18	26,15	4,00	15,29	25,56	2,13	8,34	0,59	0,19

Table 3. Numerical agility characteristics (coordination of the whole body) of respondents

Age	Girls			Boys			d	WD
	x	s	v	x	s	v		
8	13,17	0,69	5,22	12,28	0,67	5,45	0,89	1,31
9	13,55	0,52	3,83	12,09	0,86	7,14	1,46	2,12
10	12,23	0,53	4,36	12,05	1,15	9,55	0,18	0,21
11	11,99	0,70	5,81	11,99	0,95	7,91	0,00	0,00
12	11,82	0,60	5,10	11,37	0,57	4,99	0,45	0,77
13	11,49	0,56	4,88	11,15	0,63	5,63	0,34	0,57
14	11,52	0,63	5,46	10,79	0,58	5,38	0,73	1,21
15	11,37	0,51	4,51	10,66	0,65	6,11	0,71	1,22
16	11,58	0,61	5,28	10,30	0,39	3,74	1,28	2,56
17	11,32	0,29	2,55	10,19	0,39	3,79	1,13	3,32
18	11,39	0,86	7,52	10,09	0,41	4,06	1,30	2,05

3. Agility (coordination of the whole body)

Both girls and boys agility level is substantially a constant improvement of accepting the lowest value of 13.55 sec (9-year old girls) and 12.28 (8-year-old boys) to the highest in the group of 17-year-old (11.32 sec) and 18-year-old young athletes (10.09 sec). On average, the coordination of the whole body has a greater variation in a series of intra-boys. In all age groups tested the boys present a higher level of coordination capacity analyzed. The highest rate of sexual dimorphism was observed in the group of 9-year-olds, and in the last three age classes. In a series of boys throughout the analyzed age group there were no negative index value growth rate. The greatest rate of growth is characterized by a period between 12 and 13 years old. In a series of girls notes uneven pace of development of this ability. The greatest

progression was observed between 9 and 10 years and regression between 8 and 9 and 15 to 16 years old (Table. 3 and 5).

4. The frequency of movements

Numerical characteristics of trial frequency of movements included in the tab.4. From the analysis of the average size of the motor skills shows that in a series of boys it is assuming a constant improvement of 18.3 sec (8-year-olds) to 10.23 sec (18-year-olds). In a series of girls the ability develops uneven. A significant decrease in growth rate of almost 10% was recorded in the range between 15 and 16 years old, and - above 4.5% - in the last age category. The highest rate of growth is characterized by years 9-10 and 16-17. Among boys the period between 10 and 11 years is characterized by the largest increase in the coordination dynamics of motor skills (table 5). In most age groups the frequency of movement dominates among male athletes. An exception in this respect is the age of 8, 10 and 13 years in which this ability distinguishes girls.

Table 4. Characteristics of numerical frequency hand movements of a studied

Age	Girls			Boys			d	WD
	x	s	v	x	s	v		
8	17,91	3,53	19,68	18,30	2,41	13,19	-0,39	-0,13
9	17,44	1,77	10,17	16,32	2,36	14,43	1,12	0,54
10	15,05	2,22	14,76	16,45	3,36	20,40	-1,40	-0,50
11	14,05	1,47	10,44	14,02	1,64	11,68	0,03	0,02
12	13,32	2,05	15,39	13,01	1,09	8,39	0,31	0,20
13	12,88	1,42	11,06	12,98	1,85	14,27	-0,10	-0,06
14	12,59	1,85	14,66	11,88	1,65	13,89	0,71	0,41
15	12,11	1,42	11,69	11,80	1,64	13,87	0,31	0,20
16	13,38	1,81	13,54	10,74	1,33	12,42	2,64	1,68
17	11,84	1,51	12,74	10,66	0,95	8,95	1,18	0,96
18	12,39	1,73	13,94	10,23	1,00	9,77	2,16	1,58

Table 5. Indicator of the pace of development WTRIII of selected coordination motor abilities

Trial	Sex	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
4x10 m	K	-2,84	10,24	1,98	1,43	2,83	-0,26	1,31	-1,83	2,27	-0,62
	M	1,56	0,33	0,50	5,31	1,95	3,28	1,21	3,44	1,07	0,99
Hand taping	K	4,86	14,71	6,87	5,33	3,36	2,28	3,89	-9,96	12,21	-4,54
	M	11,44	-0,61	15,95	7,47	0,23	8,85	0,68	9,40	0,75	4,12
Cross-camera	K	14,91	-2,89	25,25	6,94	9,93	3,83	-2,46	6,21	5,24	-3,01
	M	-4,01	25,03	12,84	7,09	7,66	3,03	3,32	7,68	3,86	10,29
Reaction time	K	15,99	7,18	13,65	5,33	1,13	-1,69	6,71	7,83	0,12	-5,46
	M	23,78	-9,37	7,62	2,34	4,14	4,71	-0,75	11,97	0,65	-3,54

SUMMARY AND CONCLUSIONS

In terms of recruitment and selection training for competitive sports is the most important link in this process. Particular attention is required to assess the level of coordination motor abilities of future champions. In the course of sports training should take into account a much broader and more pronounced improvement of coordination of young players. And here are in fact quite large reserves of both technical skills as well as progress in the sporting achievements of [8,22]. The results show that individuals with a higher level of coordination

motor abilities obtained after proper training also higher than the average growth in the development of these properties [8,9,22,24].

The analysis of the test results shows that in the course of sports training is an increase in the level of coordination motor abilities. This growth is uneven so for boys and girls. In the case of agility in a series of players recorded four periods in which the observed slight regression of the ability of the order of 0.26% to 2.84%. In a series of riders over the period this ability is more stable. In this case there was no decrease in the level between different classes. The frequency of movement is characterized by - especially among girls - much greater instability development. In addition to significant increases in the size of up to about 15% say, about 10% tumor regression. Among boys only the period between 9 and 10 years of age shows a small regression of the coordination capacity. A similar situation was observed in the case of spatial orientation. In both series can be distinguished significantly increases between classes even above 25% and regress the order of 3-4%. In turn, the responsiveness of girls most dynamic growth was recorded in the period up to 12 years of age, in contrast to boys, where among vintages 9 and 10 years were found more than 9% regression.

The analysis of the test results allow the following conclusions:

1. In the course of sports training is an increase in the level of coordination motor abilities with the progression is characterized by a high variability; next significant increases between classes also finds significant reaching over 9% decreases in these properties of the organism
2. It seems appropriate to make the process of recruitment and selection for competitive sports far more attention paid to the current level of coordination capacity, because they are the basis for shaping specific to the specialization of sports technical skills

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