

Research Article

Medical Examinations of Children and Adolescents to Fulfill the Sports Standards of the “Ready for Labor and Defense” Complex

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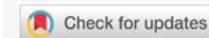
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Keywords: Medical examinations of children and adolescents; Sports standards; Standards of the All-Russian Physical Culture and Sports Complex “Ready for Labor and Defense”; City children’s polyclinic



Summary

Introduction: The organization of medical support for the implementation of the standards of the All-Russian physical culture and sports complex “Ready for Labor and Defense” (“RLD”) in children’s clinics on the territory of the Republic of Komi (RK) is carried out in order to develop a physical culture among the population.

Patients and methods: The analysis of the results of 2652 medical examinations of children and adolescents to comply with the standards of the “RLD” in the State budgetary healthcare institution of the Republic of Komi “Syktyvkar Children’s Clinic No. 3” (“SChCI No. 3”) in 2016-2022 was carried out. The significance of differences in quantitative characteristics between groups with a normal distribution of quantitative variables was calculated using Student’s t-tests for independent samples. The threshold value of the probability of error for statistically significant differences was set at a level equal to 0.05. The frequency ratio was calculated per 10,000-child population. The depth of the study was 7 years.

Results: Among patients who applied for examination only 2604 people (98.85 ± 0.21%) were allowed to pass sports standards. The FC of those who applied was 138.44 per 10,000 children, and the FC of those admitted was 135.94. The proportion of patients of “SChCI No. 3”, who were assigned the main medical group for physical education ranged over the years from 87.37 ± 1.47% in 2017 to 98.86 ± 0.34% in 2019 and on average for 7 years amounted to 94.19 ± 0.45%. That is, almost 90% of those examined are children without health and physical development disorders, but with possible functional disorders that do not lag behind their peers in physical development and physical fitness. They are allowed to study in full according to the curriculum of physical education using preventive technologies, preparation, and passing tests of individual physical fitness.

Conclusion: The average annual quantitative indicator of those who applied for certification to pass the standards of the “RLD” is a statistical tool, on the one hand, to determine the current and future workload of medical personnel and determine the forces and means of medical support, on the other hand, an indirect indicator of the interest of children and adolescents in systematic physical education and sports, instilling in schoolchildren the skills of a healthy lifestyle and the prospects for the physical development of the nation. The frequency of examinations per 10,000 of the child population should be considered as an indirect marker for assessing the physical development of children and adolescents since it is not the result of a continuous, but only selective (at the request of those who applied) research. The voluntary surrender of the “RLD” standards by children and adolescents should be approached as an indicator of physical readiness and high personal self-esteem, including psychological readiness for competitive relations in the school and adolescent environment and psychological maturity.

Introduction

A medical examination for admission to the implementation of the standards of the All-Russian physical culture and sports complex “Ready for Labor and Defense” (“RLD”) is carried out as part of the territorial program of state guarantees of

free provision of medical care to citizens on the territory of the Republic of Komi (RK) in medical organizations, functions and the powers of the founder in which are exercised by the Ministry of Health of the RK. The conclusion is issued by a general practitioner, pediatrician, general practitioner, physical therapy doctor, or sports medicine doctor based on



the results of medical examinations and preventive medical examinations.

Admission to the implementation of the standards of the “RLD” for students of educational institutions of preschool, general secondary, primary and secondary vocational education is carried out on the basis of assigning the child to the main medical group for physical education by pediatricians of medical organizations, the functions of the founder in respect of which are exercised by the Ministry of Health of the RK, draws up a medical report on admission (non-admission) to the implementation of the standards of the “RLD” within 5 working days after receiving all the necessary studies in the form in accordance with procedure of the “RLD” [1-3].

The requirement for the obligatory passing of test standards (tests) of the RLD Complex by all students mastering educational programs of primary general, basic general, and secondary general education is not established by the legislation in the field of education, and therefore failure to comply with the standards of the RLD cannot be the basis for an unsatisfactory mark during the current, intermediate and final attestation of students in the subject “Physical Education”.

This is the aim of the updated in 2020 Strategy for the Development of Physical Culture and Sports in the RF until 2030 with the fundamental principles: 1) Compliance with the national goals and strategic objectives of the development of the RF; 2) Ensuring equal opportunities for physical culture and sports at the place of residence, study and work for all categories and groups of citizens; 3) Openness and availability of information for citizens; 4) Satisfaction of citizens with the conditions for physical culture and sports; 5) Providing conditions for the training of highly qualified athletes, their sports longevity, self-development and self-realization, spiritual, moral and patriotic education; 6) Focus on the long-term strategic planning, taking into account global trends in scientific, technological and digital development; 7) Targeted nature of state support for organizations of all types in the field of physical culture and sports, as well as athletes, coaches and specialists; 8) Ensuring the “cleanliness” and safety of sports, intolerance to violations of anti-doping rules; 9) Accounting for regional features of the development of physical culture and sports. If the second, fourth, seventh, and ninth principles are provided with material resources and coaching staff, then the picture of medical examinations for passing the standards of the “RLD” will change dramatically in a positive direction [4-10].

Materials and methods

Determine the annual indicators of the examination of children and adolescents to meet the standards of the “RLD” in the city children’s polyclinic of the regional center of the subarctic territory. A retrospective cohort continuum analysis was made of the results of medical examinations of 2652 children and adolescents to comply with the standards of

the “RLD” in the State budgetary healthcare institution of the Republic of Komi “Syktyvkar Children’s Clinic No. 3” (“SChCl No. 3”) in 2016-2022. All conclusions with a decision on admission were taken by a physiotherapy doctor (1.0 staff unit) and (or) a sports medicine doctor (1.0 staff unit).

The organization of the study was in the nature of a stratified selection with the formation of a continuous sample. The criterion for the inclusion of patients was the passage of a medical examination by a patient of the “SChCl No. 3” to comply with the standards of the “RLD”. The depth of the study was 7 years. When working on the material, methodological approaches were used: systemic, integrated, integration, functional, dynamic, process, normative, quantitative, administrative, and situational. Methods were used: historical, analytical, and comparisons. Techniques were used: grouping, absolute and relative values, average values, detailing, and generalization. As the main characteristics of descriptive statistics, we used the arithmetic mean and standard deviation with the normal type of distribution of variables. Qualitative features were presented in the form of relative frequencies with the definition of a confidence interval. The significance of differences in quantitative characteristics between groups with a normal distribution of quantitative variables was calculated using Student’s t-tests for independent samples. The threshold value of the probability of error for statistically significant differences was set at a level equal to 0.05. The frequency coefficient (FC) was calculated per 10,000-child population. The average annual number of children for each age group was calculated.

The study was conducted in “SChCl No. 3”, which is an integrated children’s clinic in the city of Syktyvkar - a regional center of the federal subarctic territory with a low population density with a capacity of 1126 visits per shift and serves 42190 children. The institution includes 47 pediatric sites, 3 medical outpatient clinics, an Intermunicipal Diagnostic Center (since 2012), a Health Center (since 2010), and a rehabilitation center (since 1992), and medical units in educational organizations: preschool educational institutions - 69, schools - 39. 138 doctors work in the polyclinic, and 43 of them are district doctors. Patients are admitted in 17 medical specialties. “SDP No. 3” is the owner of the high title of WHO / UNICEF “Child-friendly polyclinic” (since 2002). The institution worked on the International Project “Mother and Child” (2004-2006), and actively participate in the project “Lean Polyclinic” (since 2018).

Citizens of the Russian Federation (RF) aged 6 to 18 who expressed a desire to take part in the implementation of the standards of the “RLD” were subject to the survey. The provision of medical care in the implementation of these standards includes the organization of 1) Primary medical and specialized health care in order to issue access to the implementation of the standards to persons who have expressed a desire to participate in their implementation; 2)



Provision of primary health care and ambulance, including emergency specialized, medical care in compliance with the standards to the participants of the competition.

If a minor citizen who wants to be tested has a disability or a preparatory medical group for physical education, the pediatrician of the institution providing primary health care on a territorial basis fills out a referral directs the citizen to sports medicine doctor (specialty "medical and sports medicine"). The purpose of the examination of a sports medicine doctor is to assess the reaction of the cardiovascular system to an increase in the load and determine the possible passing of testing in the corresponding group. The conclusion with the admission decision in this case is made by the doctor financial support for the admission of minors with disabilities or a preparatory medical group for physical education is carried out at the expense of the republican budget of the RK.

In case of disagreement of a citizen (his legal representative) with the results of determining admission to passing the standards of the "RLD", he has the right to apply to the medical commission of a medical organization on a territorial-district basis.

Children under the age of 15 are allowed to pass the "RLD" standards with the written consent of their parents or legal representative.

Children with a special medical group of health for physical education are not allowed to pass the standards of the "RLD".

Results

In "SChCl No. 3", the examination of patients to comply with

the standards of the All-Russian Federal Sports Commendation of the "RLD" is organized on the basis of regulatory documents and provided with statistical tools in the Parus program [11-14].

2652 patients applied for examination (Table 1), of which 2604 people (98.85 ± 0.21%) were admitted to passing sports standards, respectively, by the years 2016 - 23 (95.83 ± 4.08%), 2017 - 491 (96.84 ± 0.78%), 2018 - 273 (98.91 ± 0.62%), 2019 - 216 (97.29 ± 1.09%), 2020 - 295 (98.33 ± 0, 74%), 2021 - 352 (98.59 ± 0.62%), 2022 - 955 (98.86 ± 0.34%), all *p* < 0.001. At the same time, the FC of those who applied was 138.44 per 10,000 children, FC of those admitted was 135.94.

The proportion of patients of "SChCl No. 3", who were assigned the main medical group for physical education (Table 2) ranged over the years from 87.37 ± 1.47% in 2017 to 98.86 ± 0.34 % in 2019 and on average for 7 years amounted to 94.19 ± 0.45%. That is, almost 90% of those examined are children without health and physical development disorders, but with possible functional disorders that do not lag behind their peers in physical development and physical fitness. They are allowed to study in full according to the curriculum of physical education using preventive technologies, preparation, and passing tests of individual physical fitness.

The preparatory medical group for physical culture was determined in total for 140 children (5.27 ± 0.43%), of which 106 were allowed to pass the norms. These are children with morph functional disorders or physically poorly prepared; included in the risk groups for the occurrence of diseases (pathological conditions); with chronic diseases (conditions)

Table 1: The structure of the results of medical examinations of children and adolescents for the implementation of the standards of the All-Russian physical culture and sports complex "Ready for Work and Defense" in the "SChCl No. 3" depending on age groups in 2016-2022.

Year / Age (Human)	Results	6-8 years (8054)	9-10 years (4799)	11-12 years (4480)	13-15 years (6014)	16-17 years (4019)	Total (27366)	%
2016	Passed inspection	0	0	1	5	18	24	100,00
	Of them allowed	0	0	1	5	17	23	95,83 ± 4,08
2017	Passed inspection	53	88	147	164	55	507	100,00
	Of them allowed	52	84	140	161	54	491	96,84 ± 0,78
2018	Passed inspection	35	73	60	80	28	276	100,00
	Of them allowed	35	73	59	78	28	273	98,91 ± 0,62
2019	Passed inspection	23	68	31	57	43	222	100,00
	Of them allowed	23	66	31	54	42	216	97,29 ± 1,09
2020	Passed inspection	52	150	57	26	15	300	100,00
	Of them allowed	52	144	57	26	15	295	98,33 ± 0,74
2021	Passed inspection	13	42	6	250	46	357	100,00
	Of them allowed	13	42	5	246	46	352	98,59 ± 0,62
2022	Passed inspection	70	83	134	354	325	966	100,00
	Of them allowed	70	83	134	347	321	955	98,86 ± 0,34
2016-2022 Total	Passed inspection	246	504	436	936	530	2652	100,00
	Of them allowed	245	492	427	917	523	2604	98,85 ± 0,21
Annually	Passed inspection	35,15	72,00	62,29	133,71	75,71	378,86	--
	%	9,29	19,00	16,44	35,29	19,98	100,00	--
	FC	43,64	150,03	139,04	222,33	188,48	138,44	--
	Of them allowed	35,00	70,29	61,00	131,00	74,71	372,00	--
	%	9,41	18,90	16,40	35,22	20,08	100,00	--
	FC	43,46	146,47	136,16	217,83	185,89	135,94	--

In absolute numbers, % and frequency coefficient (FC) per 10,000 child population (P ± m)



Table 2: Distribution of the contingent of children and adolescents who underwent examination with medical support for the fulfillment of the standards of the All-Russian physical culture and sports complex "Ready for Work and Defense" in the "SChCI No. 3" by medical groups and ages in 2016-2022.

Year / Age (Human)	Medical groups	6-8 years (8054)	9-10 years (4799)	11-12 years (4480)	13-15 years (6014)	16-17 years (4019)	Total (27366)	%
2016 (24)	1. The main medical group for physical education	0	0	1	5	17	23	95,83 ± 4,08
	2. Preparatory medical group for physical education	0	0	0	0	1	1	4,17 ± 4,08
	2.1. Of which allowed	0	0	0	0	0	0	--
	3. Special Medical Group	0	0	0	0	0	0	--
2017 (507)	1. The main medical group for physical education	45	72	132	145	49	443	87,37 ± 1,47
	2. Preparatory medical group for physical education	7	15	8	17	5	52	10,26 ± 1,34
	2.1. Of which allowed	7	12	8	16	5	48	92,31 ± 3,67
	3. Special Medical Group	1	1	7	2	1	12	2,37 ± 0,68
2018 (276)	1. The main medical group for physical education	33	60	52	71	26	242	87,68 ± 1,98
	2. Preparatory medical group for physical education	2	13	8	9	2	34	12,32 ± 1,98
	2.1. Of which allowed	2	13	7	7	2	31	91,18 ± 4,86
	3. Special Medical Group	0	0	0	0	0	0	--
2019 (222)	1. The main medical group for physical education	22	66	31	54	40	213	95,95 ± 1,32
	2. Preparatory medical group for physical education	1	2	0	1	3	7	3,15 ± 1,17
	2.1. Of which allowed	1	0	0	0	2	3	42,86 ± 18,70
	3. Special Medical Group	0	0	0	2	0	2	0,90 ± 0,63
2020 (300)	1. The main medical group for physical education	50	132	49	26	15	272	90,67 ± 1,67
	2. Preparatory medical group for physical education	2	18	8	0	0	28	9,33 ± 1,67
	2.1. Of which allowed	2	12	8	0	0	22	7,33 ± 1,51
	3. Special Medical Group	0	0	0	0	0	0	--
2021 (357)	1. The main medical group for physical education	13	42	5	245	45	350	98,04 ± 0,74
	2. Preparatory medical group for physical education	0	0	1	5	1	7	1,96 ± 0,74
	2.1. Of which allowed	0	0	0	1	1	2	0,56 ± 0,39
	3. Special Medical Group	0	0	0	0	0	0	--
2022 (966)	1. Основная медицинская группа для занятий физической культурой	70	83	134	347	321	955	98,86 ± 0,34
	2. Preparatory medical group for physical education	0	0	0	7	4	11	1,14 ± 0,34
	2.1. Of which allowed	0	0	0	0	0	0	
	3. Special Medical Group	0	0	0	0	0	0	
2016-2022 Total (2652)	1. The main medical group for physical education ой	233	455	404	893	513	2498	94,19 ± 0,45
	2. Preparatory medical group for physical education	12	48	25	39	16	140	5,27 ± 0,43
	2.1. Of which allowed	12	37	23	24	10	106	75,71 ± 3,62
	3. Special Medical Group	1	1	7	4	1	14	0,54 ± 0,14
Annually (378,86)	1. The main medical group for physical education	33,29	65,00	57,71	127,57	73,29	356,86	89,77 ± 1,86
	%	9,33	18,21	16,17	35,75	20,54	100,00	--
	FC	41,33	135,44	128,82	212,12	182,36	130,40	--
	2. Preparatory medical group for physical education	1,71	6,86	3,57	5,57	2,29	20,00	9,18 ± 1,77
	%	8,55	34,30	17,85	27,85	11,45	100,00	--
	FC	2,12	14,29	7,97	9,26	5,70	7,31	--
	2.1. Of which allowed	1,71	5,26	3,30	3,43	1,44	15,14	85,25 ± 7,18
	%	11,36	34,74	21,73	22,66	9,51	100,00	
	FC	2,13	10,96	7,34	5,70	3,58	5,53	
	3. Special Medical Group	0,14	0,14	1,00	0,58	0,14	2,00	1,05 ± 0,63
	%	7,00	7,00	50,00	29,00	7,00	100,00	
	FC	1,24	2,08	15,60	6,65	2,48	5,12	

In absolute numbers, % and frequency coefficient (FC) per 10,000 child population (P ± m)



in the stage of stable clinical and laboratory remission, lasting at least 3-5 years. They are allowed to take classes according to the physical education curricula, subject to a more gradual mastery of a set of motor skills and abilities, especially those related to the presentation of increased requirements to the body, with more careful dosing of physical activity and the exclusion of contraindicated movements. Test tests, passing individual standards and participating in mass physical culture activities are not allowed without additional medical examination. These students are not allowed to participate in sports competitions. Additional classes are recommended to improve general physical fitness in an educational institution or at home. The average annual FC of children with a preparatory medical group for 7 years was 7.31 per 10,000 children, a special group - 2.00.

A special medical group for physical culture was determined in total for 14 children ($0.54 \pm 0.14\%$). This group is divided into two subgroups:

The special subgroup "A" includes persons with health disorders of a permanent nature (chronic diseases or conditions, congenital malformations, deformities without progression, in the stage of compensation) or a temporary nature; with physical development disorders requiring limitation of physical activity. They are allowed to practice health-improving physical culture according to special programs (preventive and health-improving technologies). When practicing health-improving physical culture, the nature and severity of violations of the state of health, physical development and the level of functional capabilities of the minor should be taken into account, while speed-strength, acrobatic exercises, and outdoor games of moderate intensity are sharply limited; outdoor walks are recommended. Adaptive physical education classes are possible.

The special subgroup "B" - is persons with permanent health disorders (chronic diseases or conditions in the stage of sub-compensation) and temporary nature, without pronounced health disorders. They are recommended to do physiotherapy exercises in a medical organization without fail, as well as to conduct regular self-study at home according to the complexes proposed by the physiotherapy doctor of a medical organization.

In accordance with the regulatory documents, during the examination for passing the standards of the "RLD", children are not divided into subgroups "A" and "B". In this study, patients of a special medical group with signs of subgroup "B" did not apply for an examination to pass the "RLD" standards.

Discussion

"RLD" should be considered as a full-fledged program and normative basis for the physical education of the population of the RF, aimed at the development of mass sports and the improvement of the nation [15]. His medical support is carried out on the basis of approved legal documents.

The population of the RK as of 01.01.2023 was 725,969 people, aged 0-18 years 182,801. For the entire child population of the subarctic region of the RF. The dynamics of absolute indicators over the years but the strength is spasmodic, the average annual number of examined children reaches 379 people, of which 372 are allowed to pass the standards of the "RLD". The obtained indicators in absolute values can be assessed as quite low.

The proportion of persons who annually independently applied for a medical examination in order to comply with the standards of the "RLD" amounted to 0.90% of the corresponding contingent, of which 0.88% was admitted. The minimum indicator in 2016 barely reached 0.09% and 0.08%, and the maximum in 2022 - 2.29% and 2.26%. Based on the results obtained, it can be concluded that there is a trend of stable low relative indicators of medical examinations of children and adolescents to meet the standards of the "RLD". However, it is not possible to compare them with similar ones due to the lack of data on other regions, federal districts, and the RF as a whole in the available scientific literature. The average annual FC of children who were assigned to the main medical group was 130.40 per 10,000-child population.

In the average annual age structure of those examined, as a rule, children aged 9-10 years old (27.66%) and 13-15 years old (25.23%) prevailed over other categories: 11-12 years old (22.21%), 6-8 years old (12.57%) and 16-17 years old (12.33%). The age structure of admitted children differs from those examined only by 0.1-0.2%.

The corresponding average annual intensive age indicators of children and adolescents examined and admitted to the implementation of the standards of the "RLD" also differ from each other. But for certain age groups, significant differences have been established. The study revealed a consistent increase in intensive indicators of medical examinations in the group of 9-10 years compared with 6-8 years by 3.7 times. Having reached the maximum number of visits for the purpose of a medical examination, the number of children begins to consistently decrease from the age of 11-12 years. These are, as a rule, schoolchildren of grades 4-6, who undergo not only violent morphological and functional processes of the formation of the body but also meaningful socialization of the individual. It is important for them to take part and prove themselves at the highest level in all proposed areas of life, and not just in the physical culture and sports health movement. In this group, a significant gap was found between the examined and admitted children to pass the standards, as deviations in the state of health were formed and became possible for diagnosing, which became the rationale for a medical challenge. At the age of 13-15, the interest of schoolchildren in grades 6-8 in sports activities remains high, but at the age of 16-17, it decreases by almost 1.36 times, because a significant number of other interests and hobbies appear [16,17]. That is, the first two age groups can be considered a reserve for the



development of children's interest in regular sports activities. It is in kindergarten and grades 1-3 of elementary school that one can effectively instill in a child a sense of need and need for physical education and sports. In older age groups, this is much more difficult to do.

Thus, in a large children's polyclinic, no more than one group of children, pupils of kindergarten, 1st or 2nd grades annually undergo a medical examination to pass the standards of the "RLD", two or more than two grades from 3rd to 8th and one grade from 9th to 11th grades. And these are the results in the regional center of the subarctic territory with a developed sports infrastructure, where more than a dozen Olympic champions, Olympic medalists, champions, and prizewinners of world championships in various sports have been brought up. Such low results are due to the reality of the modern practical life of children and adolescents. The way out is to provide opportunities for physical education and sports for everyone and this is possible only if conditions are created for free classes (accessibility for each child) to choose from in one of 3-4 sports sections operating on the basis of the school gym, where high conditions are not set sports results and achievements, and in a neighboring school they offer classes in other sections that are not in this school. The Decree of the President of the country does not provide for such opportunities. As a result, an indirect marker, which is the indicator of medical examinations for passing the standards of the "RLD", states a low level of physical education for children and adolescents, participation in sports events, prospects for high individual results in schools of sportsmanship and Olympic reserve, European championships, world, and Olympic Games. No availability - no mass. There is no mass character - there is no choice of promising athletes and the achievement of high results.

Conclusion

The average annual quantitative indicator of those who applied for certification to pass the standards of the "RLD" is a statistical tool, on the one hand, to determine the current and future workload of medical personnel and determine the forces and means of medical support, on the other hand, an indirect indicator of the interest of children and adolescents in systematic physical education and sports, instilling in schoolchildren the skills of a healthy lifestyle and the prospects for the physical development of the nation. The frequency of examinations per 10,000 of the child population should be considered as an indirect marker for assessing the physical development of children and adolescents since it is not the result of continuous, but only selective (at the request of those who applied) research. The voluntary surrender of the "RLD" standards by children and adolescents should be approached as an indicator of physical readiness and high personal self-esteem, including psychological readiness for competitive relations in the school and adolescent environment and psychological maturity.

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