CRITERIA FOR ASSESSING THE PHYSICAL ACTIVITY OF PUPILS USING THE THEORY OF FUZZY LOGIC FROM ARTIFICIAL INTELLIGENCE TECHNIQUES IN THE INFORMATION SYSTEM" SMART SCHOOL".

Masharipov S.A[1], Raximova L.S[1], Baydjanov M.I.[2]

[1]Urgench branch of Tashkent University of Information Technologies named after Muhammad al-Khwarizmi
[2]Tashkent International University of Education, Tashkent, Uzbekistan

Annotation: In this article, we will talk about the problems of collecting, monitoring and selecting exercises for the pupil in an individual way based on the results of the assessment of physical and anthropometric indicators of children in schools and the solutions proposed to it. Naturally, a lot of scientific work has been done on the issue of the physical development of man, anthropometric indicators. But most of this is done for the world of professional sports or show business. Few such experiments have been done on school-age pupils. One of the main reasons for this is the large number of schoolchildren, which we can cite as a reason for problems in data collection.

Keywords: *Smart School, fuzzy logic, anthropometric, physical, pupil, child, application, monitoring;*

Introduction

One of the main tasks of improving the educational system is to adapt the educational process to the state of health of pupils. Modern education is carried out in an innovative mode, the volume of information is regularly increasing, which leads to overload of education, stress and negatively affects the health of pupils. It is important to monitor and monitor what the health indicators of children should be at the beginning of the school year and what result they will have at the end of the school year as a result of innovation. In our Republic, at all levels, a single electronic system for collecting and recording information about physical fitness and physical development of pupils has not been introduced, which makes the process of monitoring much more difficult and reduces its quality. Physical fitness and physical development of schoolchildren is written in schools in an optional form, and their indicators are repeated in various documents, statistical processing and visualization of data is carried out on paper. As a result, the existing monitoring system of physical fitness and physical development of schoolchildren does not ensure the adoption of effective management decisions. Today, monitoring the physical development, physical fitness and functional status of pupils is more important than ever.

In the decision of the President of the Republic of Uzbekistan dated December 18, 2018 № PQ-4063 "On measures to prevent non-communicable diseases, support a healthy lifestyle and increase the level of physical activity of the population", public health it is planned to create a single system of monitoring the condition, to develop specific measures and implement recommendations for prolonging life and strengthening health along with th introduction of modern information and innovative technologies [1].

Resolution №118 of the Cabinet of Ministers of the Republic of Uzbekistan dated February 13, 2019 "On approval of the concept of physical education and mass sports development in the Republic of Uzbekistan in the period 2019-2023" provides for physical education and the development and implementation of innovative forms and mechanisms that ensure wide coverage with mass sports is defined as a priority task [2].

Research methodology

One of the most pressing issues of age-related morphology is the study of growth and anthropometric indicators of children and adolescents of different ages. Scientists have been dealing with this issue for a long time [3, 4, 5, 6].

Physical development refers to the combination of morphological and functional characteristics, depending on hereditary factors and environmental conditions. Hereditary factors and environmental conditions are able to change the process of physical development to positive or negative sides [7, 8]. Physical development can be described by the ratio of individual anthropometric properties expressed in mathematical formulas [9].

N.N. Rudenko, I.Yu. Melnikova [10]: "physical development refers to the understanding of the dynamic process that currently describes the parameters of the child's growth and development. They are considered one of the main and information criteria for the health of the child population.

Physical education is an important component of the Shi to comprehensively educate the individual, at the same time it comprehensively solves the tasks of mental, moral, aesthetic and labor education. In various forms of Organization of children's physical education (training, action games, independent action activities, etc.k.) the caregiver's attention is focused on raising a child who is thinking, who acts consciously according to his age opportunities, acquires movement skills with success, is able to aim in the environment, actively eliminates the difficulties encountered, strives for creative search.

Issue insertion and resolution

With the help of the" Smart School" Information System, both mental and physical development of children is controlled. We will also consider Monitoring not as "observation, assessment and prediction", but as conducting lessons on based on the reliable information obtained, as well as active intervention in the process of physical education.

Growth and development of children is monitored monthly by identifying and including anthrometric indicators in the program, and with these indicators, defects and defects in the growth and development of the baby(if any) are identified. To do this, various classes and tests with children with certain standards of demand are carried out, and the results are recorded (Figure 1, 2).

Figure 1. Indicators included in the program.

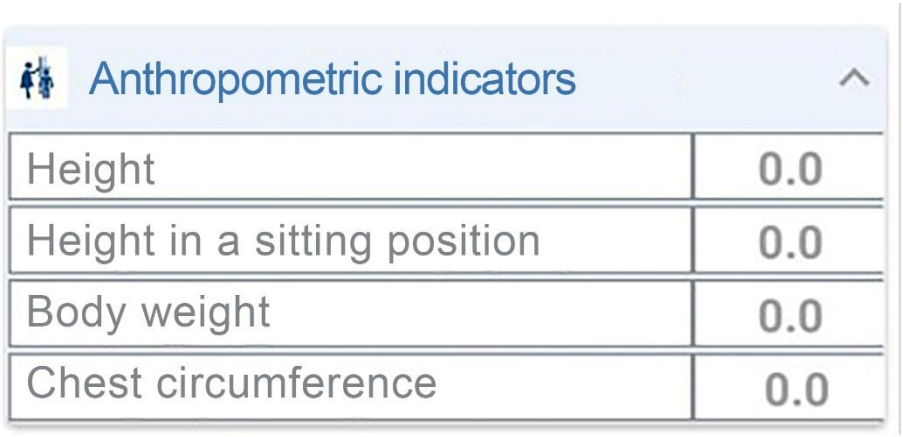

Figure 2. Recording indicators.

Particular attention should be paid to pupils who, according to the Test results, did not fulfill the requirements criteria. When the number of such children is large, it is necessary to carry out correctional work with them. To do this, first of all, it is necessary to develop exercise complexes aimed at developing less developed physical qualities. It is necessary to set specific recommendations, taking into account individual shortcomings and to correct the sets of physical exercises available to each pupil. It is necessary to organize various forms of correctional work in educational institutions, based on the low development of one or another physical qualities among schoolchildren. These include: Special Correctional Training (as a form of extracurricular work in Physical Culture); basic physical culture training (preparatory, basic and final parts) with the addition of the correctional part of the lesson, homework, etc.

Monitoring not only identifies pupils with low levels of fitness, but also pupils with high physical fitness [11].

Obviously, even for pupils in this category, it is required to look for and organize new forms of training in the classroom and during extracurricular activities. In order to guide these pupils into playing sports, it is required to develop collaborative work with children's and junior sports schools[12].

Another issue is the health of the child, that is, the elimination of problems in his physical development and training. Imagine that only one teacher can take an exam from a whole class but cannot deal individually with pupils whose physical development and physical fitness deviate from the norm. In the "smart school" system, a mobile application created for parents with this problem in mind is provided with indicators of the physical development and readiness of the child. If these pointers deviated from Meyer then parental advice is given (Figure 3, 4).

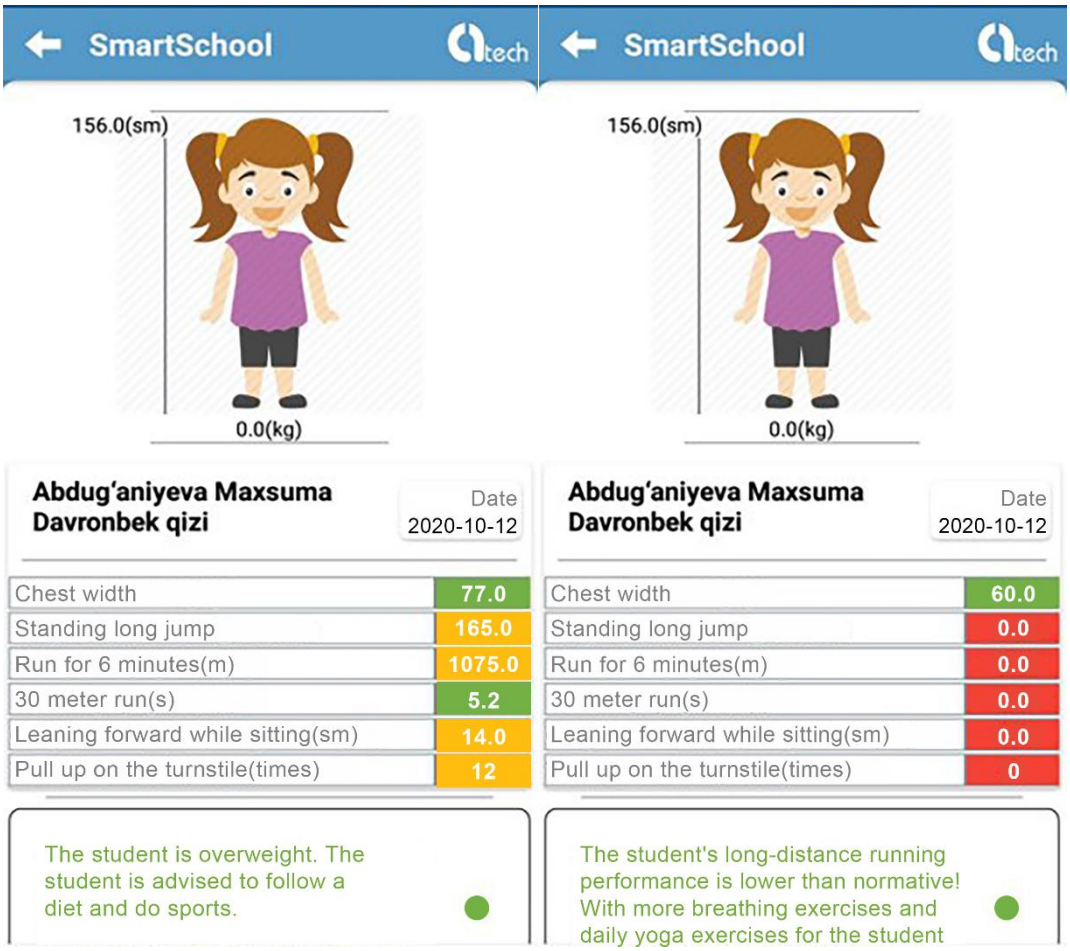

Figure-3, 4. Checking that the included indicators are in line with the norm to make a recommendation based on this.

It is natural that the use of artificial thinking systems to identify these and similar facts and find solutions to them increases the effectiveness of teaching in the educational system[13]. The system we developed used artificial thinking models in order to save time for teachers and parents in solving several issues.

Research result and discussions

Monitoring the level of physical development of pupils.

This method of analysis is developed according to the international assessment criteria of physical development, the program analyzes the processes of physical development in relation to the age and gender of pupils.

For example, the 4th"A" Class of the 41st School in Fergana when the physical indicators of 29 pupils were analyzed in the general case, the following results (tables 3,4) were obtained:

Results of analysis on physical indicators of pupils

Table 3.

Indicators	Analysis result
Total pupil fitness by class	91 %
The length of the neck is higher than that of Meyer	8 %
The length of the neck is lower than that of Meyer	11 %
The length of the neck is in meior	81 %

Above meior of body weight	8 %
Below meior of body weight	10 %
Those with body weight in meior	82 %

As of the end of the analysis, the example of 1 Class revealed that out of a total of 29 pupils, 11% had a lower neck length than Meyer, and 10% had a lower body weight than Meyer. The program at the same time determines in an individual way exactly which pupils are left behind in physical development. As a result of this, it will be possible to deal with the pupils in question separately in order to eliminate the shortcomings.

The level of development of physical qualities of pupils in total

Table 4.

Indicators	**Analysis result**
Those with high speed quality	93,1 %
Those with poor speed quality	2,3 %
Speed quality averages	4,6 %
Durability quality higher	81,6 %
Poor durability	13,8 %
Durability quality averages	4,6 %
Degree of elasticity	13,7 %

Through this method of analysis, the level of development of physical qualities of pupils of the 4th"A" Class of the selected 41st school has been determined. In this case, those with poor speed quality accounted for 2.3 percent, those with poor durability for 13.8 percent. As a result, it will be possible to achieve an increase in their physical qualities by taking separate classes with pupils with a lower figure, which is determined in schools.

References

1. O'zbekiston Respublikasi Prezidentining 2018 yil 18-dekabrdagi "Yuqumli bo'lmagan kasalliklar profilaktikasi, sog'lom turmush tarzini qo'llab quvvatlash va aholining jismoniy faolligi darajasini oshirish chora-tadbirlari to'g'risida"gi PQ-4063-son qaror.

2. O'zbekiston Respublikasi Vazirlar Mahkamasining 2019 yil 29 yanvardagi "O'zbekistonda sog'lom turmush tarzini keng targ'ib qilish va aholini jismoniy tarbiya va ommaviy sportga jalb etish to'g'risida"gi 65-son qaror.

3. Антонова А.А. Сравнительная характеристика физического развития детей / А.А. Антонова, С.Н. Ченsова, В.Г. Сердюков // Астрахан. мед. журнал. -2012. - № 4. - С. 26 - 29.

4. Кахаров Зафар Абдурахманович, Саттибаев Илхом Иномович, Салиева Минора Юлбарсовна, Абдурахимов Абдухалим Холиддинович, Бобоев Мухаммадаюбхон Муродхонович Антропометрические показатели физического развития у детей в Андижанской области // Универсум: медисина и фармакология. 2018. №9 (54).

5. Лучанинова В.Н. Мониторинг физического развития детей г. Владивостока (1996 - 2002 гг.) / В.Н. Лучанинова, Е.В. Крукович, Л.Н. Нагирная [и др.] // Тихоокеан. мед. жур. - 2003. - № 2. - С. 35-38.

6. Савватеева В.Г. Физическое развитие детей раннего возраста г. Иркутска / В.Г. Савватеева, Л.А. Кузьмина, С.В. Шаров [и др.] // Сиб. мед. журн. - 2003. -Т40, №5. - С. 71-77.

7. Л. К. Будук-оол, Р. И. Айзман // Сиб. пед. журн. - 2005. - № 4. - С. 143-148.

8. Тулякова О.В. Влияние аэротехногенного загрязнения на антропометрические показатели физического развития детей (обзорная статья) / О.В. Тулякова, Н.Л. Демина, Г.А. Попова [и др.] // Новые исследования. - 2013. - № (35). - С. 23-33.

9. Крикун Е. Н. Антопоэкологический мониторинг показателей физического развития новорожденных детей / Е. Н. Крикун, Э. Г. Мартиросов, Д. Б. Никитюк / / Науч. ведомости Белгород. гос. ун-та. - 2008. - № 6. - С. 26-33.

10.N.N. Rudenko, I.Y. Melnikova "Urgency of the estimation of physical development of children".2009

11. M.S.Atanazarovich, R.L.Saparbayevna, A.X.Ilkhomovna DETERMINING THE KNOWLEDGE LEVEL OF PUPILS IN THE" SMART SCHOOL" INFORMATION SYSTEM. - International Journal of Contemporary Scientific and …, 2022

12. Mukhammadsolayev Akbar, Masharipov San'atbek, Iskandarov Sanjar, Sharipov Sirojbek. "Comparison of recommendation systems in educational management" science and innovation International scientific journal volume 2 issue 4 april 2023

13. M.S.Atanazarovich, S.Q.Iskandarov, R.B.Sharifboyeva "Sun'iy intellekt asosida yoshlarni kasbga to'g'ri yo'naltirish tizimini ishlab chiqish" Komputer texnologiyalari, 2022