PHYSICAL FITNESS OF ELEMENTARY AND SECONDARY SCHOOL STUDENTS IN THE PARDUBICE REGION

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Abstract:
The aim of the presented study was to verify the declining level of physical fitness in students comparing analysed data with the data of the previous pilot research study. To provide measures in larger sample of probands as in the pilot study was focused and supported of a Pardubice Region. In total 432 probands (228 females and 204 males) of the fourth class of the primary schools and 141 probands (71 females, 70 males) of the first class of secondary schools from Pardubice Region were measured using the test battery UNIFITTEST (6-60). The measured results show that the overall physical fitness of probands is below the average level and the amount of subcutaneous fat is significantly higher due to a population norm. At the same time there has been a decline in physical fitness compared with the previous research from 2010.

Keywords:
Unifittest, physical fitness, motor skills, somatic parameters, Pardubice Region

INTRODUCTION

Many abroad studies (Tremblay, LeBlanc, at al. 2011; Tremblay, Shields, et al. 2010; Andersen, Sardinha, Froberg, et al. 2008; Pate, Wang, Dowda, et al. 2006; Wedderkopp, Froberg, et al. 2004) show that the physical fitness of the population is declining. The same tendencies, with all the known and possible consequences, declared Ministry of Healthcare in Czech Republic in 2015 in Action plans for health support of children and youth (MZ, 2016).

After 2000, in the new millennium, the trend of diverting from moving to other activities is still accelerating and deepening, which is alarming not only for the present, but above all for the future. It has come so far that not possible to reach children, who would just chase for a ball or otherwise move spontaneously for the pleasure. At the same time sports grounds are certainly enough both indoor and outdoor, when all Czech regions have been put into sport areas reconstructions a lot of financial resources in the past years. Unfortunately, the playgrounds are often empty. It is not possible to force young people to a healthier way of life, and there are many reasons why they go so differently.

The first major competition of sport as the most significant leisure activity of young people came decades ago with the onset of television broadcasting. Still, it was not as fundamental as the last twenty years of promise to a huge boom of computers. Currently, most children watch

TV, including DVDs, for more than two hours a day, and about seven out of ten children spend two hours or more each day at the computer. For example, in the age group of 15, there has been a massive increase in this trend of inclined youth from thirty to eighty percent, that is, half full! And in the modern era of tablets, smart phones and emerging technical features, it's hard to assume any future loss, rather the opposite MZ (2016).

Another important factor is the approach of parents who often do not want their children to leave themselves out of their security concerns. There are many dangerous traps in today's world, but this fear is sometimes too anxious or unnecessary. Not to mention that eight percent of current schoolchildren are at the parents' request exempt from PE and gymnastics (MZ, 2016). When all of the above factors are added together, it is hardly surprising that more and more young people spend most of their time at home or elsewhere shut absolutely free of movement. This then logically results in the worsening health of mankind. General physical fitness of elementary school pupils decreased.

Before we speculate about the causes, we need to verify this trend. In the first phase, research was carried out at a high school in Prague, which resulted in the physical fitness of the youth being lower compared to the standard values stated in the UNIFITTEST (6-60) test battery (Kubricht, 2010).

The Pardubice Region is one of the thirteen regions of the Czech Republic. It is still divided into four districts and, according to available information, 516 004 inhabitants lived in its territory at the end of June 2014 (ČSÚ, 2016). In the school year 2014/2015 there were 251 primary schools in the Pardubice Region, attended by 40 959 pupils and 73 secondary schools attended 21 546 students (ČSÚ, 2016).

Consequently, in 2014, the OP VK 53 project for schools in the Pardubice Region entitled "Health question marks - options for increasing the health literacy of children and youth" (Registration number: CZ.1.07 / 1.1.00 / 53.0008) took place. 25 schools entered the project, of which twenty-two primary schools and three high schools. Part of this project was physical fitness measurement using the UNIFITTEST (6-60) test battery. Testing was carried out on pupils of the fourth grades of elementary schools and students of the first years of secondary schools. The results obtained from this project were processed and compared with the normalized values of the UNIFITTEST (6-60) test battery.

OBJECTIVES AND HYPOTHESES

The main objective of the presented study was to point out the worsening trend in the physical fitness of schoolchildren. The next long-term objective was to test possibilities of condition remedying.

METHODS

Characteristics of samples

Physical fitness measurement was attended by twenty two elementary schools and three high schools in 2014. Followed samples were selected for the study. Together 573 probands (298 females, 275

males) were measured. From that in total 432 probands - Sample E (228 females and 204 males) were pupils of the fourth class of the primary schools from Pardubice Region, and 141 probands – Sample S (71 females, 70 males) were students of the first class of secondary schools from Pardubice Region. The Basic Sample of the fourth classes pupils of elementary schools consisted in total of 4 868 pupils in the Pardubice Region. The Basic Sample of the first classes students of secondary schools consisted in total of 4 075 students in the whole Pardubice Region (ČSÚ, 2016). The detail descriptions and the explanations in percentiles you can see in Figures 1 - 4.

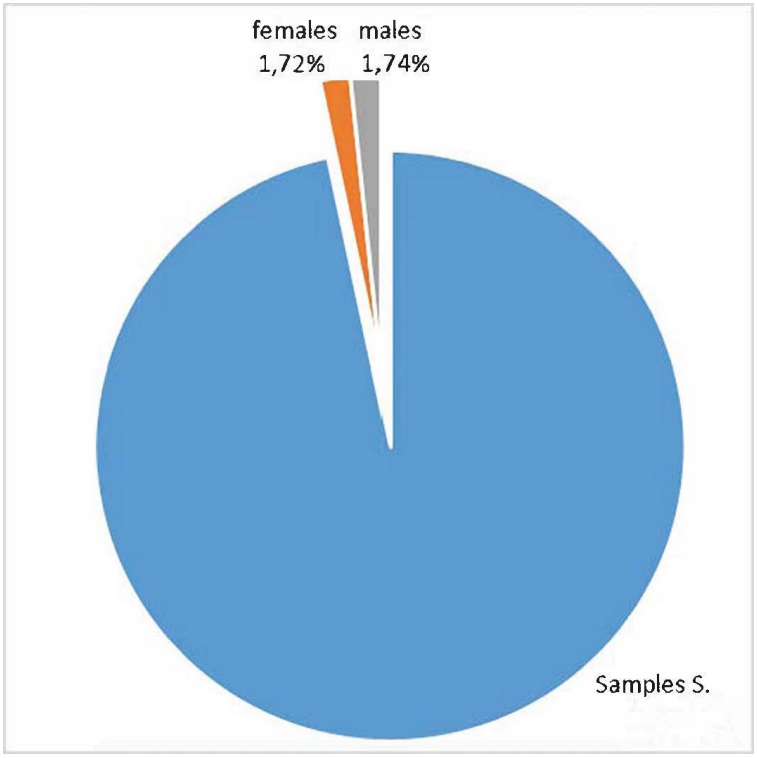

Figure 1 Percentage of Sample S probands (N=141) according the Basic Sample (N=4075) in Pardubice region

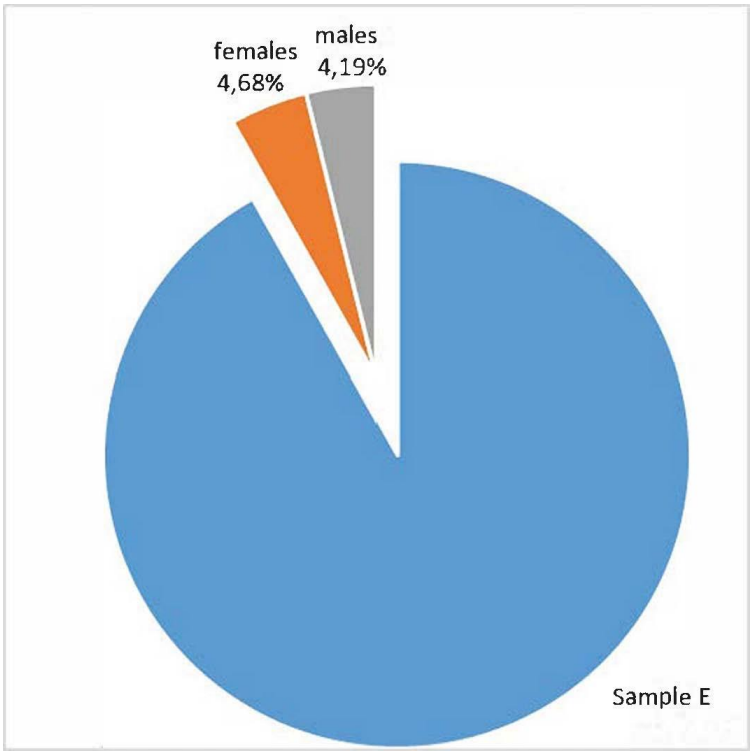

Figure 2 Percentage of Sample E probands (N=432) according the Basic Sample (N=4868 pupils) in Pardubice Region

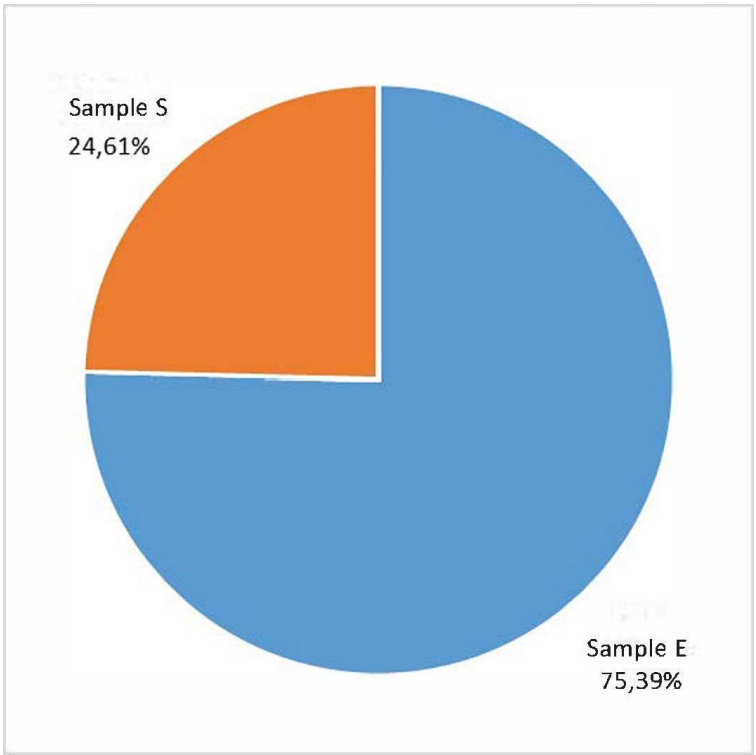

Figure 3 Percentage of probands Sample E and Sample S according the Type of school (N=573 probands, 298 females, 275 males)

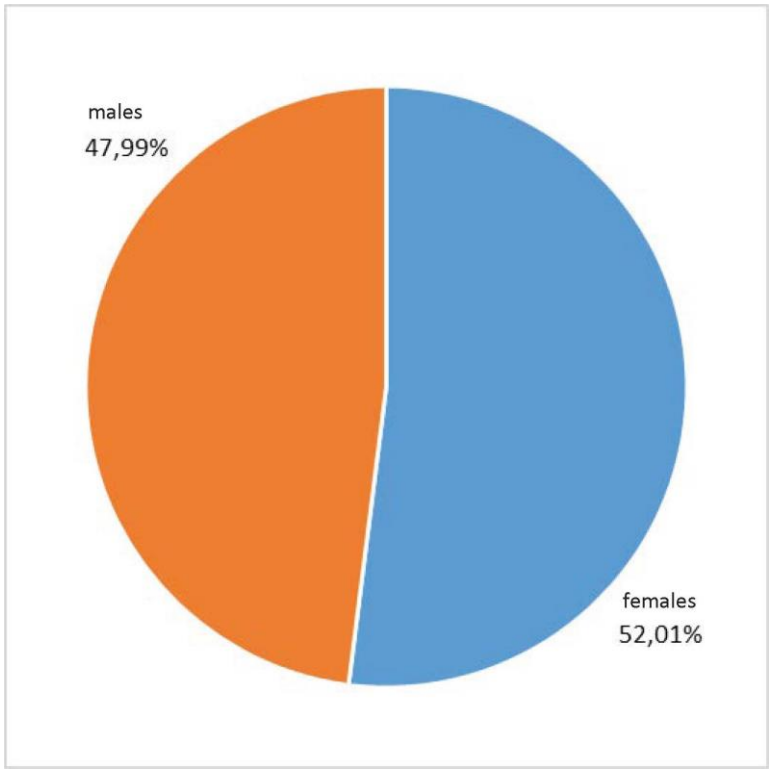

Figure 4 Percentage of probands Sample E and Sample S according sex (N=573 probands, 298 females, 275 males)

Organization of the research study

Measurement of the physical fitness of children and youth took place in the school year 2014/2015 at elementary and secondary schools in the Pardubice Region. This measurement was possible thanks to the call for OP VK 53 for schools in the Pardubice Region entitled "Health question mark - possibilities of improving the health literacy of children and youth" (registration number: CZ.1.07 / 1.1.00 / 53.0008). Within this project there was a key activity (KA4) called Physical Fitness.

This key activity was created in direct connection with the call for OP VK 53 to realize further physical fitness measurements, this time on a much larger group of probands. The undisputed advantage was that a large amount of money was allocated to the entire measurement, which allowed several crucial steps.

First, it was necessary to get and buy enough tools to allow each school to borrow one set as it is required by the UNIFITTEST (6-60) Manual. In addition, a full-day seminar was organized for PE teachers from the participating schools, who were thoroughly instructed and trained on the issue of the whole UNIFITTEST (6-60) test battery, the use of aids and the recording of measured data. During the training, there was a theoretical and practical introduction, where everyone could try out the procedures. Together with

the accompanying materials, educational video was also created.

Given the number of probands and the relatively short period when all measurements were needed, it was important for each teacher to get familiar with the issue. During the course of the measurements, visits were made at schools and teachers were constantly provided with technical assistance, but all measurements were made by PE teachers.

During the measurement, and subsequently, when passing on the results, a number of problems had to be addressed. Even before the start of the work itself, it was necessary to ensure that all pupils had informed consent from their parents. Without this document, the pupil could not be included in the measurement. However, a much greater problem has been the inattention of teachers when recording results in pre-prepared tables. Most educators recorded data in units other than prescribed, or wrote several data into one cell in a spreadsheet. For these reasons, it was time consuming to process the acquired data.

On the other hand, it is important to appreciate the access of all participating teachers (PE teachers and school principals). Their attitude to the issue was very positive and active.

RESULTS AND DISCUSSION

After calculating the total score of the UNIFITTEST (6-60) test battery and determining the difference score it is quite clear that the results, in all the monitored categories, are well below the population standard (Měkota, Kovář, Chytráčková, et al. 2002). The graphical representation (Figures 11-14) shows that the highest percentage representation has a "Significantly below average" rating compared to the theoretical values where the highest representation is rated "Average". The theoretical value for proband representation in the "average" rating is 38%. However, probands were found to have a much lower representation: primary school girls 23%, primary school boys 23%, girls 19% and secondary boys 21%. On the contrary, the theoretical value for proband representation in the "under-average" rating is 7%, and the probands were found to be significantly higher: primary school girls 36%, primary school boys 30%, girls 54% and secondary boys 44%.

These results show that the physical fitness of students of the 1st year of secondary schools dropped very significantly compared to the population standard, more than for pupils of the 4th year of elementary schools. Particular results in individual categories show that this significant decline in physical fitness is due in particular to a decrease in aerobic capacity and explosiveness of the lower limbs and a significant increase in the amount of subcutaneous fat. Differential scores (Chart 15-18) also do not hold accurate theoretical values, however, it is not an indicator of overall physical fitness. Differential score is an ancillary indicator referring to the harmonious (or vice versa) development of an individual in each component of physical fitness.

As says Měkota (in Měkota, Kovář, Chytráčková, et al. 2002), expressing test results with just one parameter is not very appropriate for practice. Therefore, an individual test profile (Table 22) is

preferred, which compares the individual results of each test with the population standard, thus allowing to identify the strengths and weaknesses of each individual and, if appropriate, to suggest an appropriate intervention.

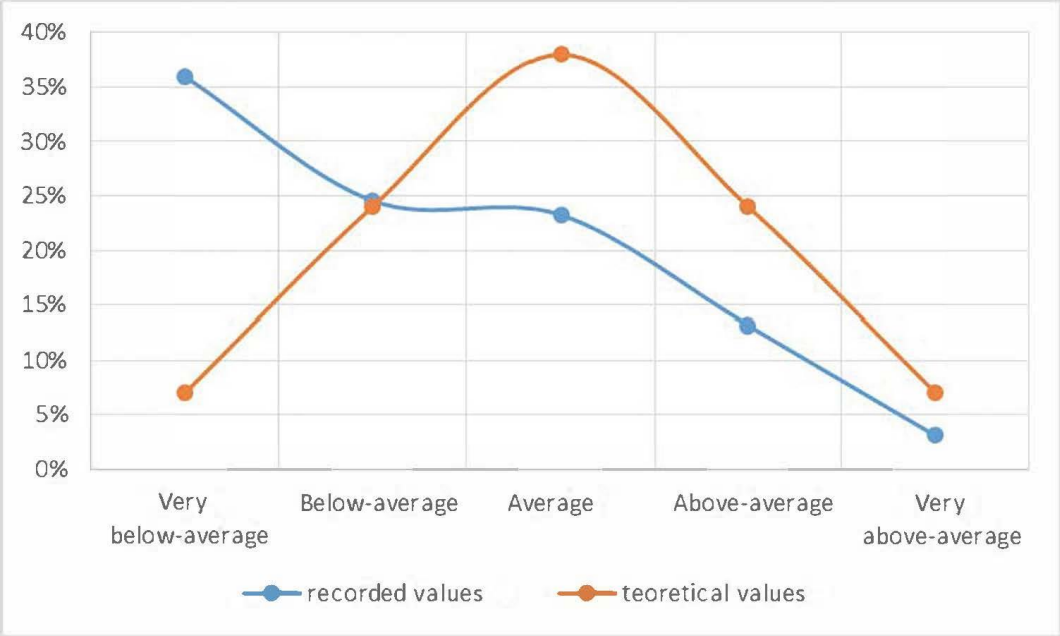

Figure 5 Evaluation of the Test Battery UNIFITTEST (6-60) – Primary school (N=228 females)

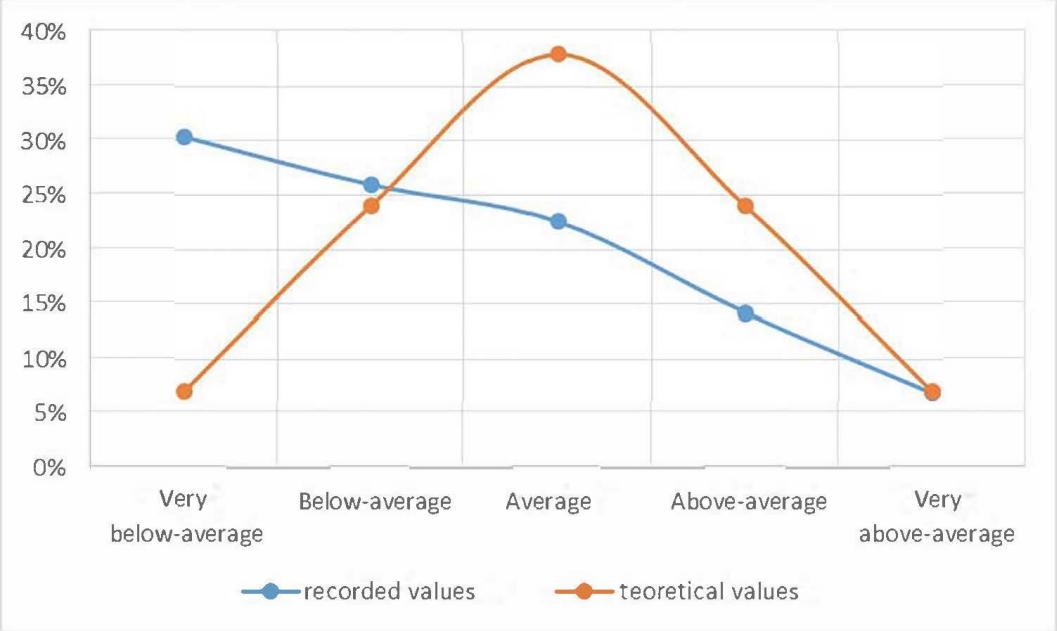

Figure 6 Evaluation of the Test Battery UNIFITTEST (6-60) – Primary school (N=204 males)

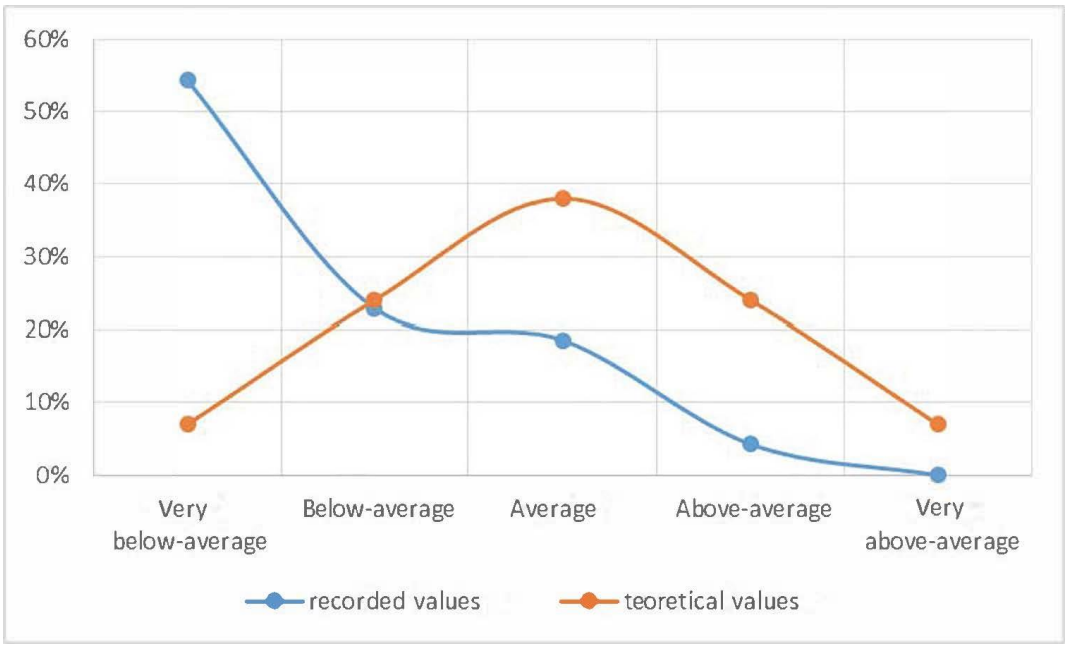

Figure 7 Evaluation of the Test Battery UNIFITTEST (6-60) – 1st class, Secondary school (N=71 females)

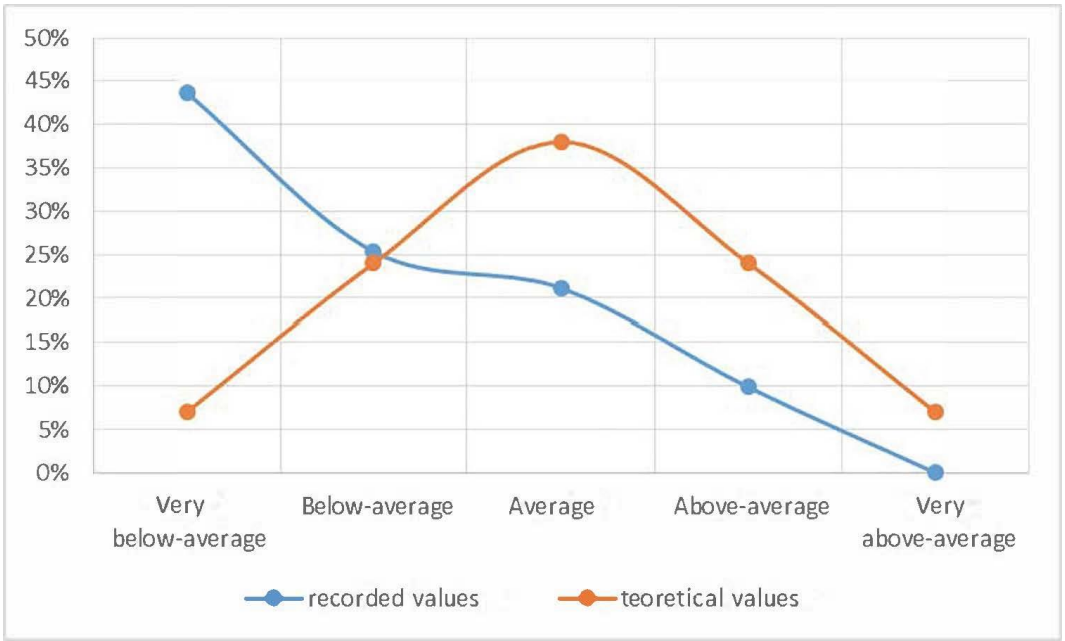

Figure 8 Evaluation of the Test Battery UNIFITTEST (6-60) – 1st class, Secondary school (N=71 males)

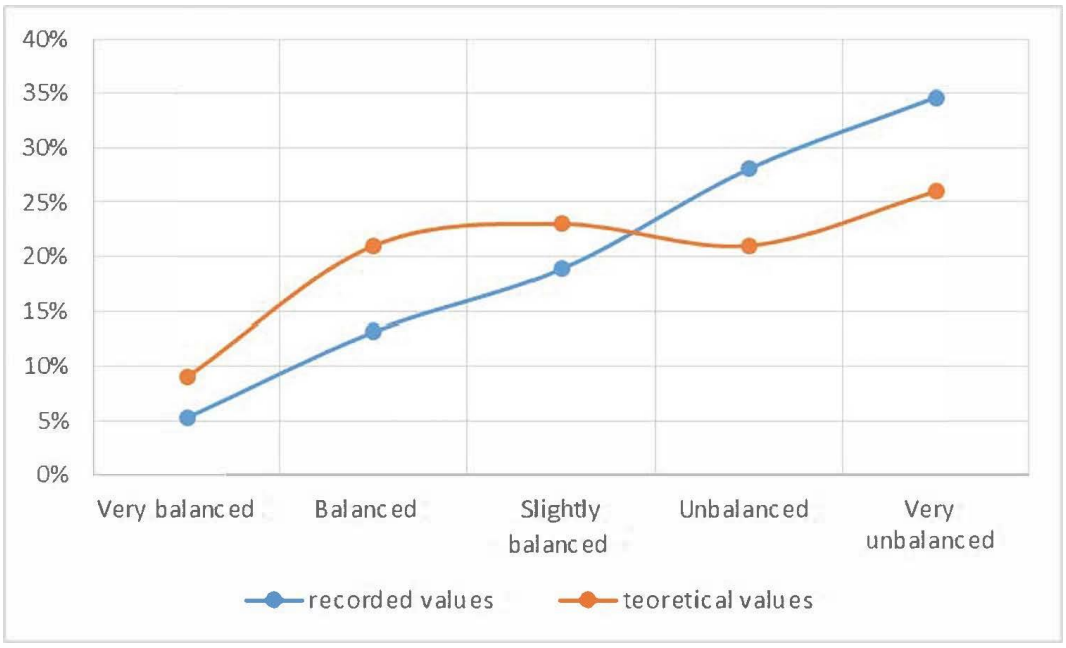

Figure 9 Difference score of test battery UNIFITTEST (6-60) – 4th class, Primary school (N=228 females)

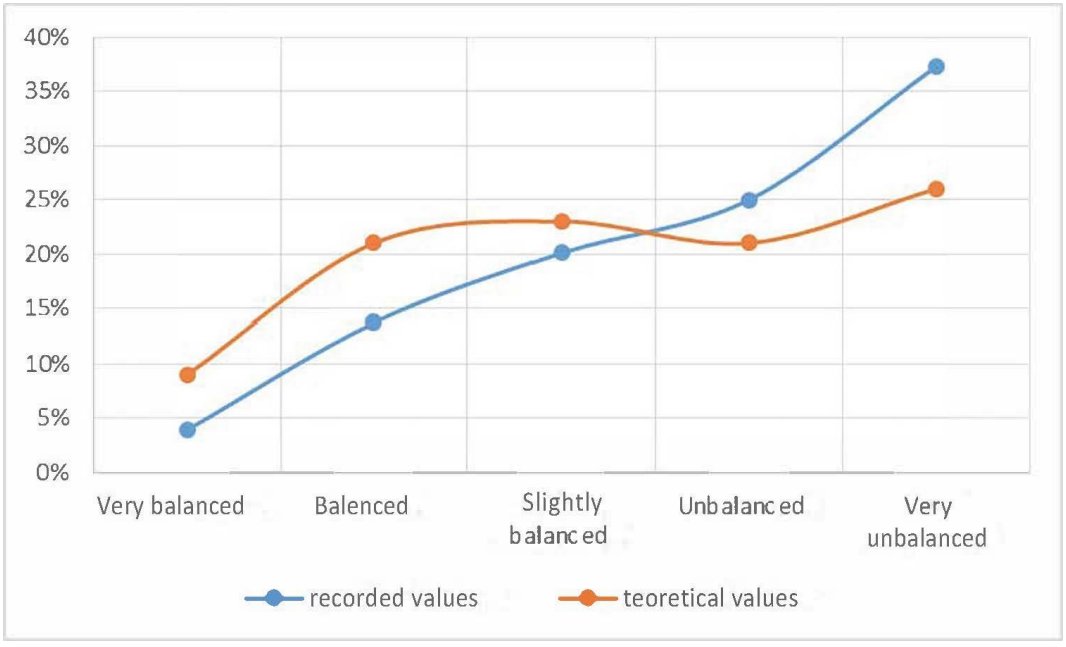

Figure 10 Difference score of test battery UNIFITTEST (6-60) – 4th class, Primary school (N=204 males)

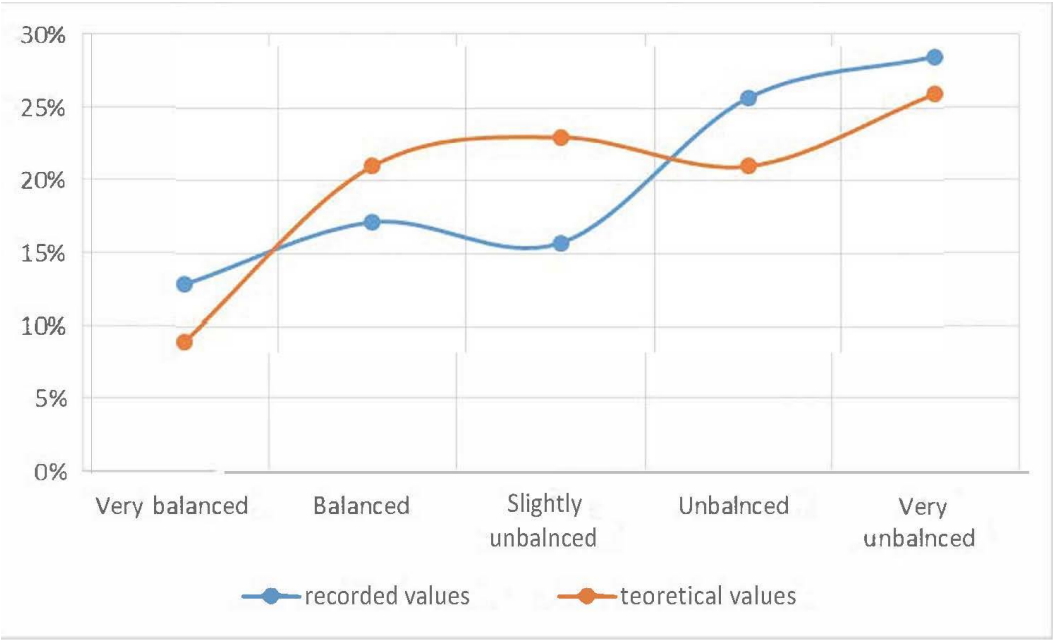

Figure 11 Difference score of test battery UNIFITTEST (6-60) – 1st class, Secondary school (N=70 females)

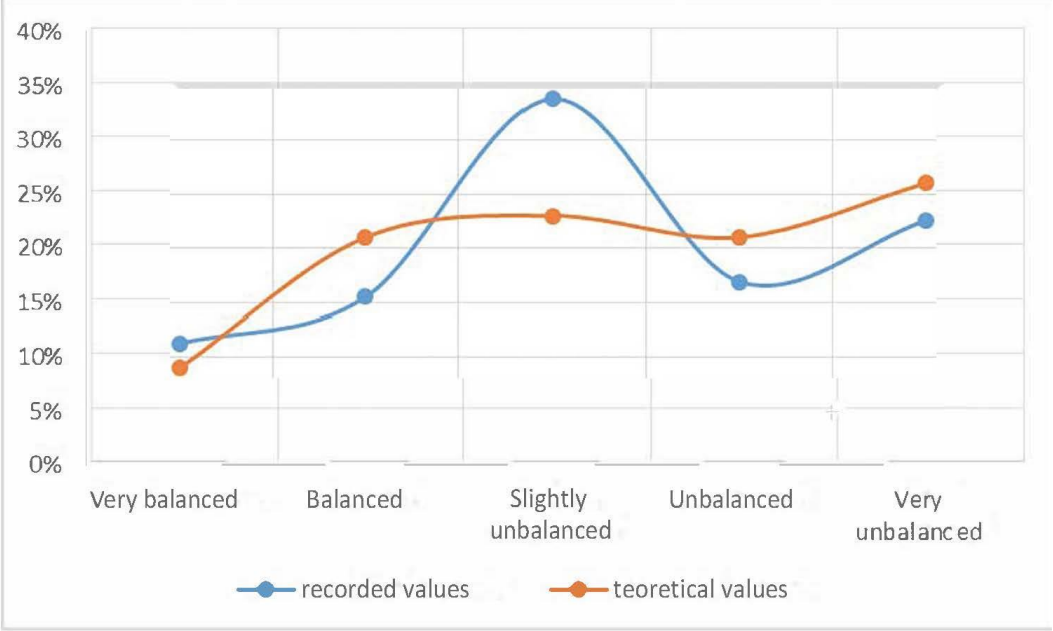

Figure 12 Difference score of test battery UNIFITTEST (6-60) – 1st class, Secondary school (N=71 males)

Table 1 Example of an Individual Test Profile of the UNIFITTEST (6-60)-Czech form

Proband č.:	5	Tělesná výška:	173 cm
Věk:	15,75	Váha:	79,5 kg
Testováno:	3.11.2014	BMI:	26,56

	1	2	3	4	5	6	7	8	9	10
T1 Člunkový běh: *Podprůměrný*			6,50							
T2 Skok: *Podprůměrný*				190						
T3 Leh-sed: *Průměrný*					40					
T4 Shyby: *Výrazněpodprůměrný*		2								

Výrazně podprůměrné	Podprůměrné	Průměrné	Nadprůměrné	Výrazně nadprůměrné

Součet bodů:	14	Celková výkonnost	Výrazně podprůměrné
Diferenční skóre	3	Vyrovnanost baterie	Poněkud nevyrovnané
Kožní řasy - součet	55 mm	Množství tuku	Nadprůměrné

DISCUSSION

Testing of the physical fitness, interpreting measured results and generalizing, finding causes and possible consequences and, last but not least, creating and applying possible interventions is a very extensive and complicated area, theoretically interfering with many disciplines.

This work deals with testing and possible interpretation of the results. However, in the first place it should be mentioned that the process of preparation itself, especially the acquisition of probands in minor age, is very difficult. Nowadays, the consent of legal representatives with testing is needed. The problem is that parents are trying to protect their children at all costs, yet they do not realize that they will not hurt their children all the way, notwithstanding the whole society's interest in finding relevant data. Even during this measurement, there were a number of parents who, with exaggeration, thought that their offspring would jump in the distance, and someone would write down the result, threaten the activity, and did not agree with testing of their children.

In this respect, it is almost unthinkable to talk about nationwide testing without an awareness campaign, whether by the media or, primarily, by the responsible authorities, especially the MEYS and other sports associations and organizations.

Indeed, only such a diagnosis is a basic prerequisite for finding possible remedies, or just for the selection of talents for top sport.

As it is stated in the Report on the Health of the Population of the Czech Republic, both in the Czech Republic, as well as in the whole world, there is a decline in physical activity, which entails many risks (MZ, 2015). These include, in particular, health risks associated with lower physical activity in productive age and advanced countries and poor dietary habits, especially cardiovascular, colon and breast cancer, and diabetes type 2. On the contrary, sufficient physical activity helps prevent these consequences while helping to maintain optimal body weight and good mental state.

The Government of the Czech Republic, in connection with health risks and general health literacy, has developed a national program dealing with this issue. Health 2020 is a strategy that aims to stabilize and establish a long-term concept of a health and prevention system. The strategy is divided into thirteen Action Plans, with "Promotion of Motion Activity" at the first place (MZ, 2015). This Action Plan discusses the theoretical background of physical activity in different age categories and in different areas of human life and at the same time presents some measures or proposals that should be supported under this plan.

On the one hand, it is very encouraging that the government of the Czech Republic is also involved in the support of physical activities, but it is still just proposals and not concrete actions. And unfortunately, there is no talk of systematic and nationwide testing.

On a nationwide scale, nation-wide anthropological research has worked in a ten-year period (Vignerová, Riedlová, Bláha, 2006). Unfortunately, the last measurement took place in 2001. In view of the issues addressed by this work, it would be advisable to follow up these surveys and add some physical fitness measurements.

It is true that increasing health literacy can have a positive impact on the behaviour of the population, but it is necessary to involve not only educational and physical education institutions. All families need to be involved because children, primarily from childhood and from their families, take away basic habits and, therefore, a relationship to physical activity and sport. If parents do not systematically engage in some physical activity if their children do not do it, and if the stereotype is not removed, "it is only a gymnasium ...", it is not possible to expect a long-term and sustainable process of improvement of the current state.

CONCLUSION

Of the total results of the UNIFITEST (6-60) test battery, there is a decrease in the physical fitness of the probands and at the same time an increase in the number of subcutaneous fat compared to the population standard (Měkota, Kovář, Chytráčková, et al. 2002).

At the same time, there was a decrease in the physical fitness of probands compared to previous research in 2010 (Kubricht, 2010).

According to the partial results of the physical fitness tests and the results of the one-volume T-test with a significance level

of 0.05, it can be concluded that the other pupils of the 4th year of elementary schools and of the 1st year of the secondary schools from the Pardubice Region will also have a worse results in physical fitness tests and quantity of subcutaneous fat. Young people are increasingly pushing for too early top performance, and you have to win the results in the sense of winning, in addition to a very narrow specialization in one sport. At the same time, surveys clearly show that for children themselves, victory is only a fifth in importance, far beyond the joy of being able to operate the sports industry. At present, it seems that when young people are doing some sports in the compartments, they are often poisoned by tall eyes.

For further generalization of the results of our presented study, further and especially nationwide research would be needed, which would be very appropriate, given that the results of the latest nationwide surveys were used in the design of UNIFITTEST standards, (Měkota, Kovář, Chytráčková, et al. 2002) which, according to the measurement results, may not fully reflect the state of our population.

We should try to do everything from a complete set of ball games, through running, swimming, and winter sports to gymnastics. Today, unfortunately, there is a minimum of children able to do a normal bite, not to mention some more demanding exercises, which even the teachers themselves do not even want to do with the safety of schoolchildren themselves. The legislation is such that accidents are responsible for the teachers and risking injury to children with respect to their mostly weaker physical fitness, no one wants.

Also the current two hours of gymnastics a week in schools are not enough. It would be appropriate to raise it to at least three, but at the same time also to improve their content. This is extremely difficult for current legislation, the general position of teachers in society, and the overall dislike of most children for sports. Still, there are enough enthusiasts willing and able to take care of young people for their health, but if there is no response from the other side, even the greatest sacrifice does not do anything.

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