

Computer analysis of weight evolution – a method to improve the children population health

Assist.Prof Corina Muşuroi, PhD
Assoc.Prof. Doina Moţ, PhD
„Tibiscus” University of Timișoara, Romania

ABSTRACT: The improvement of assesment of growth development of children has been explicated by introduction of new methods for monitoring the growth parameters and computer analysis of this data. The necessity of this new tehnologies appeared because the clinicians observed that there are a new types of data, in large amounts, which are difficult to analyze using the traditional methods. So, in order to receive the maxim information, introducing the computer analysis and new mathematical methods has been necessary.

Using these new tools, we described the evolution of body weigh in overweighted pupils by colecting quality indicators of body dimensions and length .

KEYWORDS: overweighted pupils, physical education, computer analysis

1. Introduction

The goal of the study was to improve the body ratio height/weight by optimize the proces of physical education in the secondary school. The method that we applied consisted in introducing a new methodology for a differentiated aproach of the overweighted childern during the Physical Education class and computer analysis of data after each stage of the project. The work stages regarded:

- specifying the type of morphological development for each child;
- the macro-differentiation of the training - which takes place in the 4th stage of the Physical Education class when it will be differentially worked

for improving the somatic deficiencies, according to each child's age, sex and specific morphological development.

- the micro-differentiation of the training during the Physical Education class - it involves the differentiated activity for the overweighted group. Its separation from the collective is based on the group therapy, on the association of individuals with similar regimens.

At the same time the purpose was to determine the work motivation to become an efficient psychological support for the effort mobilization during the class and for achieving the goals. That was why we proposed the replacing of the current methodology which was neither flexible enough nor adjusted to the individual by a new working pattern based on some standardized algorithms, according to the weight, the body mass and individual movement capacity. The advantages of the model was outstanding having consequences on the individual's life quality. As he/she can perceive the welfare strongly connected to the physical exercises. There was built:

-the habit of the completing the established working algorithms

-the necessity of working according to the individually established program, according to the body configuration so that the subject may become dependent on the intellectual physical effort.

The computer analysis was based on results obtained by applying this working methodology during Physical Education class in one school of Timisoara.

2. Methods

As an institutionalized activity, the Physical Education involves a thorough selection of the most adequate and efficient means to be concordant with the pedagogical, physiological and hygiene principles and norms, specific to the sex, and age categories as well as to the educational finality. The Physical Education is an instructive and formative bilateral process during which the subjects are systematically submitted to influences permanently coordinated with the general educational objectives and with the specific ones of the Physical Education. By the nature of the used means, the Physical education is a physiological activity, while by its methods, a pedagogical one; biological due to its results and social due to its effects. The objectives of the Physical Education in schools are content in the School Curriculum and they refer to:

- the health permanent improvement and the building of a harmonic somatic development;
- the acquirement of general, theoretical and practical knowledge to cultivate the interest in physical effort and self-training.
- the perfecting of the movement capacity and the building of a biological potential which by physical activity to be maintained even after graduation;
- the modeling of a psycho-behavioral state and its transposition in the social life (fair-play, team spirit, responsibility, perseverance, self-confidence and self-possession).
- the providing of the compensative effects for the intellectual activity, in order to balance the sedentary life, the stress and the tiredness.

The educational process is based on an educational curriculum and a subject curriculum. The lost one is a necessary document which establishes the content of the educational process, at a certain stage, containing the elements of a system open to the social evolution. Consequently, any modifications on the system of the Physical education objective and of the demands regarding the school-age children's physical education, determines the modification and improvement of the curricula. Therefore, the curricula have a dynamic character that does not affect by its changing the stability and continuity of the physical education process. So far the analytic curriculum has been a necessary document presenting the characteristics of the educational process: it emphasizes the volume of the components of the educational process, its objectives and purposes for each training stage. It has a differentiated content on classes and age; it provides a sound and continuously ascendant base of physical development, involving a combination between the linear and concentric character of the instructive process. It differentiates some content elements, according to the sex, climate conditions, traditions; it maintains the importance of the formative functions, stressing on the harmonious physical development of the body and on its capacity of self-assurance. The curricula are submitted to transformations, being dynamic: they are changed at 5-8 years, according to the evolution of the social demand to be adjusted to the contemporaneous conditions and requirements.

Although the analytical curriculum is adjusted to the social necessities and particularities we consider that it is still not flexible and adjusted enough at different conditions and requirements. It does not include differentiated norms and tests according to the weight, bodybuilding and individual physical skills, disregarding the fact that the number of overweight children is increasing as a consequence of the changing in the

our lifestyle (using the computer, the television, etc.) Though the curriculum is conceived according to the age particularities, its application in mass does not correspond to the individual motility. The starting point is a somatic equalization of the students' population, without taking into account the specific features of each individual. Considering the premises that each subject is unique from the somatic, dynamic and psychic point of view, the motility education must have in view a large amount of particulates and to treat differentially the children in the Physical Education lesson. All these must respect the general requirements of the school curriculum, giving the teacher the autonomy to decide on the way of applying the curriculum (including the evaluation), the planning technology and the accounting in the Physical Education activity. This autonomy, considered as a modern methodological orientation, can use any sport branch under the condition of achieving the objectives. Respecting the same principles, the evaluation of the students' efficiency will pay respect to the content and the methodology of some systems nationally established, but it can be developed by own criteria.

Taking into account this observation, the research proposes the elaboration of a differentiated, individualized curriculum, which should contain:

- the macro-differentiation of the instruction – it is realized by: the subjects distribution on constitutional types (according to the characteristics defined in the specialty literature); the establishing, for each group, of the exercises to permit the correction of the deficiencies so that the subject may get closer to a harmonic development according to his/her morphological construction.
- micro-differentiation of the instruction – consisting in the differentiated activity with the overweight group, further on distributed on particular types (superior, inferior, general adiposity). This supposes the constitution of working groups of overweight students to work separately from the collective. This instruction method supposes the passing through all the well-determined stages which offer beginning data, working and evaluation instruments for the obtained progresses and for their maintenance on an as long as possible period of time:

1. The somatic-metric evaluation of the subjects in the group (waist, weight, chest perimeter, abdominal perimeter, the perimeter of the members segments, etc)
2. The elaboration of the deviation diagrams from the shape of the optimal body model, corresponding to the subject's age and sex. The model is described in the specialty literature.

3. The elaboration of the operational models and of the particular and individual working algorithms for the improving of the corresponding values for a harmonious development.
4. The determination of the obtained progress by elaborating the progress diagrams according to the time; the elaboration of an evaluation system to appreciate the working technology efficiency.
5. The completion of the individual training final model in the Physical Education lesson.

The data that we obtained was processed using the computer program. The results can be used for extension of the experimental method to a large lot of pupils, from different schools and localities so that the obtained results may have statistic significance and, thus, applicability on a large scale. The purpose of the research was to build up the standardization of the working algorithms on differentiated somatic-metric types to directly offer the theoretical base for elaborating a differentiate and individualized working program in the Physical education lesson. From the data obtained so far, the special effects of the usage of this working methodology can be emphasized:

- the micro-differentiation of the training in the group of overweight students using the method of *group therapy*, the obtained results having a direct and benefic impact on the cause that has determined the lack of interest in the physical activity. By the specially structured process, individualized to a great extent, it was operated on the improving of the motivation for the continuous and systematic practice of the physical exercises, on the rebuilding of self-confidence and, especially, of the awareness that by physical exercise a real improvement of the personal development parameters can be achieved.

- the passing from the necessity of physically working to the habit and further on to the desire of practicing the given physical exercises and the specific categories of exercises at home, individually.

- spending the free time, on weekends, by practicing physical exercises;

- adopting, under specialized guidance, by personal choice, of a hypo caloric regime;

- the periodical evaluation at distance of the body parameters for keeping the progresses obtained by individualized physical activity;

- the increasing of the learning efficiency as a consequence of the stimulation of the vital functions of the body and of the reducing of the stress.

This way a new lifestyle can be achieved by which the subject can

search other values for his/her health and welfare. The consequences are immediate, but their implications are long-term and consist in the prophylaxis of illnesses by diminishing the three risk factors: overweight, sedentary life and daily stress.

The reform begun in the Romanian educational system, with a view to the integration in the European structures involves the application of its principles for all the specific unities for achieving the final goal: the improvement of the quality of the educational processes and the completing of the developing profile of the youth, defined by the new National Curriculum promoted by MEC.

Conclusions

Considering these transformations, there has been created a implementation program of a new principle intituled "education for everyone", meant to replace the existing one, the mass school. The aim was to bring the physical conformation of each subject as close as possible to the ideal model corresponding to his/her constitutional type, to his/her age or sex. Starting from the obtained results on a participants segment (overweight pupils in the secondary school) we propose the creation of a work algorithm standardizing on diverse types of beneficiaries so that this working method could be used in any secondary school during the Physical Education class, at the 9th-12th grades.

The estimated advantages of this working method are :

- the arising of the children' interest in the Physical Education lesson;
- the building up of the habit and, consequently, of the necessity to work physically so that the student may become dependent on the intelligent physical effort.
- the out of need practising of the physical exercise in the free time, by using the working program established by individual algorithms.
- the increasing of the learning efficiency due to the welfare induced by practising the physical exercise.

The objectives and activities within the study were sintetized in table nr.1.

There are many ways to use the results obtained in the research activity:

- consolidation of the collaboration between the two teams of specialists from the university and pre-university educational system who participated at the research

- publications and scientific communications on internal and international level.

Table 1: *The managerial objectives and associated activities in the study*

Managerial objectives	Associated activities
1.1. Establishing the work groups	1. The selection of the subjects (the students in the 9 th -12 th grade).
	2. The morphological, functional and esthetic evaluation of the subjects (anthrop-metrical measures.)
	3. The distribution in groups and subgroups according to the constitutional type, the deficiency grade (superior/inferior/general adiposity).
1.2. The elaboration of an individual working methodology.	1. The elaboration of individual and particular working algorithm
	2. Establishing the individual working program and the associated diet.
	3. Establishing the individual diagram of deviation from the referential model.
1.3. The first working stage:	1. The individual work within the Physical Education class; the development of the individual program under the coordination of the Physical Education teachers.
	2. The evaluation after 4 months, according to the program and the remaking of the progress diagrams depending on the time.
2.1. The second working stage:	1. The second working stage, according to the adopted program in the first stage. 2. The second evaluation after other 4 months and the remaking of the progress diagram depending on the time
2.2. The third working stage:	1. The third working stage, according to the program adopted in the second working stage. 2. The final evaluation after other 4 months and after 12 months since the program began. The elaboration of the progress diagrams according to the time as well as of the morphograms.
2.3. Computer analysis of data	1. The analyze of data using the indicators of body development utilized in program
2.4. Conclusions and suggestions regarding the research results.	1. The creation of the final individual model for the participant subjects. 2. The elaboration of an evaluation system regarding the efficiency of the program. 3. The completion of the working algorithms standardization on differentiated types of subjects.

- realizing an national and international collaboration with another university;
- the offering technical consultation in this domain.
- the realization of a research and teaching laboratory.
- to offering of improvement service to students and graduates in physical education and sports.

The result of the research offers a sound theoretical and practical base for the elaboration of a documentation regarding a new approaching method for the physical education lessons in school.

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