**Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH**
Vol. XII, ISSUE 2 Supplement 2012, Romania
**The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning**

# INCREASING MOTOR DENSITY IN PHYSICAL EDUCATION LESSON, FOR THE CHILDREN OF 11-13 YEARS

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**Objective.**This paper is to present and demonstrate that by using science-based methods and effective means to comply with the requirements and content of physical education lesson, and psycho-motor features of students can get an increase motor density of physical education lesson.

**Methods.** To verify the hypothesis and work to achieve the purpose, were used: the method of observation, explanatory method, method of questionnaires, testing method, statistical and mathematical method and graphic method, resulting in effective means, selected and applied taking into account the particular lesson and collective students.

**Results.** It notes that over 24 lessons, by implementing effective means, scientific and rigorously applied, motor density increased from 20% recorded in the density protocol from the first lesson ,at 44.13% from the last lesson, the progress being continuous.

**Conclusions.** Following the final results of the experiment, it can be said that hypothesis was checked and the purpose was achieved, can therefore conclude that the scientific application of effective means of working, and taking into account the psycho-somatic and driving features of the students is obtained an optimal motor density, leading to lesson tasks.

**Keywords**: motor density, growth, lessons, gymnasium, physical education

## Introduction

Physical education and sports, represents and is a constant and continuous preoccupation, for all the factors which are responsible for the education of the young generations and for the state of health and propelling force of the population.

The goal of the school physical education determines the educational purposes, and this materialises on different plans and levels the general prescriptions of the goal.

The target of the physical school education, can be defined from a practical point of view, in which the main actions are set, in a historical period of time also defined from a strategical point of view, which ensures the domain's development on long term.

Another goal of the physical school education, is represented by the individual's personality development, according to the society's demands, of gaining the autonomy, of the efficiency and balance towards natural and social environment .

Taking into account the rationalization of the educational process, there appear significant changes in the aspects of the lesson methodology, this representing the way of translating the objectives of the physical school education.

To uphold this idea , Gh. Mitra and Al. Mogoş (1980), assert that, „the lesson will continue to represent, the methodical lever, through which, the pedagogue, taking action systematically in the base of a well elaborated programme, stimulating the possibilities of knowledge , the pupils' skills and interests, contributes to the development of the growing generations, for the futher participation, to the production of new material and spiritual values, to the progress of science, technique and economy".

As a completion, Gh. Cârstea in "The methodology of physical education" (1993), asserts that, „the other ways of organization of the activity of physical education (daily gymnastics, independent activity, sports activities, trips, campings), won't accomplish the lesson's role and functions, but will establish a continuation ".

As a logical continuation of the facts presented above, the specialists in the field, are continuously preoccuppied , to find ways and new solutions to lead to the growth of the pupils' physical and intellectual efficiency , in different ways of organisation.

The lesson represents the main form of organizing the educational process, because by the methodological generalizations which it contains, establishes a system of didactic demand scientifically based, capable of orientating the teaching activity of pedagogues and trainers in order to obtain the maximum of efficiency.

Al. Mogoş and Gh. Mitra in "The methodology of physical education" (1980), define the lesson as being „the unitary pedagogical way through which generations of pupils, set up in homogeneous classes , working in groups, teams or independently, will obtain under the pedagogues' guidance and with their effort, the spiritual and material values, will assimilate the experience of life and work of the previous generations and will develop the abilities and skills, getting ready for life and social activity".

The physical education class represents an unitary pedagogical process which highlights the work of both the teacher and the pupil, the way in which the education and the schooling are made, all of this being



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Received 09.05.2012 / Accepted 12.08.2012

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
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orientated to the accomplishment of the objectives of physical education and sports .

To particularize, the physical education lesson represents the activity performed by pupils, with the guidance and lead of the physical education and sports teacher, that maximizes physical development by the development of the driving skills, they assimilate knowledge, abilities and main driving habits, utilitarian-applicative and specific for the sports domains, in an accurate period of time of 45-50 minutes.

**Problem statement**

The multiple tasks that need to be solved at the lesson, lesson that has a limited time, demand a special attention from the teacher when it comes to the rational use of each and every minute of time. The correct use of time and space lead to the achievement of a good lesson density .

The use in a helpful way when it comes to a lesson means taking into account certain conditions such as the uptake of the material,the execution of the exercises, the supervision of the pupils' work, to ensure active or pasive rest , auxiliary actions (putting in order the equipment), deciding the work teams.

As to fully achieve the target that the physical education and sports lesson has, and its efficiency to continue growing, a decision is needed, as compulsory, the setting of a three main tasks, not taking into account the type and the objectives of the lesson in discussion: *the optimum density, variety and attractivity.*

The efficiency of the physical education and sports lesson ought to be appreciated mainly, by the quality and quantity of the effort made by pupils during the lesson.

The maximum of efficiency when it comes to gymnasium lessons of physical education implies to strictly stick to the methodological and didactical methods, starting with setting the themes, the operational and instructive objectives, establishing the most correct content elements, telling exactly the time needed for reaching the rings, establishing a high functional and propelling density and ending with conceiving the lesson as an inseparable element part of a system of lessons and having a tight connection between instruction and education .

The quantity and quality of the effort invested in every physical education lessons is determined by its density. In fact this is the number one indicator for each and every lesson, because this makes the quality of lesson.

For every physical education lesson, which takes place in a group of pupils, the density is important only if this is applied simultaniously on individual or on groups of individuals representative from many points of view: number, level of physical development, level of motor skills, sex. The quality of lesson may be appreciated taking into account the method of putting into value the time required.

The indicator which highlights the way the time is spent is called density and represents the relation between the time spent to achieve the target of the lesson and the whole part of it.

The density is the first indicator for establishing the quality of a lesson or any other real activity, this referring to the quantity and quality of the physical effort taking into account the time component. The density can be observed, from "outside", by the professional men who have experience in "observation", but can't be analysed without real recordings basis.

The density, is considered by certain specialists in the field, the fourth effort parameter, which depends on the density's influence over the capacity of effort of the human body, this being defined as the density of effort.

The statement is partially true, because the density has a proved theorem which includes the rest of the effort parameters, volume, intensity, complexity, which express the quantity of effort invested, the types of density being according to parameters of the effort.

The parameters of the effort, as it was said above, determine the density type of the lesson, so,we can have a classification of the lesson density: *the movement density, the pedagogical density and the functional density.*

*The movement density* represents the relation between the time spent by pupils in an useful way for preparing for the lesson, and the full time of the lesson.

If we work with small groups of students, as in the physical education and sports activities in school, we may say that the results to be reported by using a number of subjects or by using compact groups of subjects and to take into account at least as an arithmetic mean. This action can take place in cases of scientific research, but the inspectors or methodic do not have "teams" of scientific researchers.

Anyway, as it was said in other works, there is a big mistake in saying that the teacher, who leads the lessons and wants to elaborate a methodological and scientific work, can pay attention of the density of those lessons.

"The theory and methodology of physical education and sports" from NAPES Bucharest-National Academy of Physical Education and Sports, by using the precise synthesis of the specific bibliographical information, presents the following types of density and appropriate criteria: the volume of the physical effort, due to the time of the lesson, in our case, determines two types of density:

-The movement density (Md), represents the real time of practice/the subjects listed in the lesson time, more exactly the time spent by the subjects to put into practice the exercises, including the active brakes between the reccurences.

This density, which has a relative priority towards the other types, is calculated by using the logical formula: Md =The real working time of the subject/The lesson's scheduled time x 100.

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We multiply this with 100 because there is statistically accustomed that everything to be expressed in percentage.

In the physical education lessons ,no matter their typology, as we explained above the movement density is very often used .It is true that this type of density has higher values in the lessons that have a purpose in enhancing skills and/or the movement abilities towards the lessons of 'primary initiation , in these skills and/or abilities of movement.

The experts appreciate that a good movement density must be at about 60%, this being connected to the operational objectives of the lesson.

-The pedagogical density (Pd), consists of the time spent by the way the subject is involved in the didactic process, the methods and the organization of the lesson , explanation, demonstration, corrections of the mistakes made in practice, the marking of routes/pathways, the transportation of sports materials etc.

So the pedagogical density doesn't refer to what and how much the teacher does in the teaching process, methodological and organizational.

When it comes to pedagogical density we talk about the passive breaks useful in practice. The logical formula of calculating the pedagogical density, again in percentage is the following: Pd= The time spent in an active way by the subject in the process of teaching, organisational and methodological /the time allocated x 100.

The pedagogical density value is, of course, higher in the lessons which have operational objectives of "acknowledge or primary initiation" of the movement skills and abilities when of course, there are made numerous explanations and demonstrations, many common practising mistakes are being corrected and so on.

Theoretically speaking, the sum between the movement density and the pedagogical one should be of 100%, but practically we can't have such good result, especially when we work with groups of subjects and there is some time wasted, and most of all when there is a lack of materials as it happen in Romanian schools.

The intensity and complexity of the physical effort determines a third type of lesson density –the functional density, the density that we often call the dynamic of the physical effort in lessons and other precise activities. As we can figure out from the name, this type of density is given by the progress of the main functions of the body during the lesson.

This progress, in practice, is measured by the heart rate (HR) and seldom, by the breathing frequency(BF), measured at the beginning of the lesson an during it, and at the end of it also. All the three types of density are measured only on the basis of a special protocol. The one who assists at a lesson and says, without a special protocol, that the density was weak, good or very good, makes a methodological mistake.

The density protocol shouldn't be mistaken with the lesson plan although there is a section that is alike in both cases. In order to avoid this mistake we have to make things very clear: the density protocol is established by any other person but the teacher during the lesson and the lesson plan is made by specialist before the lesson begins.

In most cases the density of physical education and sports lesson is not as it should be because of different elements, but the experience and the methodological thinking, give the useful alternatives to increase the density.

The elements that lead to a weak density and to an ineffective lesson are organizational reasons (mistakes in choosing the groups and methods of practicing lead to disorder, the lack of materials, leads to a small number of repetitions or to failure ,a lesson which is not well prepared in advance , can lead to time spent inefficiently, an improper place for this activity can lead to crowd, inadequate state of the equipment, can lead to a waste of time spent to fix it, the field or equipment which is not checked in advance can lead to accidents),of methodological nature (long and ambiguous explanations in a messy description, with improper terminology, the lack of understanding the main actions, unconvincing demonstration, the wrong execution of the exercise, the persistence in the same mistakes lead to a wrong memorizing of the exercise mechanism, irrational ways of acting, the intense use of the memory than of the body, the use of improvised elements leads to waste of precious time, the lack of interest in preparing the lesson in advance , even the lesson in progress and other emotional reasons (the lack of attractivity of the means used, the lack of games and competitions which are means of gaining the pupils' interest, lack of pupils' active participation).

Having in mind these cases and for assuring the efficiency required, some measures are asked, a strong desire from the pupils by choosing a group and efficient methodological practice , direct work, in pairs, team work, encouraging and promoting the team or independent work, the use of concise and clear explanations , in order to gain the pupils' interest towards the lesson.

The measures of increasing density are nevertheless answers to action and do not need special description.

**Procedures and research methods**

The research hypothesis is the idea of combining in the best way the themes of the lesson, the use of the time and equipment in an efficient way, the propelling density may reach to, *pedagogigal and physiological density* may turn to the best parameters that the methodology demands (60-65% of the lesson time, representing almost 30-35 minutes).

The study took place in the 1st semester of the year 2011-2012, at Mihai Eminescu Gymnasial School

in Brăila, at gymnasium, at Vth grade. I have chosen the V th grade because it makes the connection between one educational level to a more complex one. At this level, the pupils have no solid base of knowledge in this field, and have little information of the demands and terminology of the topic.

Having in mind this information, working at this educational level, means measures, ways and different and quite complex methods, for achieving an optimum of lesson density, in order to reach the goals set in mind.

There were used the following methods documentation, observation, explanation, the density protocol method, the statistic-mathematical method for interpreting the results and the graphic method.

**Results**

**Table 1.** Synoptic table

| N° protocol | Motor density % | Pedagogical density % |
|---|---|---|
| 1 | 20% | 18.91% |
| 2 | 20.02% | 20.91% |
| 3 | 20.18% | 20.87% |
| 4 | 20.44% | 17.85% |
| 5 | 25.47% | 14.61% |
| 6 | 25.53% | 18.44% |
| 7 | 25.78% | 16.94% |
| 8 | 26.53% | 19.53% |
| 9 | 27.14% | 18.66% |
| 10 | 27.31% | 12.17% |
| 11 | 27.53% | 10.65% |
| 12 | 28.52% | 20.61% |
| 13 | 28.61% | 18.11% |
| 14 | 28.66% | 13.06% |
| 15 | 33.94% | 13.21% |
| 16 | 34% | 17.68% |
| 17 | 37.54% | 12.38% |
| 18 | 37.72% | 22.14% |
| 19 | 38.4% | 12.66% |
| 20 | 40.89% | 17.39% |
| 21 | 41% | 11.26% |
| 22 | 41% | 12.93% |
| 23 | 41% | 17.8% |
| 24 | 44.13% | 14.46% |

Studying the results obtained, we observe that the motor density has increased from one lesson to another but the pedagogical density had variations depending on the lesson themes

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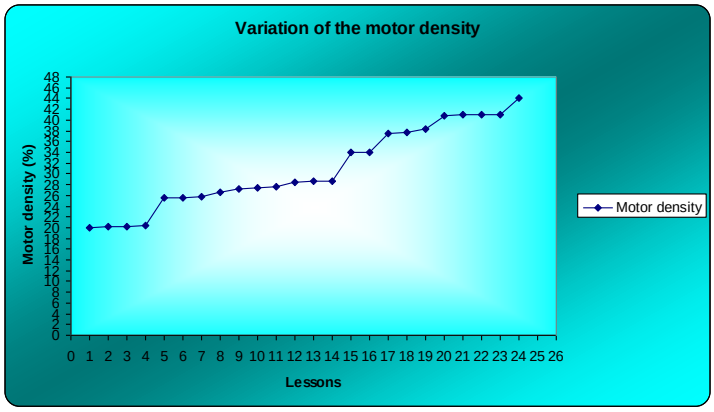
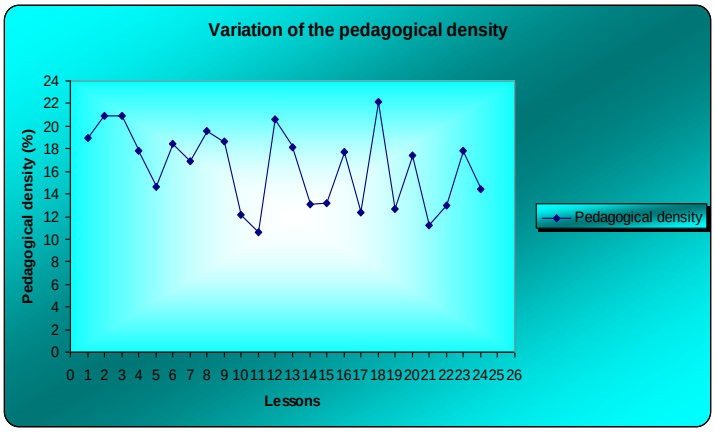
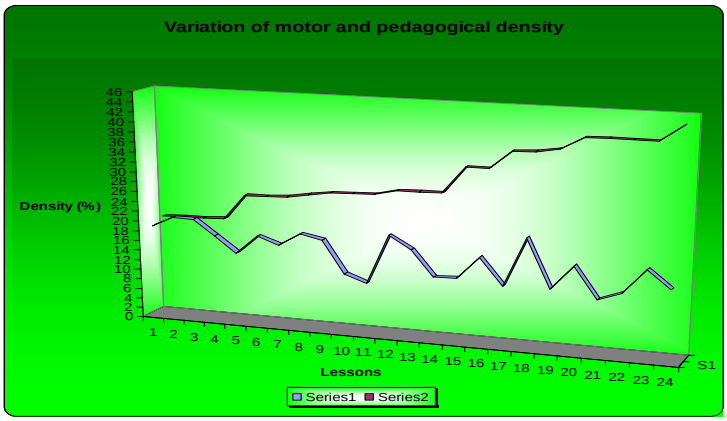
**Graphic 1**




**Graphic 2**




**Graphic 3**



**Discussion and conclusion**

Although at the 5th grade the density is lower because there is quite a lot time lost with explanations and with multiple practice all these things coming from the fact that pupils come from primary school with a small amount of skills and movement abilities and with late reaction to tasks.

As a conclusion of the study after examinig and interpreting the results obtained , we may say that the hypothesis and the purpose of the study were checked, accomplished and confirmed.

It was revealed that choosing the most efficient systems of teaching , the best combination of methods got from abilities and movement skills made the lesson density increase in spite of all problems .

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