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## A study regarding the impact of motor activities on the students' working memory

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### Abstract

**Problem Statement:** It is widely acknowledged that memory is an indispensable process for survival, that it is the sum of all psychic processes, reason for which the study undertaken regarding the impact of motor activities on the adolescents' working memory has raised our interest, and, as a consequence, we have attempted to describe the continuity of psychic aspects, which are due to memory, respectively to the capacity of retention within the neuro-functional and psychic structures of all experiences gathered by an individual in the presence of weekly motor activities, but also in their decrease.

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### 1. Introduction

Being a hyper-complex system, the psyche always acts and adjusts the human behaviour, involving memory, thus emphasizing the reflection of the manner in which a system, in our case the student, interacts with his environment through both external (motor) and internal (psychic) activities. "The research undertaken from the perspective of the cybernetic model (Tulving & Donaldson, 1972; Lindsay & Norman, 1972; Golu, 1975; Simon, 1980), taking into consideration the time necessary for the processing and integration of information in different types of real systems, emphasized the existence of certain forms of temporal memory, namely: immediate or sensory, short term memory (STM) and long term memory (LTM)." (Golu, 200, p. 394) A concept of maximum importance, to which we appeal when we discuss about memory and the importance of motor acts in its education, is represented by the guide that

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evaluates the agreement between motor activities and working memory (WM), due to the fact that memory would have the possibility of better operating, in our belief, with more enriched and complex representations and notions, but also with essential aspects when the students' schedule has weekly Physical Education lessons, and not once every two weeks. In addition, we mentioned a widely known fact, respectively that an oxygenated brain possesses the ability of reacting faster towards information, as compared to a brain without a proper oxygenation, which has delayed reactions. We must add that the best manner of oxygenating our brain is during Physical Education lessons, where we experience simultaneous process of relaxation and oxygenation. This statement is based on the observation of physically active people, who have gained, in time, an increased capacity of „...coding and decoding factors utilized for operating and organizing the long term memory, through accumulations and storing of information (Verza & Verza, 1994; 2000). This phenomenon may occur through accumulations in time within the didactic process, and may be finalized, emphasized through the use of motor acts within the Physical Education lessons, due to the fact that memory works “[...] when the organism is actively involved in a physical [...] exploration, as a physical action (motor, in our opinion) and material (contact with objects may be determinant), [...] as well as in the formulation of questions [...]”, these being reference points for our research. (Gardner, 2005, p. 88). Important – We mention that this study, undertaken regarding the working memory (WM) and described in the following lines, represents a pilot study, a small part from a larger project, which is intended, presently, to be an observation study, rather than a research paper, this being the reason for which the number of subjects is not very big, and the objectives followed were only those representative for the subject, due to the fact that our entire scientific process represents only the first step for a larger study which is intended to be undertaken, and open for specialists in the future.

## **2. Hypothesis**

The present research started from the hypothesis according to which the presence of weekly motor activities in the students' schedule would maintain the adolescents' working memory (WM) at a high level, and that the reduction of Physical Education lessons to one class every two weeks would have a negative impact over their working memory (WM), and not only.

## **3. Methods**

### *3.1. Subjects*

For the present research, we had two groups of subjects involved, who were involved in the research in two distinctive periods of time. First of the groups, from the second year of study - 24 subjects (students from 2011 - 14 lessons/semester); and the second group, from the second year of study - 18 subjects (students from 2013 with 7 lessons/semester). All subjects were students enrolled in the Petroleum-Gas University from Ploiești, therefore the group composed from a total number of 42 subjects – students (boys) came from the same institution, and possessed similar intellectual and motor activities. These subjects were researched in different time periods, because an amendment occurred in the didactic process, regarding the number of lessons distributed in a semester for the Physical Education lesson, thus decreasing the number of classes from 14 to 7 in a semester. As a consequence, the number of subjects involved in the research was not the same, as the groups formed have an oscillating number.

### *3.2. Research methods*

The bibliographic study method; the observation method; the enquiry method (questionnaire, discussion, enquiry, etc.); the pedagogical experiment method; the statistical-mathematical method; the graphical method.

### *3.3. Research purpose*

The purpose of the present paper is to demonstrate that Physical Education lessons have a defining role, not only for the physical status of a human being, but also for the psychological status, possessing an influence over the

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