Selected Paper

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Teaching Styles, Physical Literacy and Perceived Physical Self-Efficacy. Results of A Learning Unit in Primary School

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ABSTRACT

Objective: The aim of this study was to present the results of the triennial SBAM regional program aimed at monitoring 8- year old children in the Apulian region of Southern Italy from 2013 to 2016.

Materials and methods: The program included 17,102 children in the first year, 16,104 children in the second year and 14,847 children in the third year. SBAM was a multi-component program and included different integrated action plans: physical education, active transport (pedibus), and methods for developing healthy eating habits. For each year, four motor tests (long jump standing, shuttle run, 6 min walk test, and medicine ball throw), a motor coordination test and two self-reports for evaluating self-efficacy and enjoyment were proposed to all children.

Results: The results showed gender and group differences (normal-weight vs. overweight-obese) in both motor tests and self-reports ($p < 0.05$). The annual results of the motor tests were sorted in deciles in order to have a regional observation and monitoring database concerning the motor development skills among children and preadolescents.

Conclusion: Boys showed motor performance, perceived self-efficacy scores and enjoyment higher than females in three years. Growth influences the development of motor abilities; overweight and obese males and females showed a different development of motor performance that was lower than in children with a BMI in the norm. It is necessary to develop physical education in primary school, increasing opportunities and adapting them to the needs of all children. SBAM project highlighted the need to promote interdisciplinary and inter-institutional actions to promote child health and acquire physically active lifestyles.

Key words: Health promotion, motor development, physical self-efficacy, physical education, primary school.

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INTRODUCTION

Physical education in Primary school is the most important structured context in which to develop motor experiences that contribute in meaningful way to the educational trial of the person. Through PE the development of perception, motor skills learning and qualitative and quantitative opportunities increase are promoted and the students have not fully involved on the physical-motor terms only but also cognitive, social and emotional (1,2).

Physical Literacy is an essential opportunity to promote benefits for the health and specific and transversal learnings in different age groups (3); it expresses the degree of competences motor, autonomy and responsibility through which an individual chooses, program and practice motor activity and sport in aware way to preserving their own state of health (3, 4).

What is *Physical Literacy*? It's a learning process which allows, to all kids, to acquire a linguistic-motor repertoire according to individual rhythms of maturation and growth and in relationship to the opportunities offered by the external environment (family, school, society) starting from fundamental motor skills, in all ages groups. Above all, because of social-environmental conditions changes, motor skills learning became one of the most areas of action in PE, in fact, despite the recommendations of the WHO (5), in the last years the decline of the levels of physical activity and the opportunities to practise motor activity is constant. To such intention Faigenbaum et al. (6), proposes an interpretation of such phenomenon from a triplex perspective. He speaks about the *triad* of the physical inactivity to pediatric age, in which there are three separate but tightly correlated factors: disorder exercise deficit, pediatric dynapenia and physical literacy. In particular, *Physical literacy* is understood as the lack of motivation, trust, perceived self-efficacy, and reduced repertoire of motor ability, knowledges and awareness to evaluate and to engage in responsible way in the physical activities. The concept of physical illiteracy includes the negative consequences influences from the disorders sprung by the lack of exercise and by the pediatric dynapenia.

According to Edwards et al. (7) the concept of Physical Literacy has gradually acquired notable importance in many countries, In the last years (particularly from 1998 to the 2014), through the publication of an increasing number of articles and scientific studies.

Educational institutions and all the world researchers think that the physical literacy should have the same educational value as specific learning from other subjects and other alphabets (linguistic, mathematical, etc). Physical literacy is at the foundation between teaching and learning of the motor skills; it doesn't concern just the motor skills learning and the development of the correlated motor abilities but understands also the self-efficacy development, meta-cognitive process and interpersonal relations, in a determined context. The individual *physically alphabetized* has a proper motor repertoire, constituted by motor schemes and executive variants that develops from the beginning of school age and continuous during people's lifetime. Through the motor skills alphabet, the child communicates, elaborates the information and resolves problem-situation to interact with the environment systematically integrating his own motor repertoire with new motor answers and adaptations (3,4,8).

The development of the individual motor repertoire, through various experiences developed in different contexts, promote the self-efficacy perceived, namely the trust that the individual puts back in his own abilities to perform an assignment with positive results, through the expression of his motor skills (9).

Self-efficacy regulates the processes of learning and influence motor control (accelerating or slowing down) the cognitive, motivational, affective processes at the base of every individual's action.

On the methodological plan, a problem emerges, perhaps not enough examinated: how to promote the learning of the motor competences and the factors that composes (motor skills, knowledges, behaviors) ?

Particularly, how to teach the transferable motor abilities and encourage the development of the correlated psychological factors to the motor experience? How to teach children to create links between learning?

The effects of the motor activities on the processes of learning don't exclusively result from the practice but also from the mediation with the behaviours of the teacher that it

chooses the formalities of communication and interaction. *Production and reproduction* teaching styles (10) promote in children different ways of learning and help to generate positive relationships among learning. *Reproduction* teaching styles point out a great responsibility of didactic decision from the teacher that defines the activity type, the duration, the intensity, the executive difficulty, the organisation arrangements. The *production styles* (11, 13), attribute to the student more operational autonomy and decision-making, about the organisation arrangements and executive varieties of a task.

Production styles allow: a. operational autonomy; b. motor creativeness; c. cognitive and emotional involvement of the student; d. interaction and socialization; e. transversal learnings but they foresee a limited control of the intensity and motor learning times are longer.

Objective

The study proposes this objectives: 1) Appraise and compare the *GMQ - Gross Motor Quotient* between EG (experimental group) and CG (control group) at the end of the didactic intervention in primary school; 2) Appraise and compare the levels perceived of physical self-efficacy between EG and CG at the end of an experimental didactic intervention.

MATERIALS AND METHODS

The sample was recruited from 2 primary schools in Apulia Region, in the south of Italy. The research project was carried out by local associations and had provided for the collaboration of the University of Foggia. The didactic interventions involved a sample of children from the first grade. The schools (N = 2) responded to an invitation from the University of Foggia. The study sample are 84 children of the primary school divided according to the gender and randomly assigned to two different groups: an experimental group (EG-Male: 23; Female: 17; aged 6.88 ± 0.61) and a control group (CG-Male: 21; Female: 23; aged 7.02 ± 0.27). Normal weight subjects (Table1). The study has been developed halfway of the scholastic year (February).

Table 1. *Sample Description*

Sample						
Gender	Group	N	Age	Height	Weight	BMI
Male	CG	23	7,04 ± 0,21	1,25 ± 0,06	28,91 ± 7,05	18,50 ± 3,61
	EG	21	6,80 ± 0,74	1,22 ± 0,05	26,38 ± 5,29	17,52 ± 2,69
Female	CG	17	7,00 ± 0,35	1,20 ± 0,06	23,94 ± 2,93	16,56 ± 1,64
	EG	23	6,95 ± 0,47	1,20 ± 0,05	24,56 ± 4,75	16,71 ± 2,34
	Total	84				

The control group (CG) has done 14 lessons of physical education according to the traditional curriculum with the traditional teacher and the experimental group (EG) has developed the same number of lessons but with the expert teacher. EG motor activities have been proposed, mainly, through the production styles (led discovery and problem-solving style). Evaluation tests have been proposed at the beginning and at the end of the activities: the TGMD2 (13) for the evaluation of the motor-gross abilities and the self-report PSP_C (14) for the evaluation of the physical self-efficacy.

RESULTS

Besides the descriptive statistics (M±SD), the test-T student has been effected to underline meaningful differences, among EG vs CG, independently from gender differences. The index of statistical significance has been fixed to $p < 0,05$ (Table 2). Males of the experimental group showed a *GMQ - Gross Motor Quotient* - higher score than control group (P =0.000). In

the same way females of the EG underlined a superior GMQ - Gross Motor Quotient - than control group (p =0.000). Particularly, in the GMQ (Figure 1,2), females of the EG showing higher scores of the motor-gross abilities than T0 vs T1 (76,65 ±s 6,82 vs 105,21 ±s 11,83; p =.000); CG females results statistically are not meaningful. Males of the EG have superior scores in the comparison T0 vs T1 (74,71 ±s 7,62 vs 104,42 ±s 12,99; p =.000). The CG males results statistically are not meaningful.

Table 2. Gross Motor Quotient Measures – GMQ- Gross Motor Quotient

Gender	Group	T_0	T_1
Male	CG	65,82±10,1	68,95±10,09
	EG	74,71±7,62	104,42±12,99
Female	CG	69,64±9,94	73,7±9,97
	EG	76,65±6,82	105,21±11,83

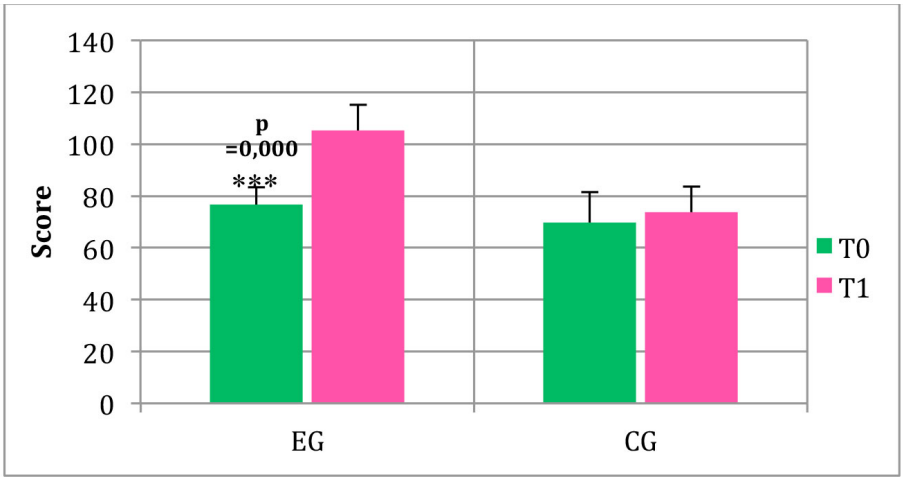

Figure 1. *Gross Motor Quotient- Female*

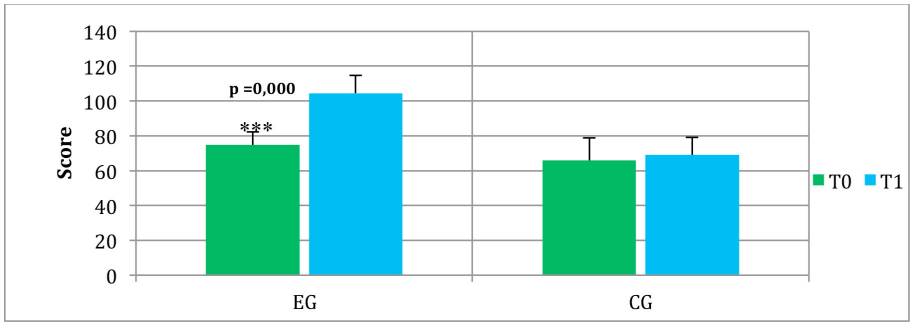

Figure 2. Gross Motor Quotient – Male

The results of the self-report underline differences (Table3; Figure 3,4) for males of the EG, among T0 vs T1 (18,8 ±s 2,11 vs 20,65 ±s 2,70; p=.000); in the CG there aren't differences. The females of the EG underline differences among T0 vs T1 (17,47 ±s 2,66 vs 19,43 ±s 2,31; p=.000); in the CG there aren't differences.

Table 3. Physical Self-Efficacy Measures

Measures – Physical self-efficacy			
Gender	**Group**	**T_0**	**T_1**
Male	CG	18,71±2,7	19,28 ±2,36
	EG	18,8 ±2,11	20,65 ±2,70
Female	CG	16,47±1,61	17,52±1,81
	EG	17,47±2,66	19,43±2,31

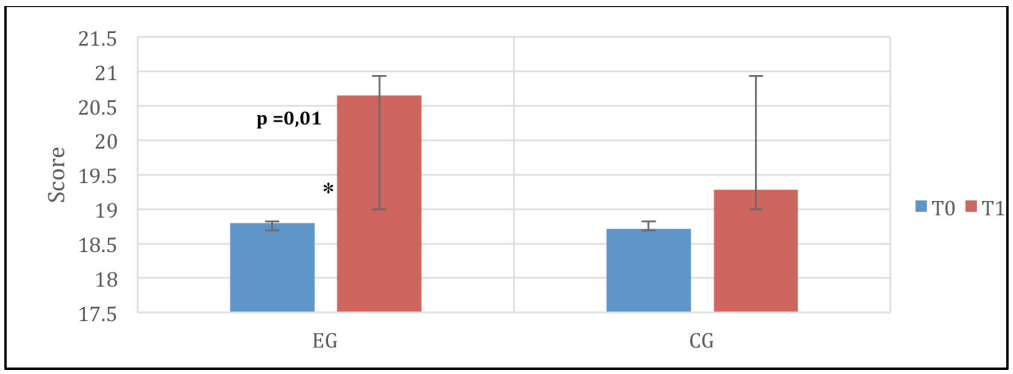

Figure 3. Physical Self Efficacy Male

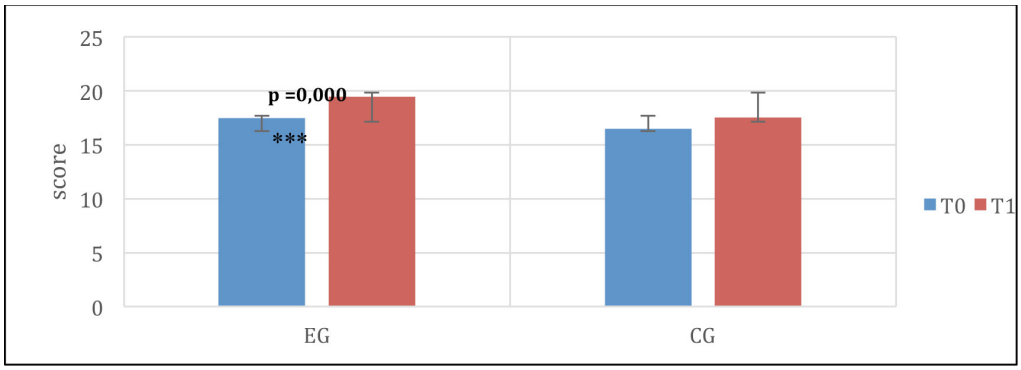

Figure 4. Physical Self Efficacy Female

CONCLUSION

The study carried out in the primary school underlines the necessity to foresee in every lesson of physical education a modulation of the styles of teaching (10, 11). In such way it's possible to propose to the children structured motor activity, useful in every phase of the motor learning, and propose different practice and motor answers variability.

Groups that have done activities, through the *production* teaching styles, have showed a great mastery of the motor abilities and highest scores of physical self-efficacy (T_0 vs T_1) also comparing to the groups of control, in which teaching styles had not been specified. Such important differences must be considered when motor activities are proposed in the primary school. Through the *modulation* of teaching styles in PE, it's possible to modulate and increase the degree of cognitive, motor and

social involvement of the students and the time for the activities (11, 12). In fact the integration of the motor experiences through different teaching styles promotes the student learning process and the educational trial. The choice of teaching styles also has an impact on the physical activity extracurricular physical activity. According to Lubans et al. (15), numerous studies underline positive relationships between base motor skills (ability of locomotion and control of the objects) and physical activity developed by children during the day and that the mastery of the motor abilities gives the bases for an active life style, contributing to the cognitive, motor and social development. Also Morgan et al (16), says that base motor skills are positively associated to the physical activity and physical fitness levels. Many studies have compared the effects of educational trial proposed through the use of different teaching styles for the motor learning and the development of the psychological factors. A study of Chatoupis (17) developed in the primary school, has compared the level of physical competence perception in two groups, through the relationship between didactic proposals with different teaching styles (practice and inclusion), showing a high motor competence perception in the group that had been using *inclusion* style, in comparison to the group that had been using *practice* style.

Activities proposed through the inclusion style allow children to exercise activities according to different difficulty levels, they are also effective to promote the perception of competence. Another study (18), has compared the acquisition of the fundamental motor skills in two groups of children of the primary school (6-7 years), that used *guided discovery* style compared to *command* style. Both groups have underlined improvements but the group that had developed the motor experience through the guided discovery style has got better learnings results. Teaching Styles include and delineate the contexts in which students can *reproduce* (imitating or repeating) and *produce* (discovering, elaborating and creating) motor skills and knowledges and this interaction is fundamental in the teaching of the motor competences.

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