Enhancing the Quality of Life in Young Persons with SEN through Swimming Exercises in the New Era of Mobile Technologies

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Abstract: This study highlights the sustainability of using the mobile computerized technologies (MCT) in monitoring the physical activities (PA) for enhancing the quality of the life to the young persons with special education needs (QLYPSEN).

In this study we have established programme by physical activities specific of swimming (PASS) permanently monitored by MCT and the application of research methods showed the sustainability of MCT in enhancing QLYPSEN. This fact will allow a connection with the help of the modern means and an implication in the generation of behaviors adapted to the modern society, the connection between the new technologies and the basic technique specific to the swimming highlighting the need for change and a permanent attention paid to the interdisciplinary use of the training valences. The human evolution, capable of a permanent adaptation, regardless of the existential conditions, makes it possible to anchor, and at the same time, the transfer to a continuous relationship with others.

The psychological and motor behavioural development of YPSEN by PA of swimming realizes quickly and correctly using MCT, motivating them and gaining self-confidence as well as contributing to rendering their social behaviour more efficient and the increase QLYPSEN.

Keywords: *motor skills; digital apparatus;*

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1. Introduction

Today, portable technology is everywhere around us. The necessary information, the stages and the results obtained by this type of technology generate a saving an energy consumed by the human body, an efficient storage of the introduced database, as well as an interpretation of the recorded information. In today's era, the advancement of technologies has allowed an increase of the pace in the general manifestation of the person, in thinking and in issuing new statements and concepts.

Online software and networks, in a permanent up-dating, accessed non-stop by the vast majority of individuals, are ascendant preferred for the transmission of information, in different formats, due to the emitting of answers in real time, which allows maximum efficiency with an effort minimal economy, all in support of sports management and beyond. Through the use of portable technology and the quick means of information transfer, the thoughts of the individual can be directed towards other aspects of the activity. Portable technology helps us in sport making the work of the coach much easier and allowing a much deeper study of the activities held.

The instructors utilize this technology in sporting activities, registering the activities held as well as certain parameters of effort, even in the middle of the lesson. Unfortunately, many schools and teachers still use the concept that a young person is either intelligent or not, and that he either has a high level of intelligence or a low one (Chera & Plăstoi, 2016a). It is true that the level of young person's intelligence is different, depending on many aspects, genetic and evolutionary aspects, among which the school, family, society, group belonging etc that influence their degree of achieving the theoretical knowledge, of gaining the abilities and of social belonging etc.

During the physical exercises the reaction time decreases, this fact involving a recovery of cortical activity, compared to the SG activities that play a role in facilitating the processing of information (Pedroso, Cancela et al, 2018), in case they assimilate the information by stimulating the visual and auditory analysers though not only motor. The importance of the physical exercises in the hydric environment lies in the facility to execute the strokes specific to swimming due to floatability, which the body gains in the water, as well as due to the mechanic, thermic and chemic factors of the water.

The development and evolution of the human body is permanently exposed to aggression and challenges, under different aspects, uncontrollable changes in the climate and social status. We need to understand that the

individual, through his actions, tends to integrate as efficiently as possible in societal groups, but not always with positive ends. The environment, the industrialization and the aggressive processing of foods, have a strong impact on the genetic evolution of individuals, even from the embryonic phase, these becoming individuals of the next generation, fragile and even with different dependencies (Chera & Plastoi, 2016b).

Bolger et al (2019) noticed that the young persons have inflated perceptions of their overall and object-control movement skill competency. Perceived object-control and total FMS is associated with PA and thus, interventions aimed at increasing PA among young person should target PC. The PC contribution valued through improving the perception upon the execution of the strokes as a whole. The possibility exists, in this case, to visualize the strokes as sequences (every time there is a need) aiming at accurate fixation of the elements succession within the physical exercise.

During the physical exercises, the heart presses a great effort for irrigating the internal organs, being determined by the narrowness of the vessels causing the frequent emergence of fatigue condition, dizziness and malfunction of the cardio rhythm. At the level of the nervous system, several changes occur, the volume of the brain is reduced, however, the fibers of association multiply, the cortical cells continuously develop, the processes of excitation and inhibition emerge enabling the activity of synthesis and data processing.

The psychic development in this period marks the emergence and forming more and more complex psychic processes and contradictory, improving continuously the adaptation to the social and natural environment of the young person. The perceptions become more and more complex with evidenced character of selection, space and time orientation improving considerably under the influence of thought.

The young person is capable to operate with notions of a higher degree of abstraction and joins enthusiastically different forms of activities, manifesting an increased interest and curiosity, thus developing the aptitudes and talent. The team activities have the possibility to form positive traits, now is the moment when the team spirit, collegiality and tolerance form.

For these young people, the evolution of modern technologies plays a major role in everyday life, and these can be used in the various physical activities organized, such as adapted swimming. It is very important to know that “the key feature of the model is its elaborate construction, which, however appropriate and elaborate would be, approximates linguistic reality, being but one of its assumptions of organization and functioning. According to this feature, the possibility appears justified the idea of continuous

improvement and concomitant models of the same type of model (Popescu-Brădiceni & Plastoi, 2014).

The model of execution, which the YPSEN visualize through executions rendered sequence by sequence, still frame or in frames enable the personalization of the visualizing rhythm and utilizing the PCT.

Different aspects manifest depending on gender, consequently, in the case of the boys, because of the biologic discomfort, some negative forms appear as irascibility, exteriorization through conflictual speech and attitudes, tendencies of underestimation, demobilization, lack of courage and determination, shyness etc. developing moral traits is possible, will, self-assessment, determination, courage, tenacity, motivation etc.

At motor level, the youth represents the optimum interval for developing and educating the motor qualities, by forming the basic motor abilities and specific to certain sports activities. The PA through swimming through its objectives contribute to the functional balance, heavily tried by the alterations occurring in the young person's bodies at this period, the main alterations in point of morph-functionality conditioning exercising some strokes specific to the hydric environment, skill/coordination being possible to educate and improve through a programme adequately formational and informational.

In this regard we can say that, the training involves the combined application of the technologies specific to the different fields of activity, based on the anticipated knowledge of the training principles and can intervene in modifying the functional parameters of the body in order to obtain some evolutions that favor the quality of life of individuals. Their applicability generates positive results by involving the multidisciplinary teams in managing the activities of these young people, in order to maintain the positive values obtained for as long as possible (Plastoi, 2014).

The educational valences are recreated with the help of mobile technologies, the new era of information extremely fast and permissive from comparative point of view, imposes us and puts us in the front of major challenges whereby accessing the "new"/news is achieved through visualization and communication in real time, no matter where (or area) we are. Therefore, the transmission or reception of a message by sound or image is made directly, efficiently and in full agreement with the "real", thus assuming the existence of a "transmitter" and a "receiver", each having its role, and in the situation of a dialogue, role change becoming inherent.

This new era of modern technologies, reliable and extremely easy to carry, inevitably determines the acquisition of new motor skills, simultaneously requesting more ways of communication and generating an

extremely fast fold of young people to the current society requirements, an aspect that favors socialization and the enhancing of the quality of life.

The permanent attention paid to young people with special educational needs, as well as the search for the most suitable connections between the studies already carried out and the needs of this category of individuals, all we are doing is to come in creation help of creating and increase the quality of life for these young people. Their need for integration and socialization is becoming increasingly important in today's society, and understanding their evolution leads us to become involved and provide significant support, enhanced by the contribution of mobile technologies that generate a differentiation compared to their omission from the training and the behavior adaptation process of young people with special educational needs.

Utilizing the mobile computerized technology is useful irrespective of the level of the mastered abilities and has the role to stimulate, becoming aware, forming and up-to-dating concepts, attitudes and behaviours in all the categories of people. Its contribution is significant the more it is an important part in obtaining performance in all the domains, continuously present in records and the great performance, in improving the human existence (in the case of disabled individuals), in recovery and maintaining mental and physical health. The portability of information comes also in supporting the YPSEN, making their existence easier, valuing their qualities, maintaining their well-being and helping them to integrate into the society.

Due to the increasing need for YPSEN integration, the activities carried out by them expose them to intense challenges, portable technology being able to solve, to a large extent, the needs of this category of population, facilitating different tests and periodic assessments which, in the absence of these technologies, would be impossible to achieve. Contacting YPSEN with these mobile technologies ensures the quality of monitoring their evolution.

At large, making some physical effort, within the limits allowed by the diagnosis and the monitored physical activities, enhance the quality of the life of these young people/individuals. What is even more, through the contribution of the portable computerized technology in monitoring the physical effort, the YSEN can meet the challenges (during the physical activities through swimming and not only) feel motivated and self-confident, can answer adequately to the physical efforts, maintaining, improving and surpassing their condition.

Portable technology in PA is extremely different and varied offering a different range of utilization, setup and easy personalized interpretations.

Intelligent and extremely varied applications, what can be accessed on mobile phones and the global information transfer system, thus revolutionizing sports training activities, it generates an efficiency and a simplification of the communication, regardless of the place and time.

The use of mobile technologies in the new era facilitates intergroups/intragroup communication, allowing the transmission of a response, in real time, at all members of the group, regardless of their location and the amount of message. The available setups in the mobile phone facilitated the communication through founding groups for different activities, extended group of study, group of parents, the group of volunteers, the group of young persons and voluntaries etc. and posting the information on Facebook, twitter etc.

Motricity and the mental actions of the individual, involved in performing a physical activity creates perceptive-sensorial-intellectual connections, repetition allowing for increased motricity intelligence and generating the acquisition of an improved general motricity, through the accumulation of individual experiences and a higher development of the bodily expressiveness (Chera-Ferrario et al, 2011).

2. Research Methods

Subjects

The head of the Physical Education Department within Valahia University of Târgoviște, Romania approved the study. All the young persons and their tutors informed about the activities carried on during the study expressed their accord in writing to participate in all the activities, including posting the photos and films online. In the activity carried on in the period 2016-2018, 10 series of 14 young persons between 18 and 22 years, of which 7 girls and 7 boys in each series participated, accompanied by their parents.

The whole group communicated with one another through portable computerized technological means. In order of series: I and II whose of young persons with 18 years; III and IV whose of young persons with 19 years; V and VI whose of young persons with 20 years; VII and VIII whose of young persons with 21 years; IX and X whose of young persons with 22 years.

In the activity, a group of volunteers participated formed of 16 students from the Physical Education Department within Valahia University of Târgoviște, Romania. The volunteers implied permanently, solving programming tasks of the swimming physical activities, help when required

by the young or tutors, taking over partially the data, analysing the photos and the video recordings during the classes of physical activity and their transmission online (Facebook or Twitter etc.)

In order to create a pedagogical climate and an environment favourable for the young persons, each of the volunteers established a relation with one young person in a team during the whole period of the study.

Experimental Procedures

Activities based on using modern technology have been previously planned for each day of the weeks. The practical lessons of the physical activities took place a two time/week, 1,5 hours/day, for 6 months (Ferrario, 2009).

The period of adapted swimming training with YPSEN included: video recordings and pictures at different times and stages, as well as periodic notations of indicators values YPSEN, before, during and at the end of the effort. The use of mobile technology allowed the uploading on the platform of the organization, at the end of each lesson, of the value and/or video recordings (Grigore & Stanescu, 2006).

The physical activities that YPSEN must carry out during the adapted swimming lesson are monitored by the teams involved in this activity, in support of which the contribution of mobile technologies is considerable, facilitating the accuracy and the individual analysis of each young person and allowing a storage and complex interpretation of the evolutionary path of the young people under study (Lauteslager & Peter, 2017).

Statistical Analyses

The arithmetical average calculated of the two tests, initial and final, for each series of young persons, arithmetical average – widely used indicator, and a fictions quantity approximating a central value around which the data obtained through real fathoming evolve. The approximation is so much better as the extremes are closer one another. It is the result of adding each value of the (x) variable comparatively to the number of cases (n) and is obtained with the formula:

$$\overline{X} = \frac{\sum_{i=1}^n x_i}{n} \quad \text{Where: } \overline{X} - \text{arithmetical average}$$

Σ - sum, n – number of cases

We calculated also the standard deviation; an aspect pointed in the tables 1 and 2, for each series, with the aim to emphasize the homogenous intragroup in the initial moment and the final one. Utilizing the modern technology during the activity rendered possible the rapid processing of data through the graphical method and the table one aiming at ordering and graphical representations of the variables, an evaluation of the correctness of the gathered data and the evolution of the averages from a test to another. Highlighting values recorded using mobile technologies will be presented below

Table 1 The representation of physiological parameters registered at initial test at rest and during effort, the presence of PC technology being of great help for visualization of the registered results as a whole.

Table 1 Initial testing

Series	Rest Pulse	Effort Pulse	Rest Oxygen	Effort Oxygen
I	60	108	84	99
II	85	117	85	95
III	87	116	79	99
IV	82	111	92	99
V	80	110	89	96
VI	83	126	85	99
VII	78	102	75	99
VIII	82	110	82	99

Chart 1. Emphasizes the values of the pulse and oxygen at rest and during effort obtain at initial test for the group of YPSEN

Chart 1.1. Emphasizes of standard deviation and average for each series of YPSEN obtain from initial testing.

It was calculated the standard deviation and average of each group of YPSEN and obtained the values from the point of view of the pulse at rest

7.05 and effort 8.02, of oxygen at rest 5.45 and effort 1.41. As well for average have been obtained of pulse at rest 79.5 and effort 110.9, of oxygen at rest 83.1 and effort 98.

Digital representation of physiological parameters registered at the final test at rest and during effort the presence of PC technology allowing visualizing the statistics at rest and during effort of the young group.

Chart 2. Emphasizes the values of pulse and oxygen at rest and during effort for the series of YPSEN in the final test.

Chart 2.2. Emphasizes of standard deviation and average for each series of YPSEN obtain form final testing.

It was calculating standard deviation of each group of YPSEN judging from the point of view of the pulse at rest 3.87 and effort 8.30, of oxygen at rest 3.67 and effort 0.83. As well for average of pulse at rest 76.8 and effort 104.4, of oxygen at rest 85.1 and effort 98.1.

Chart 2.2.2. Comparative statistic value from initial and final testing for each series of YPSEN.

During the training lessons were observed and recorded, through different tests, the physiological parameters in rest and in effort for each young person, in order to receive objective information regarding the physical state of YPSEN. Knowing each value of these parameters, it was possible to adapt the intensity of the executions for each subject and also to modify them where required.

Using of this portable technology throughout the activities (Radu & Ulici, 2003) they could view, whenever they wanted, the data uploaded on the web page, configured for the young people involved in the research.

Statistics representation of using the mobile computerized technologies (MCT) in monitoring the physical activities (PA) for enhancing the QLYPSEN (graph no.3).

Graph no.3

Using the medical apparatus, I obtained concrete heart rate and oxygen saturation levels, both in moments of rest as well as in moments of effort, at different points in the training and the use of camcorders and cameras gave us an incredibly important visual database, allowing us to study the evolution of the young persons and see how they manifested during and throughout the trainings, according by Roibu (1994).

Using the software programmes allowed us observe the finer points of the movements, both the positive and negative aspects.

The presence of PC technology is a true advantage in sport, being the basic technology through which we used all of the other methods, according by Verza (2000).

These modern technologies allow combinations and processing of the recorded information, so that their promotion, analysis and discussions with the specialists of the field made online, generate useful feedback in the management of physical activities on short, medium and long term. All these valences help to improve the efficiency of the physical activities carried out by YPSEN.

Using the MCT correctly, the evolution of YPSEN is qualitatively improved on all levels of development, the almost continuous contact with these mobile devices giving them confidence in their own forces and creating a mental and a proper behavioral for integration into the society. Use of different stimuli, sequential or total body schemes, creates premises for achieving high performances in different sports, contributing to the building of this category of young people.

For YPSEN, sports and "physical education activities are of major interest, which aimed at improving health, training and developing positive traits of character. ... In this individual development, physical development occupies a special place. To achieve this requires choosing of strategy to maximize the potential of native young persons. Within these strategies a variety of methods and procedures can be used" and with the help of portable technology in order to obtain a positive development in the attitudinal behaviour of young persons with special education needs. (Bogdan & Plăstoi, 2012a)

3. Discussion

Starting from the fact that psycho-physical differences between young persons and of activity specific ways lead to the adoption hierarchical and differentiated interventions to exploit full potential of the young. Thus it is believed that any human being can be subjected to a process of positive influence, and for YPSEN, training and education must be subordinate corrective purpose - recuperative and socio-professional integration process (Bogdan & Plăstoi, 2012b), an aspect facilitated by utilizing the mobile computerized technology both in the case of the YPSEN as well as rendering the control more efficient of the physical and informational activities carried on by these.

The scientists have assumed and studied the young person's need to be closer to their parents for a long time notwithstanding carrying on physical activities by the young persons, at large, is in perfect concordance with the assumption.

During the course of the different physical activities, between parents and YPSEN, a low level of dependence or interaction is installed, although during the free time and on the weekend, this interaction is very strong. Therefore, establishing PA at the weekend and outside the school program would be much more efficient and beneficial for the physical development and psychic evolution of YPSEN (Strutz, 2018) the assumption imply that the young persons with or without special needs practicing physical activities require a different approach and at the same time in accord with the educative novelties in the pedagogical area.

In the swimming adapted for YPSEN the recording of the different indicators regarding the evolutions of the young people during the period of the exercises in water is very important for the one who conducts the instructional-educational process, the feedback received following the evolutions determining the treatment differentiated by personalized

executions. The MCT can be used at any time of the effort, even in water without affecting the recordings made.

Moreover, the values of the recorded physiological indicators provide us information about how YPSEN perceives the effort in the hydric environment, giving us information about the cardiovascular and respiratory systems under the impact of hydrostatic pressure, compared with the evolution of exercises outside the hydric environment (performed on the ground). All these benchmarks play a decisive role in the design of exercises and adapted swimming lessons.

The computerized technology ensuring a storage of the registered databases, in a large quantity and on unlimited time, allows us to compare different moments or executions during the evolutions, different stages or in different years, to analyze and interpret them such that their conclusion will allow progress for YPSEN. Also, in this sense it is possible to visualize the execution errors and to choose the best variants of correction, so as to the young people to answer through appropriate behavior from the physical and psychic point of view.

MCT has been used permanently during the course of the adapted swimming lessons, as well as 50% -80% in the free time. The advantages of using this technology, among others, have allowed the capture of sequences that, in real time, were not observed, which made it possible to revise, whenever necessary, some movements, so that the details can be explained and easier understanding. The involvement of the visual analyzer in the analysis of the movements produces a better awareness of their own movements and a stronger focus on the movements to be executed.

All these interdisciplinary means, used for beneficial purpose, which succeed an online promotion and increasing the valence of the instructional-educational process, bring to the fore the usefulness and necessity of using portable technologies for YPSEN, creating a positive mental state and encouraging them to integrate into society.

4. Conclusion

The contribution of portable computerised technology creates the premises of a beneficial evolution in the young person's therapy of special needs. Utilizing these technologies enhance at maximum maintaining their health, increasing the quality of their life, as well as creating special programmes, monitoring the physiological parameters in due time and the rendering more efficient the rendition of the theoretical and practical information through an appealing projection.

The general evolution of behavior YPSEN was facilitated by the MCT, which are additionally responsible due to the use and access of the mobile devices. Also, the possibility of tracking the evolutions of other YPSEN and not only, in important competitions, as well as the possibility of saving some favorite images or videos, in order to be reviewed, have generated an adequate state of communication with those around them, facilitating socialization and the desire to initiate and perform new moves.

The new era of development of society allows, by different means (including MCT), a psychological and motor development of the behavior YPSEN that support their selection for the practice of different performance sports, creating them in the long term the possibility of conducting coordination activities in different sports specializations (activating in a job appropriate to their skills), the evolutionary process of new technologies supporting the integration and socialization for future generations of YPSEN.

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