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## VIEWS ON THE IMPORTANCE OF COORDINATION CAPACITIES FOR PEOPLE WITH AMBLYOPIA

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### Abstract

*The objectives* consist of studying bibliographical materials, conceiving tests to evaluate their capacity to coordinate and drawing the conclusions of the paper.

As for the research methods, we have mainly studied the treatises on these domains: physical education and sport, kinetherapy, pedagogics, psychopedagogy and special education, and some tests have been proposed to evaluate their coordination capacity: eye-movement coordination, static balance by Romberg and Romberg sensitized and space orientation.

The present paper deals with the problem of children who suffer from amblyopia, by analysing various tests used to measure their coordination capacity. The purpose of this paper is to study bibliographical materials available so far and consists of developing the informational data in the domain of sport and physical education, regarding adapted learning.

*Conclusion* that can be drawn from our paper is that using tests to evaluate the coordination capacity will reflect the level of coordination of children with amblyopia and will help specialists in kinetherapy and sport and physical education to properly select the means to optimize it, not only by contributing to the development in the self-esteem of the people who suffer from amblyopia and but also of the level of life quality.

*Keywords:* coordination, amblyopia, tests.

### Introduction

The coordinative skill may be defined as a mental-movement quality, which is based on the correlation between the central nervous system and the bone muscles while making a move (Tudor, 2013, p. 116).

The French origin of the term dates back from the year 1892 and it belongs to neurologist ED.

He claimed that there is a close relation between the movement deficiencies and the mental ones, as reeducating one will positively influence the other.

The concept of Psychomotion has been the subject of debate among various authors, such as: Wallon, DeMeur, Dailly, Epuran, Horghidan etc.

Wallon (1975) believes that psychomotricity refers to practical intelligence in other words he speaks about the statements intelligence highlighting affective, referring to attitudes and movements resulting from them.

The concept of psychomotricity was

treated also by Epuran (1999, p. 114) which defines it as "an expression of maturation and integration of motor and mental functions at the level claimed by good functional adaptation of the individual to the environment".

The author also evaluates psychomotricity as a "complex function of regulating individual behavior" including "participation of different features that make both the perception of information and proper execution of the motor act."

Horghidan (2000, p. 7) believes that psychomotor requires the understanding of the human being as the unity between psychomovement and spiritual.

The two aspects, physical and movement, are in a continuous inter-relation, influencing and even determining one another.

In the literature of physical education and sport, coordinative capacity focuses on relations between the central nervous system and skeletal muscles during a movement to achieve because it is a psychomotor quality. They also

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differ of abilities.

They refer to the concrete acts of movement, enhanced and partly automated, while coordinative capabilities are the foundation of all skills and all new movements, helping to restructure the existing motor background of every person.

Tudor (2013, p. 117) defines coordinative skills as being determined by the processes of guidance and adjustment of gestures.

Thus, the greater the number of body segments we use when making a movement, the more complex the processes of guidance and adjustment.

Coordinative capacities are essential in managing rapid situation, succeeding to prevent any accidents that may occur as a consequence of physical activity.

In order to make a complex, coordinate movement, the subject must organize degrees of freedom and must control them, obliging the muscles and joints to function as a synergist system, as a coordinative structure, as an autonomous system.

To these structures, we may add a constraint execution, to block other possible but inefficient movement, transforming into a system with reduced degrees of freedom (Dragnea, Bota, 1999, p. 153).

Physiologic, neurologic and psychological processes, which help a child learn, organize, control and transform the wanted movement in order to develop and reinforce the movement and posture schemata, form the base of coordinative skills.

"Sight deficiency is a dysfunction in which the visual analyzer is incapable of receiving, transmitting or interpreting stimuli, in a manner which is favorable to educational and social integration."(Teodorescu, Bota, Stănescu, 2003, p. 88)

"Amblyopia is a fairly common disease affecting between 1% and 2% of the population of most developed countries" (Flynn, 1991, p. 183).

Amblyopia represents all the cases of diminished visual capacity, no matter the etiology and severity, or the diminishing of the sight which is present even after the right correction has been applied (Rozorea, 1998, Cziker, 2001, p.15).

The medical dictionary- Larousse, defines amblyopia as the partial or relative loss of

visual acuity (which allows the formation of clear, sharp, well focused images on the retina).

Another definition given by Rozorea (1998), also used by Cziker (2001, p. 15), tells the following: amblyopia is "the diminishing of sight with or without organic lesion, whose importance is not proportional with the diminishing of sight.

According to American Association for Pediatric Ophthalmology and Strabismus, in the study with the title "Amblyopia" (2015), this (amblyopia) "is decreased vision in one or both eyes due to abnormal development of vision in infancy or childhood.

In amblyopia, there may not be an obvious problem of the eye. Vision loss occurs because nerve pathways between the brain and the eye aren't properly stimulated.

The brain "learns" to see only blurry images with the amblyopic eye even when glasses are used. As a result, the brain favors one eye, usually due to poor vision in the other eye".

The visual system helps us observe movement, but especially, gives us information regarding other people's movements.

What is more, based on the elements given by the kinesiotherapist, the physical education teacher etc by means of the visual analyzer, we can elaborate a movement model of the required exercise, at mental level, the analyser being the first which takes part in the skill learning process.

People suffering from amblyopia tend to give up physical activities, moving slowly but surely towards a sedentary life.

It is observed that, since early age, children suffering from this visual deficiency abandon physical activity, which is also obvious regarding their physical development.

According to Teodorescu et al (2003, p. 92), the results described in the special literature claim that the delays in physical development at the age of seven is approximately two years, and at seventeen, this is only one year.

The absence of movement produces significant effects on the body, both on the bone and muscle system, which renders to the child with amblyopia an atrophic aspect, having the following characteristics:

- narrow thorax;
- slim limbs.

Amblyopia determines some negative posture attitudes or physical deficiencies:



- head and shoulder leaning backwards or sideways;
- loose shoulders;
- back kyphosis;
- scoliosis;
- sunken thorax.

Also a defect regarding the position of the body may be observed, emphasized by:

- the leaning of the thorax backwards;
- keeping the knees bent.

This last characteristic is determined by the tendency to step on the whole sole in order to have a greater surface for support, but also for maintaining a better balance.

The disorders from the cardiac and respiratory system are caused, mainly, by a low degree of movement, and, secondly, by the presence of the physical deficiencies mentioned above.

Regarding global movement, we can emphasize the presence of arrhythmic movements, lacking coordination, because they are influenced by the poor movement of the hand with the help of sight.

Of particular importance is the knowledge of the particularities sighted by people working with them, as pedagogical and psychological intervention must be adapted to each child with special educational needs, so that they can develop compensatory mechanisms to adapt to the social environment. Thus, the quality of life of people with amblyopia and blindness will improve.

Compensatory mechanisms are intended to complement the functional ability of children with visual impairments. Here, we talk either decrease either total loss.

To understand this process, it requires sensory stimulation for people with amblyopia or total blindness, for example, blind people will be able to receive information in two ways (auditory and tactile-kinesthetic); in this way will be complemented visual way that will not provide information from the environment.

The purpose of this paper is to study the bibliographical materials which already exist and to develop the data base in the domain of Sport Science and Physical education, connected to adapted learning, by means of a theme which emphasizes the ways of applying some coordination tests for people with amblyopia.

The objectives are:

- to study bibliographical materials;
- to establish test in order to evaluate the coordinative capacity;
- adapting tests for evaluation the coordination capacity of people with amblyopia;
- reaching the conclusions of the paper.

Research methods:

The main method is studying bibliographical materials in order to fathom theoretical knowledge on the subject of the paper. The activity is emphasized alongside reading the specialty materials, in the following domains: physical education and sport, kinesiology, psycho pedagogy and special education.

Tests proposed to measure the level of coordination in children with amblyopia:

1. To evaluate *the eye-hand coordinative capacity*:

The test represents throwing a rhythmical gymnastic ball in a confined space on the ground with the help of a hoop.

Necessary materials:

- three rhythmical gymnastic balls;
- a hoop;
- a stopwatch;
- a rope.

With the help of the rope the launching area will be defined. The hoop will be positioned at about three meters off the launching area.

The subject will have to make three launches by touching the clout in ten seconds.

The attempt is valid:

- if the subject touches the clout three times in ten seconds.

The attempt is not valid if:

- the ball does not touch the confined space three times in ten seconds;
- the time for the attempt is overrun;
- one of the three launches does not touch the clout.

2. In order to evaluate *the static balance* the Romberg test and the sensitive Romberg.

The Romberg test analyses balance while standing, legs close together, hands near the trunk, or oriented backwards (extended elbows). It may be done with open or closed eyes (the sensory control is reduced, only if the subject can maintain position with closed eyes).



For sixty seconds the loss or attempts to maintain the balance by excessive fluctuations or stepping are measured (Cordun, 2009, p. 210).

Necessary materials:

- stopwatch;

The attempt is valid:

- if the subject does not quiver or fall.

The attempt is not valid if:

- the subject leans sideways at least once.

The sensitive Romberg test analyses balance while standing with one leg in front of the other (the support surface is reduced); it is done with eyes closed or open.

The position is maintained for sixty seconds. It is interpreted as the Romberg test (Cordun, 2009, p. 210).

3. In order to evaluate the space orientation capacity:

The subject is in area A and looks at area B. He/she is asked to walk the 2 meter distance between the two areas.

The person without sensory control (blind folded) in order for the result to be valid.

Necessary materials:

- chalk to mark the two areas;
- a scarf;
- centimeter band to measure the distance between the two areas.

The attempt is valid:

- if the subject stops in the confined area.

The attempt is not valid if:

- the subject deviates
- the subject stops +/-10 cm off the confined area.

### Conclusion

By studying the specialty literature in the physical education, sport and kinesiology domains, we may conclude that coordinative skills, together with movement capacities are intensely treated differently by various authors both in the national and international bibliography.

The coordinative capacity resembles a mental-movement quality, which shows the relation between the central nervous system and the muscle one while moving.

Establishing intervention protocol for the Visually Impaired will consider knowledge of their particularities.

Thus, every child with amblyopia and blindness may develop compensatory mechanisms to adapt to the social environment and quality of life will increase.

To assess the level of coordination of children with visual impairments, it is necessary to adapt the tests to be applied to people with special educational needs in accordance with the possibilities of group to be included in scientific research.

Using these tests to evaluate the coordinative skills will reflect the coordination level of children with amblyopia and will help the specialists in the domains of physical education, sport and physical therapy, in better selecting the means to optimize it, thus contributing to developing the self trust in people with amblyopia, but also a development in their life quality.

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