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Study on the Contribution of the Dancesport in Enhancing the Quality of Life in Visually Impaired Children

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Abstract: This study aims at providing scientific arguments regarding the dancesport contribution in enhancing the quality of life of visually impaired children. Thus, a series of bio-motor tests and assessments (push-ups, squats, sit-ups, back extensions, trunk flexion while sitting and the Matorin test), psychological assessments (the Anxiety Test and the Coopersmith Self-Esteem Inventory Test), as well as a series of anthropometric measurements (height, weight and arm span) and postural observations were performed on 30 pupils attending the Special Secondary School for the Visually Impaired in Bucharest (RO: Şcoala Gimnazială Specială pentru Deficienţi de Vedere). 15 of them attended the dancesport classes organised at school for one year.
At the end of this period, the previously applied tests and performed measures were taken again, and the initial and final results were compared, while analysing the impact that the implementation of the elaborated teaching strategy had on the experimental group compared to the control group.
In order to check the statistical significance between the initial testing and the final one, the Wilcoxon test and the Student's T-test were employed. Thus, the conclusion could be drawn that attending the dancesport classes had a major influence on the visually impaired pupils' bio-motor and psychological evolution, since statistically significant differences were recorded in most of the applied tests and assessments. The differences encountered in the control group were much smaller, and statistically and mathematically non-significant.

Keywords: *dancesport, visual impairment, bio-motor, development, psychological.*

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Introduction

The individuals with Special Educational Needs (S.E.N.) require more attention from the educational and sports system, but also from the society, in general. This category consists of the children with mental or behavioural impairments, with sensory or physical disabilities, with affective and mood disorders, with communication or learning difficulties.

Whereas the society places no focus on the education and inclusion of the visually impaired persons, the object of this paper, their quality of life is severely affected. Their access to various services, obtaining a place of work, attending sports activities, and anything and everything that seems normal is a challenge for them. Hence, it is now being recognized that the problem is not about the person with a disability. The problem results from the structures and attitudes that „prevent the individual from exercising his or her capabilities" (Dawn, 2018).

We started our research from the idea that practicing sports can positively influence some of the dimensions of the quality of life. There are a total of eight dimensions (Schalock et al., 2005): *Emotional well-being, Interpersonal relations, Material well-being, Personal development, Physical well-being, Self determination, Social inclusion and Rights.*

We approached our research based on the opinion that the problem of exercising is seen as "method and means to mitigate the negative consequences of the impairment on the individual's personality development" (Pelin et al., 2016, p.72), considering that dancesport can be one of the means that can fit into this paradigm, due to the valences of this sport.

We share the point of view of some authors who consider, like us, that by adapting teaching strategies to the particularities of the blind, by including them in physical and sports activities, different sports in general and dancesport in particular can be practiced because "for persons with visual impairment, we have to consider the scope of education, opt for adequate approaches, forms, etc. Heftiness of caring for such individual is very high; furthermore, the subsequent possibilities for development of such persons with respect to future job possibilities are limited" (Finková & Ludíková, 2012). The particular content of the didactic strategy experienced by us in the practice of dancesport, with

this category of children, exploits the point of view of the quoted authors.

The paper proposes a general change of mentality, especially as other research highlights the fact that "as vision loss increased, parents' expectations for their children's ability to be physically active decreased, as did the children's views that physical activity is important or useful" (Stuart et al., 2006). Moreover, the "critical reorientation of perspective has important implications for the manner in which law and policy in relation to disability needs to be developed" (Dawn, 2018).

Therefore, "children with visual impairment require access to early intervention and low vision rehabilitation services, which aim to improve functioning in daily life and social participation, and possibly more general aspects of well-being such as quality of life and psychosocial functioning" (Elsman et al., 2019).

In our research we considered that the self-esteem and wellbeing from the children's social and emotional perspective are fields of high significance, and they must be carefully monitored in the case of children facing a high risk of developing adaptation problems and that "there is now consensus that all aspects of a child's daily activities, motivation, and behaviour are impacted by the child's self-esteem" (Saigal et al., 2002, p. 433).

As concerns the importance of doing sports for a proper development of the visually impaired child, we can state that the "physical education and sports in the form of classes in physical education classes and in the form of specialized mobile and sports games – goalball, torball and rollingball are of great importance in the development of the personality of students with visual impairments. They provide the movements necessary for the child, contributing to the development of his physiological systems, determining the pace and nature of the functioning of the growing organism. A blind child, like any child, is committed to an orderly activity. However, the first obstacles when moving in space with unskillful or insufficient guidance of movements lead to the fact that the child begins to be afraid of space. The formation of spatial concepts, orientation and mobility in blind children is closely related to physical development, their kinaesthesia and the ability to self-analyse and interpret their sensations and perceptions." (Kornev et al., 2018).

Our research has been based on the findings of previous studies that claim that "regular practicing of movement activities such as

swimming, climbing and trampoline jumping improve level of health-related quality of life for blind or visually impaired students. Practicing sport is a good solution to improve social life for visually impaired and blind students. Movement activities can improve emotional well-being and can raise self-esteem for visually impaired or blind students" (Maniu et al., 2019). Visually impaired people are able to participate in many sporting activities such as swimming, snow skiing, goalball, dance, equestrianism, athletics, judo, torball, fencing and 5-a-side football. Practicing a sport can improve their sense of autonomy and independence and this could generate multiple physiological and psychological benefits. Another positive impact of practicing sports is the acquisition or improvement of motor skills. „Visually impaired individuals who participate in regular sport activities may even improve their fitness reaching levels comparable to those of sighted subjects" (Mirandola et al., 2019). Thus, we implemented dance as an extracurricular activity in this social category at the age of 11 years.

We agreed with the views that sports could contribute to significantly reduce anxiety, which is very present in the case of the visually impaired. It is known that anxiety disorders are more frequent among individuals with visual impairment than in the general population. It is also estimated that ⅓ of the individuals with visual impairment face anxiety or/and depression (Binder-Olibrowska &Wrzesinska, 2018). Furthermore, sports can also influence the visually impaired persons' level of self-esteem. Self-esteem can be defined as the level of global, general regard that an individual has for his-or herself as a person (Leary & Baumeister, 2000). Moreover, self-esteem can play a profound and important role in all aspects regarding a child's development (Brooks, 1992).

It is interesting to mention that "visually impaired students scored higher than normally sighted children on 5 of the 12 SSAI subscales, refuting the notion that visually impaired children have poorer self-concepts than normally sighted children." (Obiakor & Stile, 1990). This could be a result of the fact that "children with visual impairments enjoy more encouragement, praise and validation from both their families and schools than children in public schools. Under these circumstances, the "Unit of Measurement" for self-esteem is different between unimpaired children and visually impaired children." (Luca & Mihăilescu, 2020)

Moreover, "our results suggest the importance of perception of physical competence and self-esteem in adolescent boys and girls. These two issues should be addressed and promoted in physical education classes to improve fitness and body satisfaction with the adequate methodology and approach" (Miguel, 2020).

As concerns the differences between the visually impaired pupils and the pupils attending mass schools, Miklyaeva, A. and Gorkovaya, A. (2019, p.94) consider that "the hardiness of visually impaired adolescents and its components (commitment, control and challenge) do not differ from similar indicators in the sample of their "healthy" peers. Probably, the development of ideas about one's own life and relationships with the world happens in accordance with the universal laws of personal formation regardless of the vision status in adolescence.".

In addition, "high levels of physical activity are possible which provide health-related benefits for children and youths with visual impairments. Theoretical background according to the World Health Organization (WHO), physical inactivity is a considerable health problem" (Giese et al., 2017).

As regards the therapeutic function of practicing dancesport, they say that it can be really useful because dance unifies the body and the creativity. The use of dance as therapy and healing tool has its roots in the knowledge that mind and body are always inseparable.

Dance provides a unique emotional experience of shared emotion, providing feelings of harmony, unity and empathy. At a physical level, dance therapy can improve coordination, mobility and reduce muscle tension. Therefore, dance therapy can be useful for both emotional and physical aspects of quality of life. Dance therapy can improve self-confidence, self-awareness and interpersonal interaction, and is a great way for people to communicate their feelings. There are also some promoters of dance and expressive therapy that claim that this may strengthen the immune system through physiological processes and muscular action and can even help prevent some diseases (Samson, 2017).

"Although much of traditional dance instruction relies upon visual cuing and modelling, evidence suggests that dance can be successfully taught to blind students by integrating verbal and tactile modes of instruction. There is a need for professional development to

train teachers in inclusion dance methodologies that specifically address the learning needs of students with vision loss" (Seham & Yeo, 2015).

Therefore, it is very important to evaluate the influence that visual impairment has on emotional state, daily activities, mobility and social participation. Research in this field will improve the provision of services for people with visual impairment (Khorrami-Nejad et al., 2016).

Problem solved by the research

The quality of life of the visually impaired persons is a matter of great significance and social concern. The possibilities opened up by sports, and its contribution to supporting the social inclusion and the bio-motor, psychological and social development of this population category are well-known.

Practicing sports should be a priority for visually impaired pupils. They are inclined to a sedentary lifestyle, develop a series of postural deficiencies, need someone to guide them on a permanent basis, their social interaction is generally mediated by someone, are cocooned and rarely face major challenges. Thus, their developing as individuals, becoming independent, and preparing for the adult life are difficult. By practicing a branch of sports, in an organised framework, the pupils can socialise, deal with their limitations by creating the premises to surpass them, improve their spatial orientation skills, correct a series of postural vices, improve their motility and coordination, and increase their independence and autonomy levels.

This study consists of a pedagogical experiment rolled-out in order to identify the dance sport contribution to the enhancement of the quality of life of visually impaired children.

Thus, an experimental group of 15 11-year-old pupils of the Special Secondary School for the Visually Impaired in Bucharest attended dancesport classes for the duration of an academic year. In order to highlight the dancesport influence on certain aspects of their quality of life, a series of bio-motor tests and assessments (push-ups, trunk flexions while sitting, back extensions, squats, sit-ups, and the Matorin test), psychological assessments (the Anxiety Test and the Coopersmith Self-Esteem Inventory Test), as well as a series of anthropometric measurements (height, weight and arm span) and postural observations were performed.

The Coopersmith Self Esteem Inventory Test, the version for pupils, consists of the application of a set of 58 questions, 50 self-esteem-related questions and 8 Distortion Scale-related questions (a manner of assessing the defensive manner in which a pupil responds to this instrument). In the end, scores are calculated for the following areas: *Total Score(T), Home-Parents (HP), General perception of one's self (GP), Social Self-Colleagues (SSC), School-Academic Experience(SAE) and Distortion Scale (DS)*. The results are interpreted and analysed compared to the national average obtained from the application of this test (Coopersmith, 2017).

The David Lewis Anxiety Test consists of the application of a set of 20 questions for the subjects and a set of 30 questions for their parents/tutors. A global score is calculated and scores are also calculated for the following areas: *School anxiety, Fear of making friends, Anxiety of not meeting expectations, Fear of new or unfamiliar things, Physical symptoms of anxiety*

The results are analyzed and interpreted, being compared to the test benchmarks (Lewis, D., 1989).

The research results will become the starting point for possible more in-depth studies regarding the physical and psychological needs of the visually impaired, and the way they can be influenced by doing sports, but they will also contribute to setting the foundation for implementing various teaching strategies.

Research methodology

The aim of the research is to scientifically argue the dancesport contribution to the enhancement of the quality of life of the visually impaired children.

Research hypothesis. Practicing dancesport can positively influence the visually impaired children's body posture, as well as their bio-motor level and their psychological and social skills.

In order to achieve the aim, the following **research methods** were used in a system: the bibliographical research method, pedagogical observation method, pedagogical experiment method, questionnaire enquiry method - test method, and statistical-mathematical method.

Our study consists of a pedagogical experiment. The experiment or the experimental method is a basic method for direct pedagogical investigation. It is defined as a kind of provoked observation because, unlike normal observation, the experiment involves the modification of the pedagogical phenomenon that is being investigated, being created clear, special conditions of appearance, but also of development

(progress), in a controlled and repeated way. Basically, the experiment identifies and evaluates the effects produced in a situation created by introducing some determining factors.

30 pupils attending the Special Secondary School for the Visually Impaired in Bucharest were initially tested. 15 of them were included in an experimental group, attending dance classes for one year. The other 15 students were the control group.

Content, results, discussions

In order to achieve the research aim and to verify the hypothesis, a series of steps were required. The Research Subjects were established - 30 pupils attending the Special Secondary School for the Visually Impaired in Bucharest. Amongst them, 15 were included in an experimental group (EG) and attended the dance classes organised at school for one year, with a frequency of 2 lessons of 60 minutes every week. They learned simplified dance sport basic figures and actions. The lessons also had in their structure dance-specific physical training components and rhythm games. The remaining 15 students were the control group (CG). Furthermore, the Subjects' parents filled-out and signed Research Participation Consents and were informed of the withdrawal possibility, with no other consequences on their status.

The research was previously approved by the Ethics Committee of the Doctoral School of the University of Pitești.

The research consisted of determining how the visually impaired pupils' attending dancesport classes can influence certain aspects of their quality of life. Thus, the 30 pupils were subject to a series of tests and assessments to determine their bio-motor, psychological and social levels. Also, a number of observations regarding the postural attitude of the students were made. The two groups (the experimental and the control one) were created, and their similarities were verified. At the end of the period when the experimental group participated in the dance classes, the same tests were reapplied to all the 30 pupils and the postural attitude was reassessed.

The performed assessments, tests and measurements were as follows:

- *Anthropometric measurements*: height, weight, arm span;
- *Bio-motor assessments and tests*: push-ups, squats, sit-ups, back extensions, trunk flexions while sitting and the Matorin test;
- *Postural assessment*;

- *Psychological tests*: the anxiety test David Lewis and the Coopersmith Self-Esteem Inventory Test.

The result analysis was performed based on the descriptive statistics, as well as by applying a series of statistical significance tests. Thus, for the bio-motor assessments and tests, and for the anthropometric measurements, the Wilcoxon test was used, and for the psychological tests, the Student's t-test was employed.

Table1 - Statistical and mathematical indicators determined for the strength and mobility tests (initial – final), EG and CG

Assessments	**Gender**	**Subject Group**	**Statistical and mathematical indicators**								
			Average		Standard deviation		Coefficient of variation		Calculated Value	Critical Value (α=0.05)	Significance
			Initial	Final	Initial	Final	Initial	Final			
Height	F	EG	135	143.17	6.9	6.71	0.05	0.05	0	0	Sign.
		CG	134.33	141.83	12.48	12.12	0.09	0.09	0	0	Sign.
	M	EG	136.89	144.33	8.3	8.43	0.06	0.06	0	6	Sign.
		CG	137.22	143.56	9.23	9.55	0.07	0.07	0	6	Sign.
Weight	F	EG	37	38	8.63	6.81	0.23	0.18	8	0	Non-sign.
		CG	33.5	38.67	12.24	11.99	0.37	0.31	0	0	Sign.
	M	EG	34.67	38.67	7.38	7.21	0.21	0.19	1	6	Sign.
		CG	38.22	41.56	10.6	9.22	0.28	0.22	0	2	Sign.
Arm span	F	EG	132.67	141.17	6.25	6.71	0.05	0.05	0	0	Sign.
		CG	132.17	140	12.51	11.93	0.09	0.09	0	0	Sign.
	M	EG	134.22	143	7.9	8.46	0.06	0.06	0	6	Sign.
		CG	136	141.78	9	9.6	0.07	0.07	0	6	Sign.
Squats	F	EG	12.83	27	4.79	8.53	0.37	0.32	0	0	Sign.
		CG	8.33	10.5	3.98	4.23	0.48	0.40	3	0	Non-sign.
	M	EG	13.44	28.67	4.07	5	0.3	0.17	0	6	Sign.
		CG	13.86	15.67	7.06	6.3	0.51	0.4	6	4	Non-sign.
Sit-ups	F	EG	18	32.33	5.69	4.84	0.32	0.15	0	0	Sign.
		CG	16.17	18.33	4.54	7.63	0.28	0.42	4	0	Non-sign.
	M	EG	14.56	28	3.91	3.24	0.27	0.12	0	6	Sign.
		CG	20.22	20.44	6.44	6.35	0.32	0.31	16	4	Non-sign.
Push-ups	F	EG	2.5	6.33	1.05	1.97	0.42	0.31	0	0	Sign.

		CG	1.5	2	0.84	0.63	0.56	0.32	6	0	Non-sign.
	M	EG	2.33	7.33	1	2	0.43	0.27	0	6	Sign.
		CG	2.44	2.78	1.13	1.3	0.46	0.47	6	0	Non-sign.
Back extensions	F	EG	40.17	49.67	25.90	24.57	0.64	0.49	0	0	Sign.
		CG	20.83	20.5	10.59	11.26	0.51	0.55	10	0	Non-sign.
	M	EG	16.44	26.78	14.59	13.28	0.89	0.5	0	6	Sign.
		CG	31.89	32.44	15.05	14.11	0.47	0.43	13	4	Non-sign.
Trunk flexion while sitting	F	EG	-12.95	-8.48	4.75	3.71	0.37	0.44	0	0	Sign.
		CG	-7.72	-8.83	5.02	4.62	0.65	0.52	2.5	0	Non-sign.
	M	EG	-8.92	-3.78	5.53	3.87	0.62	1.02	0	6	Sign.
		CG	-11.7	-10.78	7.16	5.78	0.61	0.54	15	6	Non-sign.
Matorin Right	F	EG	117.5	186.67	57.25	64.08	0.49	0.34	0	0	Sign.
		CG	129.17	140	81.76	74.57	0.63	0.53	6	0	Non-sign.
	M	EG	111.67	151.11	63.25	68.82	0.57	0.46	0	4	Sign.
		CG	166.11	184.44	84.1	65.6	0.51	0.36	3	0	Non-sign.
Matorin Left	F	EG	215	261.67	79.18	86.35	0.37	0.33	0	0	Sign.
		CG	196.67	208.33	88.92	67.06	0.45	0.32	7	0	Non-sign.
	M	EG	215.56	256.67	112.15	64.61	0.52	0.25	5	2	Non-sign.
		CG	258.89	244.44	91.98	96.32	0.36	0.39	2.5	0	Non-sign.

Source: Authors' own conception

The test and assessment results highlight the following aspects:

a) In terms of **height**, the F (female) subjects in the EG recorded an average increase of 6.05%. The F (female) subjects in the CG recorded a somewhat smaller average increase than the ones in the EG (5.58%).The M (male) subjects in the EG recorded an average height increase of 5.45%. The same gender subjects in the CG recorded an average height increase of 4.62%.

b) In terms of **weight**, the average of the F subjects in the EG increased by 2.7%, and the weight average of the F subjects in the CG increased by 15.43%. The weight average of the M subjects in the EG increased by 11.54%, and in the case of the same gender subjects in the CG, an increase of 8.74% was recorded, below the EG level.

c) As regards the **arm span**, the F subjects in the EG recorded an increase of 6.4%. In the case of the F subjects in the CG, a span average increase was also recorded, although somewhat smaller than that in the EG (5.92%). For the same measurements, the M subjects in the EG recorded a span average increase of 6.54%. The same gender subjects in the CG recorded a span average increase of 4.25%, below the result obtained by the EG subjects.

d) In the **squats** assessment, the F subjects in the EG increased the average number of repetitions by 110.44%; in the case of the F subjects in the CG an average increase could also be noticed, although much smaller than the EG average increase (26.05%). In the same assessment, the M subjects in the EG recorded an increase of the average number of repetitions by 113.31%. The same gender subjects in the CG recorded an average increase of the number of repetitions by only 13.05%, much lower than the result obtained by the EG subjects.

e) In the **sit-up** assessment, the average number of repetitions recorded by the F subjects in the EG increased by 79.61%, and the average number of repetitions of the F subjects in the CG increased by 13.35%, which was much less than the average of the EG same gender subjects. The average recorded by the M subjects in the EG in the sit-up assessment increased by 92.3%, while the same gender subjects in the CG recorded an increase of only 1.08%, much less than the increase recorded in the EG.

f) In the **push-up** assessment, for the F subjects in the EG, a very significant increase of 153.2% was noticed in terms of the average number of repetitions. For the F subjects in the CG, an average increase could also be noticed, although much smaller than that of the EG subjects (33.33%).In the same assessment, the M subjects in the EG recorded an increase by 214.59% of the average number of repetitions. The same gender subjects in the CG recorded an increase of the average number of repetitions of only 13.93%.

g) In the **back extensions** assessment, the average number of repetitions done by the F subjects in the EG increased by 23.65%, and the average number of repetitions done by the F subjects in the CG decreased by 1.58%. The average recorded by the M subjects in the EG increased by 62.9%. In the case of the same gender subjects in the CG, an increase of only 1.72% was recorded, way below the increase obtained by their EG peers.

h) In the **trunk flexion while sitting** assessment, an increase of the average results by 34.52% could be noticed for the F subjects in the EG. For the F subjects in the CG, a performance decrease by 14.38% was recorded. In the same assessment, the M subjects in the EG recorded a result improvement by 57.62%. The same gender subjects in the CG recorded a performance decrease of 7.86%, much lower than the result obtained by the EG male subjects.

i) As regards the **Matorin (Right)** test, an improvement by 58.87% of the average results could be noticed for the F subjects in the EG. The F subjects in the CG also recorded a performance increase; it was however smaller, by only 8.38%. In the same assessment, the M subjects in the EG recorded a result improvement by 35.32%.The same gender subjects in the CG recorded a performance increase by 11.03%.

j) In the case of **Matorin (Left)** test, for the F subjects in the EG, an improvement of the average results by 21.7% was noticed. The F subjects in the CG also saw an improvement in their performance, although very small, of only 5.92%. In the same assessment, the M subjects in the EG recorded a result improvement by 19.07%. The same gender subjects in the CG recorded a slight decrease in performance (5.91%).

In terms of statistical significance of the result evolution, as analysed by applying the Wilcoxon test, positive, statistically significant evolutions could be noticed for both the M subjects, and the F subjects in the EG, for all the physical tests and assessments, except for the Matorin Left test on the M subjects.

In the case of the CG subjects, all the result changes are statistically non-significant.

As concerns the anthropometric measurements, we noticed that the changes in height and arm span are statistically significant for both subject groups, M(male) and F (female). In the case of weight measurements, the changes occurred in the F subjects in the EG are statistically non-significant.

The postural attitudes of the subjects (initial and final assessment) are presented in **Table 2.**

Table 2 – Postural attitudes (initial – final), EG and CG

Group	EG		CG	
Postural attitude / Assessment moment	Initial	Final	Initial	Final
Lateral view				
Head leaning forward (slightly) (%)	73,33%	86,66%	80%	66,66%
Head leaning forward (medium) (%)	26,67%	-	20%	33,34%
Head - aligned (%)	-	13,34%	-	-
Shoulders - aligned (%)	-	13,34%	-	-
Shoulders roundedness (mild) (%)	86,66%	86,66%	86,66%	46,67%
Shoulders roundedness (medium) (%)	13,34%	-	13,34%	53,33%
Kyphotic attitude (mild) (%)	66,66%	86,66%	53,33%	46,67%
Kyphotic attitude (medium) (%)	33,34%	-	46,67%	53,33%
Kyphotic attitude (normal) (%)	-	13,34%	-	-
Lordotic attitude (normal) (%)	46,67%	53,33%	60%	60%
Lordotic attitude (mild) (%)	53,33%	46,67%	40%	33,33%
Lordotic attitude (medium) (%)	-	-	-	6,67%
Posterior view				
Head, neck lateral tilted - slightly (%)	20%	20%	26,66%	26,66%
Head, neck lateral tilted - medium (%)	-	-	-	-
Head, neck - aligned (%)	80%	80%	73,34%	73,34%
Shoulders - slightly asymmetrical (%)	26,66%	46,67%	40%	40%
Shoulders - asymmetrical (medium) (%)	20%	-	20%	20%
Shoulders - symmetrical (%)	53,34%	53,33%	40%	40%
Shoulder blades - slightly asymmetrical (%)	26,67%	46,67%	40%	40%
Shoulder blades – asymmetrical (medium) (%)	20%	-	20%	20%
Shoulder blades - symmetrical (%)	53,33%	53,33%	40%	40%
Scoliotic attitude (mild) (%)	26,67%	46,67%	60%	60%
Scoliotic attitude (normal) (%)	53,33%	53,33%	40%	40%
Scoliotic attitude (medium) (%)	20%	-	-	-

Source: Authors' own conception

It can be easily seen from Table 2 that, for EG subjects, improvements have been made for all types of postural attitudes

assessed. For CG, the aggravation of some of the poor postural attitudes was observed.

We can therefore find that no noteworthy differences could be noticed in the evolution of the two groups as concerns the anthropometric measurements. However, a mention can be made that, on an average, the EG subjects grew slightly more than the CG subjects, in terms of height. This change may be also owed to the increased focus on correcting the postural vices during the training programme.

As regards the physical assessments, the EG subjects recorded positive, statistically significant evolutions. The changes are however rather small for the back extensions assessment, since the evaluated pupils had gotten good results in this assessment, sometimes above the national average, ever since the initial assessment. This phenomenon is explained by the fact that all the visually impaired pupils generally participate in kinetotherapy sessions in school, as well, focusing on exercises designed for the backbone and strengthening and conditioning the back muscles. In the case of the CG subjects, some of them recorded favourable evolutions in some of the assessments, probably due to the natural evolution occurring over time. Other subjects however, due to the lack of physical activity, even recorded decreases in their physical test and assessment results.

In the Matorin test, the male and female EG subjects recorded result improvements, both in the Matorin (Right-side), and in the Matorin (Left-side). The CG subjects recorded positive result evolutions (although very small) in the Matorin (Right-side) -both boys and girls, and in the Matorin (Left-side) - girls. In the Matorin (Left-side) test, on an average, the M subjects recorded a slight decrease in their results compared to the initial testing.

Regarding the postural attitude, thanks to a higher level of body awareness and muscular strength, all the students of the EG group experienced improvements in postural attitudes at the end of the research. In the case of CG students, aggravation of the poor postural attitudes were observed for 8 of the subjects (53,33%), 5 of them (33,33%) showed improvements in some of the postural attitudes assessed, and for 2 of them (13,34%) the comments on their posture remain unchanged.

Table3 - Statistical and Mathematical Indicators determined for the psychological tests (initial – final), EG and CG

Test	*Assessed areas*	*Subject Group*	*Statistical and Mathematical Indicators*								
			Average		*Standard deviation*		*Coefficient of variation (CV)*		*T-Test (df=12)*	*Threshold (α=0.05)*	*Significance*
			Initial	*Final*	*Initial*	*Final*	*Initial*	*Final*			
Anxiety	*Total Score*	EG	12.21	5.57	6.38	3.55	0.56	0.64	6.1664	0.0001	Sign.
		CG	13.43	11.86	1.5	1.07	0.45	0.55	3.7815	0.0023	Sign.
	School anxiety	EG	1.29	0.21	1.49	0.43	1.16	1.99	3.3223	0.005	Sign.
		CG	1.5	1.07	0.94	1.38	0.63	1.29	1.7103	0.111	Non-sign.
	Fear of making friends	EG	1.86	1	1.92	0.68	1.03	0.68	4.17	0.0011	Sign.
		CG	2.21	2.07	1.97	2.02	0.89	0.97	1	0.3356	Non-sign.
	Anxiety of not meeting expectations	EG	4.57	2.5	1.09	2.38	0.44	0.76	5.1957	0.0002	Sign.
		CG	4.5	4	1.79	1.88	0.4	0.47	2.1885	0.0475	Sign.
	Fear of new or unfamiliar things	EG	3.14	1.21	2.38	1.81	0.76	1.49	4.17	0.0011	Sign.
		CG	3.5	3.07	2.03	2.13	0.58	0.69	1.8829	0.0823	Non-sign.
	Physical symptoms of anxiety	EG	1.29	0.64	1.07	0.93	0.83	1.44	4.8374	0.0003	Sign.
		CG	1.64	1.64	1.08	1.08	0.66	0.66	0	1	Non-sign.
Coopersmith Self-Esteem Inventory	*GP*	EG	18.64	18.5	4.65	1.95	0.25	0.11	0.1283	0.8999	Non-sign.
		CG	18.93	19.21	4.38	4.56	0.23	0.24	0.4346	0.8062	Non-sign.
	SSC	EG	5.79	6.36	1.53	1.15	0.26	0.18	1.5288	0.1503	Non-sign.
		CG	5.79	6	1.53	1.11	0.26	0.18	0.6114	0.5515	Non-sign.
	HP	EG	6.86	7.07	2.18	2.13	0.32	0.3	0.2513	0.8055	Non-sign.
		CG	6.93	6.64	2.13	2.27	0.31	0.34	1.7489	0.1039	Non-sign.
	SAE	EG	6.64	6.93	1.6	0.73	0.24	0.11	0.6724	0.5131	Non-sign.
		CG	6.57	6.57	1.79	1.4	0.27	0.21	0	1	Non-sign.
	T	EG	75.86	77.71	17.02	7.23	0.22	0.09	0.3796	0.7104	Non-sign.
		CG	76.43	76.86	16.59	15.33	0.22	0.2	0.3186	0.7551	Non-sign.

	DS	EG	3.43	1.07	1.5	0.83	0.44	0.77	7.6644	0.0001	Sign.
		CG	3.5	3.07	1.56	1.54	0.44	0.5	2.4815	0.0275	Sign.

Source: Authors' own conception

The David Lewis anxiety test results can be summarised as follows:

a)In the **Total Score**, the average obtained by the EG subjects recorded a decrease by 54.38%. In the CG subjects, the Total Score decreased by 11.69%.

b) In terms of **School anxiety**, the results improved by 83.72% in the EG subjects. The CG subjects also recorded an improvement in results, although much smaller than that of the EG subjects (28.67%).

c) As regards the **Fear of making friends**, the EG subjects recorded a decrease by 46.24% in the case of this type of anxiety. The CG subjects changed by 6.33%,in the sense of decreasing the levels of this type of anxiety, a much lower improvement compared to the one obtained by the EG subjects.

d) Regarding the **Anxiety of not meeting expectations**, the average obtained by the EG subjects fell by 45.29%, thus indicating an improvement in their anxiety levels in this area. For the CG subjects, the results were only improved by 11.11%.

e) Regarding the **Fear of new or unfamiliar things**, the EG subjects recorded a result improvement of 61.46%. The CG subjects also recorded an improvement in their anxiety levels in this area, but only by 12.29%.

f) In terms of the **Physical symptoms of anxiety**, the EG subjects' results improved by 50.38%. The CG subjects' results remained the same.

The statistical significance of the evolution of the subjects' results in the anxiety test was verified using the Student's t-test.

Thus, in the case of the **Total Score** and of the **Anxiety of not meeting expectations**, the occurred changes are statistically significant both in the case of EG subjects, and of the CG subjects (a higher level of significance was however noticed in the case of the EG subjects).

In the areas of **School anxiety**, **Fear of making friends**, **Fear of new or unfamiliar things** and **Physical symptoms of anxiety**, the changes are statistically significant, but only for the EG subjects.

Anxiety is one of the problems which can easily affect the visually impaired pupils. Nevertheless, it seems, on an average, that the

pupils assessed in this research face no major problems in this respect, having recorded high values only for the anxiety of not meeting expectations. Involving in various activities, improving their physical condition, as well as socialising seem to make the difference, hence, in the case of the research subjects, statistically significant anxiety-level improvements are noted in all the assessment areas.

Even in the case of the CG subjects slight improvements are noticed, probably due to the additional experience acquired over time, education, etc.; they are however much lower when compared to the EG subjects' and, in general, statistically non-significant (except for the "Total Score" and "Anxiety of not meeting expectations", where the changes between the initial and the final test results proved to be statistically significant).

In the case of the Coopersmith Self-Esteem Inventory, for a better understanding of the results, we can also look at the existing national references in Table 4.

Table 4 – National averages for Coopersmith Self Esteem Inventory
Source: ISS: Coopersmith Self-Esteem Inventories: technical book(2017)

Studied area	**GP**	**SSC**	**HP**	**SAE**	**T**	**DS**
National average	17,14	5,88	4,94	5,38	67,34	4,53

Source: Authors' own conception

The results in Table3highlight the following aspects:

a) In **GP**, the EG subjects recorded a drop of 0.07% in the self-esteem level average. The GC subjects' average increased however by 1.48%.

b) In **SSC**, the EG subjects' average self-esteem increased by 9.84%. The CG subjects' average increased with 3.62%.

c) In **HP**, the averages recorded by the EG subjects increased with 3.06%. The CG subjects' average dropped with 0.29%.

d) In **SAE**, the EG subjects recorded an average increase of 4.37%. The CG subjects' average remained constant.

e) In the **Total Score** (T), the EG subjects' average increased with 2.44%. The CV dropped, showing an even higher degree of homogeneity. The CG subjects' average increased with 0.56%.

f) In the case of the last area subject to testing, **DS**, the average recorded by the EG subjects fell by 68.8%. The CG subjects' average dropped with 12.28%.

When applying the Student's t-test, we found that the evolution of the results of the Coopersmith Self-Esteem Inventory test is statistically non-significant for the GP, SSC, HP, SAE and T areas, both for the EG, and the CG, and it is statistically significant for the DS area, both for the EG, and for the CG.

Notice can be easily made that, in the case of the Coopersmith Self-Esteem Inventory test, the variations between the time of the initial and of the final testing are very small, recording significant changes only for the DS area (having a much more substantial significance for the EG pupils). This change shows an increase in self-appreciation objectivity. The visually impaired pupils proved ever since the initial testing that they have high self-esteem levels, even higher than the national average recorded, for the same test, by the public-school pupils, in certain areas. It is thus easily understandable why no noteworthy changes can be noticed in terms of self-esteem, in general.

Through the dancesport training programme, the experimental group members had the opportunity to deal with new challenges in vulnerability areas and less developed abilities (orientation in open spaces, movement coordination to the beat and, depending on their partners, balance in various body positions, and so on, and so forth), and the children became aware of their strengths and weaknesses. That explains why, during the final evaluation, their self-awareness and self-assessment capacity was significantly higher, whereas their self-perception in relation to the environment and challenges was negatively (but more realistically) changed.

Conclusions

In the initial testing, the EG and CG pupils recorded similar results at the performed tests, measurements and assessments.

In the final testing, however, a very good evolution of the visually impaired pupils in the experimental group was noticed, as concerns the physical assessments and the anthropometric measurements, highly outranking the control group pupils' evolution. The strength, mobility, coordination, posture and balance considerably improved for the EG pupils as a result of their constant participation in a well-organised physical activity programme. The improvement of the

visually impaired pupils' physical condition certainly leads to an increase in their quality of life. They acquired a superior level of autonomy and independence, learnt to improve their spatial orientation skills and became more confident. We consider they will have the abilities to better deal with the requirements of their daily lives and, why not, of a workplace, if we are to look to the future.

Variations in the results obtained for the anxiety, self-esteem and others were recorded for all the subjects, both in the experimental group, and in the control group, which highlights the unpredictability and complexity of the influence held by the external environment (represented by life-events and the influence of the relationship with the others, regardless of their importance to the subjects), and by the internal environment (represented by the relationship with one-self, with all its variables).

At the end of the experiment, we found a clear and pronounced downward tendency regarding the anxiety and the psychopathological manifestations, a self-esteem improvement and a better overall perception of the quality of life in the experimental group. They felt content with their health, energy-levels, and the relationships with their parents, teachers, friends and school.

The score variations recorded for the Control Group are lower and show a greater tendency towards randomness.

The initial tests showed that most of the visually-impaired pupils have a self-esteem level that exceeds the national average obtained by the public school pupils. This may seem amazing since the visually-impaired pupils (who deal with many more challenges than the mass education pupils) are expected to have a lower self-esteem level. Nevertheless, they are surrounded by a much more protected home and school environment compared to the pupils attending mass education establishments. In most cases, at home, the parents and the family as a whole create a protective shield around these children (overprotection being one of the most common behavioural and emotional reactions the family members have when faced with any kind of deficiency, visual impairment, in particular), practically mediating almost any interaction that the child has with the external environment, implicitly, with the difficulties inherent to the everyday life. The school also intervenes with another level of structuring and support designed for the visually-impaired. The education in special school brings about a balance between cognitive learning and gradually experimenting new abilities in a

controlled environment. Encouragement and progress praising are compensatory tools for all the teaching staff. Therefore, the environment in the special schools is also more protective than the one in a public school. The visually impaired pupils' independence and autonomy grow more slowly and gradually (given the limitations imposed by the visual impairment) compared to the typical pupils' in the public schools.

The differences recorded at the end of the experiment between the EG and the CG validate the research hypothesis; the dancesport has a positive impact on the visually impaired persons' quality of life. The conclusion is not unexpected since the dancesport puts the visually impaired pupils in the situation to do more exercise in their daily routines (the visually impaired persons tend to be rather static, reserved and apprehensive when it comes to moving around). Given that the movements in the dancesport trainings are structured, well organised, involving their entire body, adding quality and value to the movements. This is all the more useful since many visually impaired persons tend to make stereotypical movements, this being a form of pseudo-compensation for the visual impairment (their bodies feel the need for kinaesthetic stimulation, but the stereotypical movement is felt as safe, since it does not expose them to the perils of moving in open spaces, perceived as dangerous).

Another benefit the dancesport brings about, which also makes a difference for the visually impaired persons' quality of life, is the fact that they are faced with the situation of coordinating their body movements with the beat. The sense of rhythm must be trained in all children, all the more so in blind and partially sighted children. Systematically training the ability to balance one's body in the context of the complex movements required by dancing and exercising the orientation ability in wide open spaces also hold an important compensatory value for the visually impaired persons.

Furthermore, acting in synchronicity with a partner develops one's abilities to harmoniously relate to everyone around. The social integration is facilitated by the ability to get on the same page as the others, and to negotiate the coordinates for being "together". The need to be permanently aware of one's partner and of the other dancers counter balances the self-centred autistic-like tendencies, which are specific to the visually impaired persons. Thus, there is a decreased expectation that the others should adapt and mould to one's needs, so

the visually impaired children feel the urge to model their behaviour depending on the others.

Not last of all, involving in the dancesport trainings is highly beneficial to all the visually impaired persons since; alongside their colleagues and coaches, they get to know themselves and each-other better, they are better anchored in the objective reality, becoming more aware of their resources and limitations, learning how to overcome obstacles, and physically, psychologically and emotionally hard times, as well as how and to which extent they can rely on the help and support of the other children and adults around them.

Moreover, improving their strength and mobility highly facilitates their solving their everyday tasks.

All of the above are compelling arguments why the dancesport is beneficial and recommended for the visually impaired persons helping them to deal with the challenges of life at a superior level and thus increasing their quality of life.

Study limits

The study is a starting point in investigating the extent to which certain aspects of the quality of life of the visually impaired persons can be improved by their constant participation in physical activities that are well organized and adapted to their needs and possibilities; the results however cannot be generalised, given the relatively low number of subjects. In addition, all the pupils attend the same special school, which highlights the fact that certain features, behaviours and abilities can be generated by a certain approach of the teaching process. In this study the level of the pupils' impairment or other diseases were not taken into account.

Result applicability

This research is a part of a wider study on the bio-motor, psychological and social levels of the visually impaired pupils aimed at building an appropriate method of teaching dancesport to the pupils in this category and investigating how doing this sport can influence the quality of life of the visually impaired pupils.

Moreover, this paper is a general alarm signal as concerns the lack of information on the pupils with Special Educational Needs and on the visually impaired pupils. When included in an adapted, well-

organised system, they can become active members of the society, have jobs and support themselves. It is therefore paramount that more specialists, teachers and coaches join hands in their efforts to identify methods and means to train these categories of pupils.

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