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Original article

IMPLEMENTATION OF PROPHYLAXIS PROGRAMS FOR THE PREVENTION OF SPINE-SPECIFIC DISEASES AMONG ADOLESCENTS

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Abstract

Background. The correct attitude of the body is not only based on the development of muscle mass or increased muscle tone, there are people with a very well developed muscle system but who have a poor body posture due to lack of coordination between agonist and antagonistic muscle chains that ensure the position correct segment. With the onset of physical disabilities, teenagers are mainly the main cause that others in their expansive groups will debate, so that they will have fun. The impact for those affected will be enormous, because they will be put in the light, but not in a permissive light.

Objectives. The theoretical objective highlighted the relevant theoretical notions regarding the physiotherapeutic approach regarding adolescents who are diagnosed with a certain type of spine-specific suffering or about adolescents trying to prevent these sufferings. The application objective shows the benefits that prophylaxis programs offer, and how they combat pain and the appearance of problems in the spine among adolescents.

Methods. The present research aimed at the progress of three patients aged 14-17 years, with deviations of the spine. Patients were monitored during rehabilitation, which consisted of physiotherapy sessions, four sessions per week, electrotherapy, hydrotherapy and massage. For the testing of the patients were used first of all exercises from the Hettinger system for testing joint mobility and balance, tests for determining muscle strength and endurance, but also the Ruffier - Dickson test, for testing anaerobic exercise capacity and for adapting to exercise.

Results. The research aimed to demonstrate that adolescents suffer more and more from spinal deviations mainly due to their erroneous position that they maintain every day. At the same time, it has been established that physiotherapy programs are very important both for those who have acquired suffering in the spine and for those who do not want such problems. The results confirmed all the benefits of prophylaxis, all these results are observed at the final examination which shows us the curves which have become normal or have been reduced to a small value.

Conclusion. The quality of life of the 3 patients was improved by applying physiotherapy programs. Patients were advised to continue treatment in order to maintain the results obtained through movement in the form of prophylaxis or various sports corresponding to the condition, and also to observe the postural hygiene program.

Keywords: spine diseases, physiotherapy, prophylaxis, rehabilitation.

Introduction

Fragility of self-image is a difficulty that comes from primary deficiencies. In people with visible spinal deficiencies, the self-image is imprinted with specific elements resulting from specific characteristics and psychological conflict with the world. Children or adolescents with physical disabilities are normal in terms of intellectual capacity, even capable of performance (Cardon G,

Balagué F, 2004).

Teenagers are impressively receptive to the physical appearance and opinion they offer to their entourage. With the help of therapeutic means, the main characteristic of adolescents with deviations of the spine, namely hypersensitivity, can be overcome (Coe JD, Arlet V, Donaldson W, Berven S, Hanson DS, Mudiyan R, 2006). At the same time, other barriers to socio-family and school integration will be

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overcome. Found at all ages, the capacity for natural recovery is the most active in childhood, and the means of recovery are based on this capacity. The social integration of people with such disabilities is the responsibility of society as a whole, not just the state (Feingold AJ, Jacobs K 2002). Persons with physical disabilities whose repercussions may or may not reflect the rejection of those persons by the social environment depending on the obligations and rules it imposes.

A favorable environment for children and adolescents with such problems is created by parents, because they cannot be helped without parental cooperation. An important role in the development of the personality of children or adolescents is also played by parents, who could be motivated by educators and teachers to bring their children in special programs (Duma, E. 1997). The school and the family should have an absolutely necessary collaboration. The vocational guidance of young people is the responsibility of the family, the school and the doctors (Hasegawa, K, Okamoto, M, Hatsushikano, S, Shimoda, H, Ono, M, Watanabe, K. 2016).

The psychological accommodation of the patient towards his deformation is it more or less aesthetic, is a main stage, performed in a slow, difficult way, which also contains the patient's tolerance at all stages of treatment (Theologis AA, Sing DC, Cheken F, Diab M: 2017). The most effective treatment depends on the therapist's ability to compose a most appropriate therapeutic strategy and to carry out a precise intervention (Johnson J, Deshpande C 2000).

The problems of integration and socialization are quite common among both adolescents and children. It is known that there are functional levels of all psychic abilities. The degree of health intensifies these levels, as do overwork and overwork. The amplification of these levels is also given by the indifference of those in the environment in which the child or adolescent lives (Jones GT, Watson KD, Silman AJ, Symmons DPM, Macfarlane GJ 2003).

Adolescents who are not aware of the seriousness of the situation they will end up in due to activities that lead to spinal deficiencies, will realize when it will be difficult to integrate, to socialize and later even in professional orientation (Oakley, PA, Harrison, DD, Harrison, DE, Haas, JW. 2005). These deformities of the spine such as kyphosis, lordosis or scoliosis also occur due to negligence on the part of both the family and the schools (Cardon G., Balagué F. 2004). A favorable factor is the supervision of the

formation of the correct attitudes of the children, the duty of the physiotherapist as well as of the family, of the teachers being of careful follow-up of the vicious positions in order to exclude their transformation into deficiencies (Solberg, G. 2005).

The word "posture" means a position in which the whole body, or part of it, is held. A dynamic "multi-limb" organism, such as the human body, cannot be defined as having a single posture. He holds many positions, only rarely holding any of them for a very long time Ling, FP, Chevillotte, T, Leglise, A, Thompson, W, Bouthors, C, Le Huec, JC. 2018).

The basic and most important function of the skeletal and muscular system is movement and any static state in which the body understands itself is only part of this basic activity, because the posture "follows" the movement like a shadow (Scoliosis Research Society. 2021). Extending this idea, delimited the posture as a "temporary position" assumed by the body in preparation for the next position (Charlson, ME, Pompei P, Ales, KL, MacKenzie, CR, 1987). Therefore, the static position is not a "real" position, because we rarely have such a position. To discuss the broad essence of the term "posture", we need to address a number of factors that affect it (Roussouly, P, Pinheiro-Franco, JL. 2011).

Gradual accustoming of young people to the systematic practice of physical exercise and movement means modeling, awareness and active participation. Thus, physical education acquires a projective-formative character, which together with the other educational factors pursue the same goal - healthy and beautiful young people from a physical and intellectual point of view (Kujala UM, Taimela S, Viljanen T 1999).

Methods

Analyzing the curative-prophylactic orientation of modern medicine and the important role that physical exercise plays in prophylaxis and sanogenesis, we notice that the traditional link between medicine and prophylaxis is becoming closer.

The aim of the research paper is to focus on the value and benefits of physical therapy in preventing or remedying the suffering of the spine, especially in adolescents. At the same time, the main purpose also included the creation of personalized prophylaxis programs for adolescents who complain of spinal problems or for adolescents who want to prevent the occurrence of such problems.

The theoretical objective of the paper highlighted the relevant theoretical notions regarding the physiotherapeutic approach regarding adolescents

who are diagnosed with a certain type of spine-specific suffering or on adolescents who try to prevent these sufferings. The application objective shows the benefits that prophylaxis programs offer, and how they combat pain and the appearance of problems in the spine among adolescents.

The research tasks are formulated in close connection with the bibliographic research of the specialized literature in order to notice the important theoretical notions showing the general data about the deficiencies of the column based on specifying the causes, definition, pathophysiology and classification of patients with these physiological problems.

The formulation of the hypotheses is based in the context of this paper on the essential objectives proposed in the ideal of patient rehabilitation. The following hypotheses were made which proved to be true during the case study:

- Participation in kinetic programs of adolescents diagnosed with spinal deficiencies or adolescents who seek to avoid such problems, contributes to toning the muscles of the deficient segment, correcting secondary deficiencies, but also correcting and maintaining consciousness in a normal attitude, followed by extending the correct reflex for this position;
- The use of the means and modalities specific to physiotherapy, in an intervention program, aims at the normal development of the movements that favor the correct attitude;

An essential phase during the program is the use of specific exercises to balance the body and coordinate movements;

In the case study, the subjects were tested 3 times, namely, initially, intermediate and final, wanting to prove to the subjects that although they are healthy, they have important deficiencies that gradually accumulated, will certainly destroy the structure and function of the human body. . Various tests have been performed for the muscular, articular and kinetic means, and among the test systems. The Hettinger system has received special attention because it includes the following types of exercises:

- Testing joint mobility and balance;
- Muscle strength testing;
- Effort capacity testing (containing the Ruffier Dickson test);

Therefore, each client was subjected to several tests over a period of twelve months, and based on the results obtained after the tests, differentiated therapy programs were applied. During the recovery period, various series of exercises were used to rehabilitate adolescents suffering from spinal deficiencies. Medical exercise is a model based on normal body function, physiological movement and attitude.

Results

In table no. 1, when testing mobility and balance through the Hettiger system, there were positive developments, a fact highlighted by the value of the arithmetic mean, from the initial testing when the average of the points was 4 and at the end was 9.33, a fact also highlighted by graph number 1 shown below.

Table no. 1 Hettinger system - testing joint mobility and balance			
Cases	Initial testing	Intermediate testing	Final testing
Case 1	5	8	10
Case 2	4	6	10
Case 3	3	4	8
Average	4	6	9.33

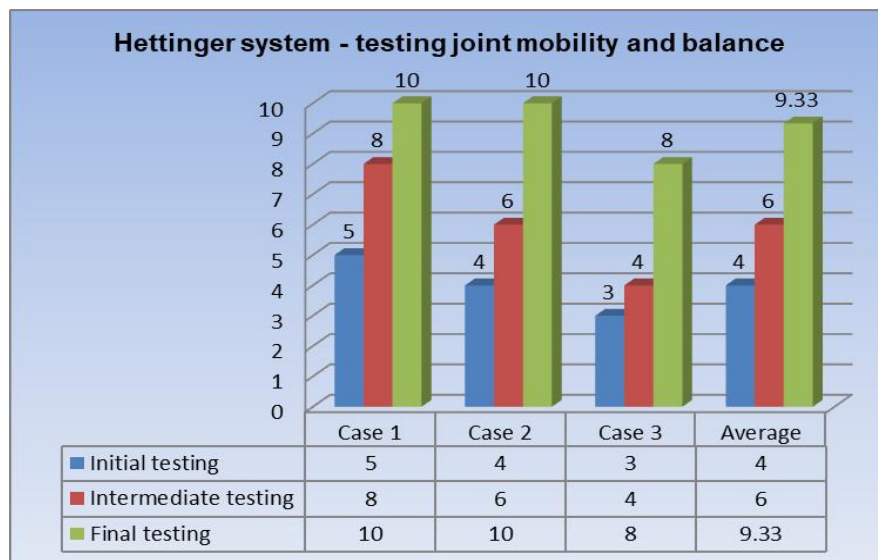


Chart 1 Testing joint mobility and balance - the evolution of subjects

In table no. 2 in the muscle strength test, through the Hettiger system, there were positive evolutions, fact highlighted by the value of the arithmetic mean, from the initial test when the average of the points

was 2.33, and at the end it was 5.33, a fact also highlighted by chart number 2 shown below.

Table no. 2 - Hettiger system - muscle strength test

Cases	Initial testing	Intermediate testing	Final testing
Case 1	4	6	7
Case 2	2	4	5
Case 3	1	3	4
Average	2.33	4.33	5.33

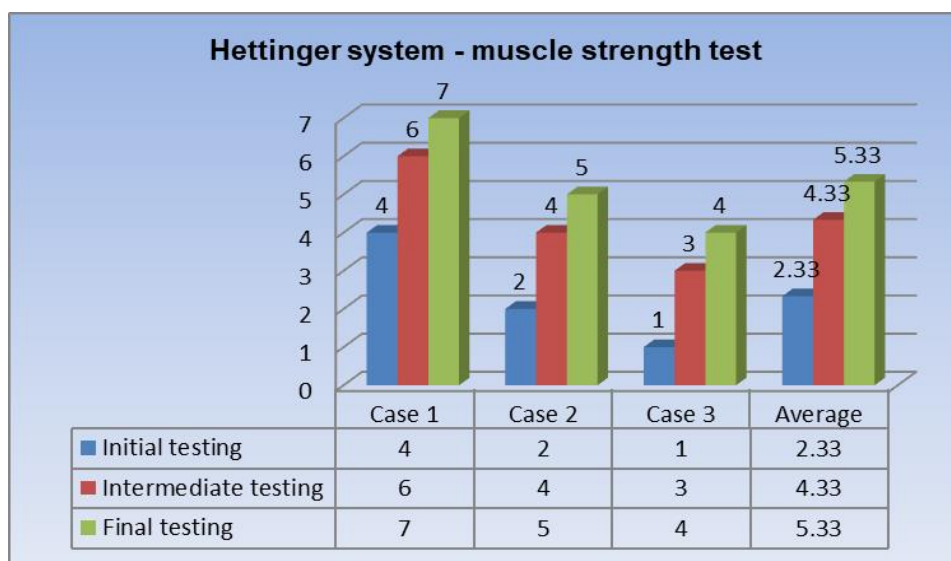


Chart 2 Muscle strength testing - the evolution of the subjects

In table no. 3 when testing the adaptation to effort of the subjects, but also of the anaerobic effort capacity, at the Ruffier-Dikson Index, there were positive evolutions, fact highlighted by the value of

the arithmetic mean, from the initial testing when the average of the points was 13.67 , and in the end it was 4.67, a fact highlighted by the chart number 3 presented below.

Table no. 3 - Index Ruffier-Dickson evolution

Cases	Initial testing	Intermediate testing	Final testing
Case 1	12	7	3
Case 2	13	10	5
Case 3	16	11	6
Average	13.67	9.33	4.67

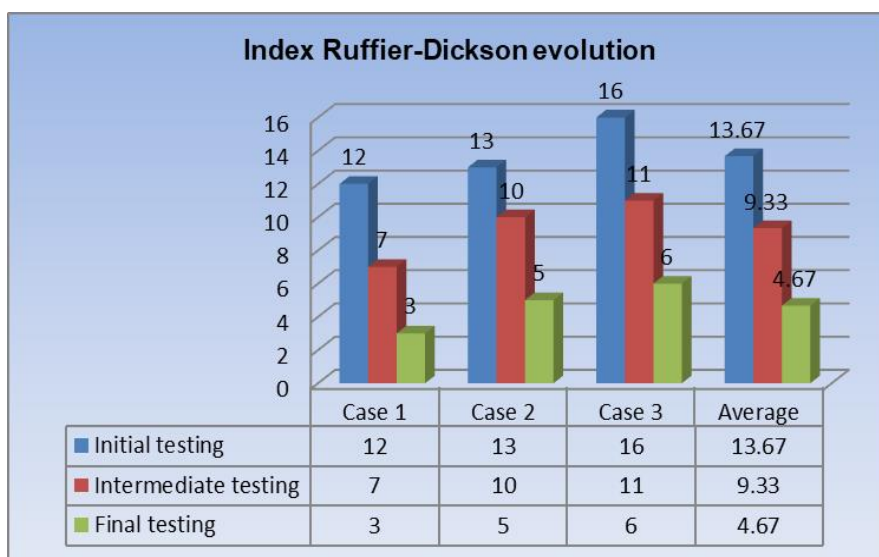


Chart 3 Ruffier Dickson test - evolution of subjects

The effects resulting from the use of prophylaxis programs were presented, in the dynamics of their evolution, starting with the values recorded at the first examination, with the entry of patients into treatment and from the other examinations.

Discussion

The quality of life of the 3 patients was improved by applying prophylaxis programs, comparative analysis of data from Hettinger system tests, and the Ruffier-Dickson Index, compared to the results, Oakley, PA, Harrison, DD, Harrison, DE, Haas, J.W. (2005), as well as with his research, Coe JD, Arlet V, Donaldson W, Berven S, Hanson DS, Mudiyan R, (2006) and last but not least with the Scoliosis Research Society: Adolescent idiopathic scoliosis. Scoliosis Research Society (2021), allows us to say that the programs applied to the three cases

studied, were fully effective and can be a useful material for future specialized research.

The evaluation methods used highlighted the results obtained by patients throughout the treatment, the evolution being higher in case 1, an average in case 2, and in case 3 a slower evolution. The results were better in case 1 which is male than in the other two cases which are female. Case 3 benefited from a slower evolution due to scoliosis which usually recovers over time.

The research aimed to demonstrate that adolescents are increasingly suffering from spinal deviations mainly due to their erroneous position that they maintain every day. At the same time, it has been established that physiotherapy programs are very important both for those who have acquired suffering in the spine and for those who do not want

such problems. The results confirmed all the benefits of prophylaxis.

In all 3 cases, it was observed that after applying the treatment the patients were able to mobilize their spine more easily, which allowed the gradual relaxation of the blocked areas and muscle toning could be done in good conditions, allowing the recovery of curves.

What helped a lot in the evolution of patients were the means used such as hydrokinetic therapy that involved swimming, it helped to raise awareness of the correct position, and practice other pleasant activities for the patient that helped in the same way.

Respiratory gymnastics was also used in all three patients, and they benefited from an improvement in respiratory capacity, which was affected by the deviations. Gymnastics has managed to maintain and improve the elasticity of the chest focused on the inspiratory muscles, namely rhomboid, large teeth, small pectorals, which has led to increased vital capacity.

Patients were advised to continue treatment in order to maintain the results obtained through movement in the form of prophylaxis or through various sports corresponding to the condition, as well as compliance with the postural hygiene program.

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