METHODS AND MEANS OF EARLY DETECTION AND IMPROVEMENT OF THE SCOLIOTIC ATTITUDE IN CHILDREN PLAYING FOOTBALL

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Abstract: In any sports discipline taking place in sports clubs, at the beginner level, harmonious physical development (general competence of physical education and sport) should be foreseen.

The study was conducted in collaboration with the Sportive Club ACADEMIC CRAIOVA, in partnership with Prokinetic/Prokinetic Junior (medical recovery center) and it was called "We care about the health of our children", held between February 2019 and May 2019.

The project provided three phases:

a. evaluation of children in order to detect deficient attitudes;

b. developing and applying recovery programs for each type of attitude/disability.

c. the final assessment of children in order to ascertain the effects of programs produced on deficient attitudes.

The present research only addresses the group of children who had functional scoliosis. Children included in the program, 15 boys and girls, had ages between 5-14 years.

The formulated hypothesis was to check whether physical therapy programs developed and applied to children starting a sport will have positive effects in terms of correcting vicious body alignment and sport performance.

Following the application of the recovery programs for the vicious attitude, the final evaluation emerged positive results considering anterior translation and angulation parameters after individual observation, but when we emerged the results of all our subjects, the outcome was slight different and it was not registered at a threshold of $p < 0.05$. With this out-turn in sight, we consider that our study should be more developed in the future, taking in consideration the number of subject and the time dedicated for the physical therapy program.

In conclusion, even though sportive activities should mend body alignment and develop muscle tonus, there is a possibility that children in young age can develop a postural deficiency that should be evaluated in time and corrected with physical therapy programs.

Keywords: *sports discipline, physical therapy programs, children, football.*

Introduction

One of the general competences of physical education and sport is to "capitalize on psycho-motor acquisitions in maintaining health and harmonious physical development"[1], competence that should not be omitted even at the beginning of the sport of children.

„The main factors that have an impact on the health condition and on diseases are the kinds of behaviour that describe life style: balanced eating, practising physical education, adopting other preventing kinds of behaviour (vaccines, periodic medical exminations, screenings), respecting sleeping hours." [2]

In the teaching of any sport discipline, at beginner level, a harmonious physical development and the formation of a general motor capacity should be foreseen then, gradually, the formation of the specific capacity of the discipline.

„A correct attitude in the body signifies the physical and psychological equilibrium as a result of a normal and harmonious development. Physical exercises effects are seen in the development of muscle types with a dynamic and static activity in forming and maintaining the correct attitude of the body." [3]

The pediatrician can play an important role in determining whether a child with a health condition should participate in certain sports by assessing the child's health status, suggesting appropriate equipment or modifications of sports to decrease the risk of injury, and educating the athlete and parents on the risks of injury as they relate to the child's condition. [4]

One of the main factors that could influence the development of a postural deficiency would be the early detection. In most cases, and from our experiences, more than 70% of the cases discover their postural deficiencies in later stages. [5]

First and foremost, our aim is to evaluate children who are starting to play a sporting game, in order to detect deficient attitudes early and to take measures to improve or even prevent them, considering it to be the first step for children in playing a sport.

„The Sporting games have their origins in emulation exercises (in general) and movement games (especially) receiving a pronounced character sporting print.". [6]

U. A. and D. M. (2009) performed, on a group of 19 athletes aged 14-15 years, who practiced football for at least 4 years, a similar finding study, whose purpose it was of discovering, by analysing the medical and sportive notice files of the investigated athletes, the presence of any physical deficiency. Their conclusion was: from all the 19 analyzed athelets only one had no discovered physical deficitary attitude and from among the rest 18 athelets 4 have a cyphosis attitude, 6 have a kipho-lordosis attitude, 6 have kypho – scoliosis sketches (combined deviations) and there are 2 cases of kypho-lordosis ½ degree which is a very concerning situation. [7]

In childhood and adolescence, congenital structural changes are encountered, which, in addition to pain, produce paravertebral muscle contracts, static disorders of the spinal column and articular sprains..

According to the latest studies, the incidence of scoliosis in children is very high and affects more than 70% of their population. In addition to this pathology, its compensations can be encountered, which can affect both the upper and lower trains, such as kyphosis, hyperlordosis, knee var, knee valg, or platfus.

The research premises

Incorrect positions in school banks, asymmetrical behavior of backpacks, hereditary factors and other causes lead to the installation of deficient attitudes, so that elaborated and applied programs could also play a role in preventing the installation of deficient attitudes.

The leisure activities are usually summarized in the use of IT means, to the detriment of outdoor activities, or long-term activities such as playing a sport. In order to improve the concept of sporting activity in conjunction with forms of treatment and approaches in the field of physical therapy, we aimed to introduce some objectives that will intervene on the deficient postural attitudes.

By their content, the physical exercises that are meant to prevent vicious attitudes instalation, represent static and dynamic actions that enclose in the general demands (anatomic, biomechanic, physiological, pedagogical and hyginic) of practising physical exercises. The moment deficitary attitudes are produced, the effect of these exercises participate into the reestablishing of the ballance and constant relation between the segments and the body, between them and the environment. [8]

Physical deficiencies are characterized by pathological changes that occur primarily in the shape and structure of the body and are manifested by slowing growth or overgrowth, by non-harmonious or disproportionate development, by deviations, deformations or other morphological defects.[9]

Starting from these premises, we carried out the evaluation of some children, after which we developed and applied recovery programs, within a sports club. The programs were implemented by the volunteers participating in this project that were guided by professional physical therapist.

Material and Methods

The pedagogical experiment was applied between February 20019 - May 2019, the subjects tested being 15 children, boys and girls. This experiment started as a result of the collaboration between the ACADEMIC CRAIOVA Sports Club (football sports club), Prokinetic Junior - Medical Recovery and the Faculty of Physical Education and Sport in Craiova (through students - volunteers), within the Project "We care about the health of our children. ".

The experimental programs applied were elaborated for the improvement and prevention of deficient attitudes, on groups of subjects with the same type of pathology, the present research approaching only the one for the group of subjects that had detected, as pathology, scoliotic atitude.

Assumption

The hypothesis was to verify that the programs developed and applied to children who start practicing in a sport, will have positive effects on the correct body attitude.

Organization and conduct of research

The subjects under investigation were the athletes of the Academic Sports Club Craiova, beginner athletes, boys and girls, who started playing football about 2 to 8 months, most of them not being involved in official competitions. Athletes are 5-14 years old and are trained by U-D A. and D. M.

Even if the upper age limit - 14 years, it seems a great age to be a beginner, within the club mentioned in the present research, to this age category (11-14 years), the girls who formed the football teams recently fall. U12-U14. However,

in the present study, the athletes were not organized by age or sex groups but by groups with the same type of pathology, presenting in the present research, the programs and the results of their application, only on the group of subjects with the scoliotic attitude pathology, this being detected in most subjects.

Research stages

- studying the specialized literature in the field;
- the conclusion of the partnership between the three parties (January 2019);
- setting the purpose and formulating the working hypothesis (January 2019);
- establishing the subjects (February 2019);
- evaluation of the subjects in order to detect the deficient attitudes (February 2019);
- organization of subjects in groups with the same type of pathology;
- elaboration and implementation of the recovery programs for the pathology of the scoliotic attitude during the training sessions (February 2019 - May 2019);
- introducing and preparing the children in the specific discipline, without applying the recovery programs (May 2019 - October 2019), with a total break, according to the structure of the school year that we respect, at this age level, between June 30 - August 6;
- the final evaluation of the children in order to ascertain the effects of the applied programs and of the football practice on the improvement of the scoliotic attitudes (October 2019);
- interpretation and processing of the obtained results (October 2019);
- issuing conclusions and proposals (October 2019).

The pedagogical experiment, itself, was applied during the period February-May 2019 and supposed, as at two training sessions / week, to apply the recovery programs developed by the specialists of the Prokinetic Junior recovery center who trained the volunteers on the correct application modalities of them and the points to be corrected.

The training of the athletes in the research, on the whole was done through 3 training sessions / week of 60 minutes, to two of them applying the recovery program, in the structure of these lessons, without major changes:

- the introductory part - increased in duration, the first 15 minutes being allocated to the recovery program and another 15 to reach the objectives of gradual growth of the great functions of the body.
- in the thematic part, a topic of lesson specific to football was approached and one of the basic motor skills or basic motor qualities approached through movement games, given the level of beginners, of the subjects, even if they were on different age groups;
- the closing part aimed at gradually decreasing the values of heart rate and respiratory rate near the basal level, according to the age particularities of the subjects.

Exercise number	Exercise number	Dosage	METHOD
1	**From standing** holding the cane down, with the ends grasped: raising the previous stick, carrying the cane to the back, casting on one leg, returning.	20 repetitions	TREATMENT METHOD FOR SCOLIOTIC ATTITUDES
2.	**From standing** with slightly bent knees - the stick at the back, with the elbow grasped: turning to the right and to the left	10 x to the right 10 x to the left	
3	**From standing** with the stick to the back of the elbow grasped: walking on the tips	2 lengths	
4	**Posture from orthostatism**: from standing with the tips at an angle of 30 degrees, the arms near the body, the palms anteriorly, the chin slightly at the chest, the cervical posteriorly oriented, the knees bent [correction genu varum – in closing position / correction genu valgum - in opening position] - maintained for 60 seconds **CORRECTION** each deficiency: head, shoulder, chest, hip, knee, leg. **• inspiration (rest) correction on expiration**.	60 sec	

Tabel nr.1. Presentation of the exercises within the program of recovery of deficient positions

Results

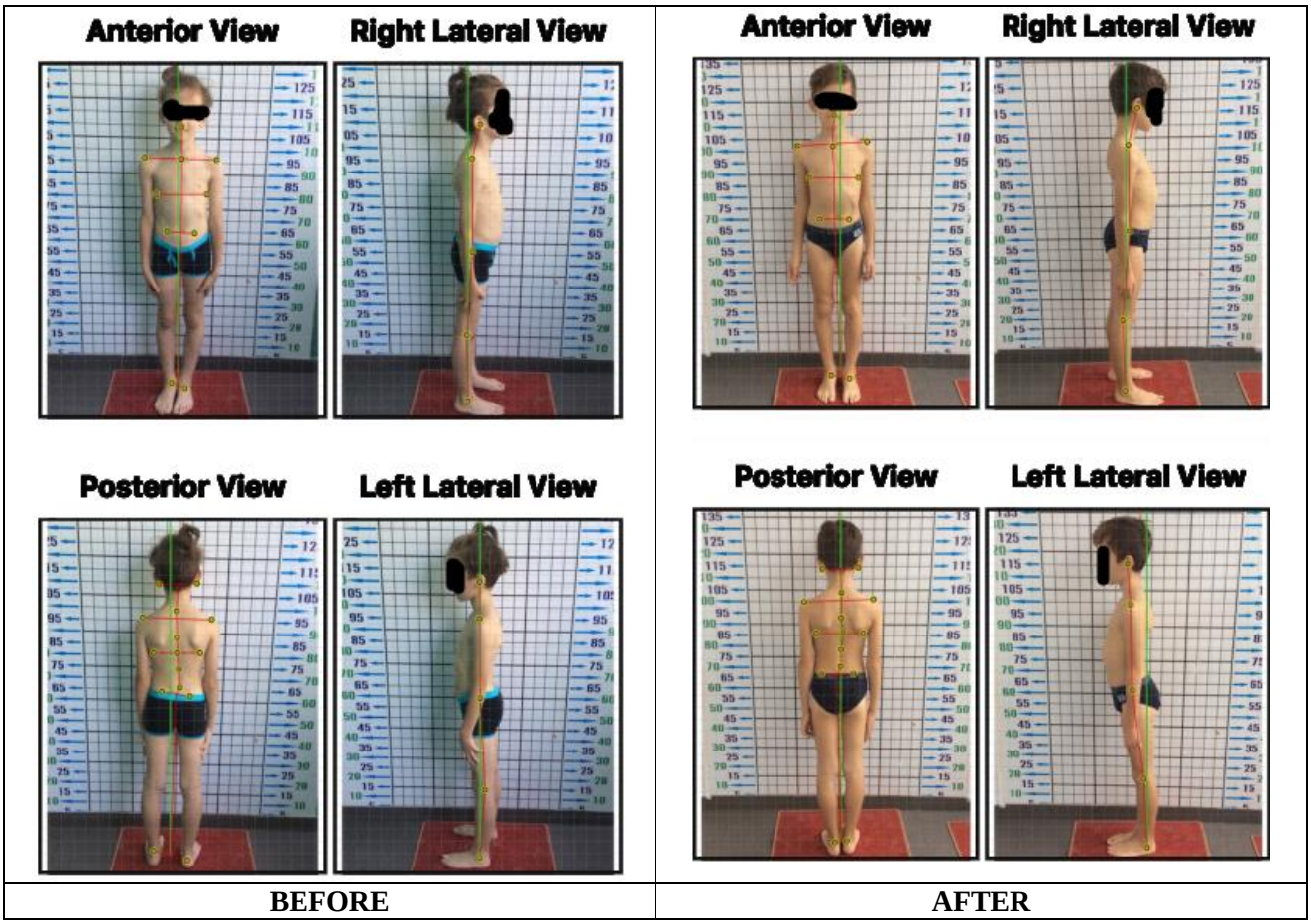
15 children were involved in this project, being evaluated before the application of the exercise program with the help of the postural application Posture Screen and re-evaluated at the end of the project. The Wilcoxan test was used to observe the differences.

The results of the study showed improvements in the position of those involved in the situation in which they were followed individually, but their average as a group, did not show a statistically significant difference, this not reaching a threshold of $p < 0.05$ (table no. 2).

	Before n: 15		After n: 15		p*
	Mean ± SD	Median (IQR 25/75)	Mean ± SD	Median (IQR 25/75)	
Anterior Translation	13,8±4,1	13 (11/15,5)	16,5±9,2	17 (10/21)	0,209
Anterior Angulation	7,1±4,2	6 (4/8,5)	6,8±2,7	6 (5/9)	0,825
Posterior Translation	30,9±12,6	33 (24/38)	33,3±17,0	27 (20/41,5)	0,776
Posterior Angulation	34,5±13,4	37 (22,5/46)	34,9±15,6	38 (25/43)	0,754

Tabel nr.2. Comparative results before and after the exercise program

The results followed the evaluation of the subjects from the anterior and posterior plane performed with the help of the Posture Screen application, having as the parameters the translation and the angulation as can be seen in figure 1.



BEFORE **AFTER**

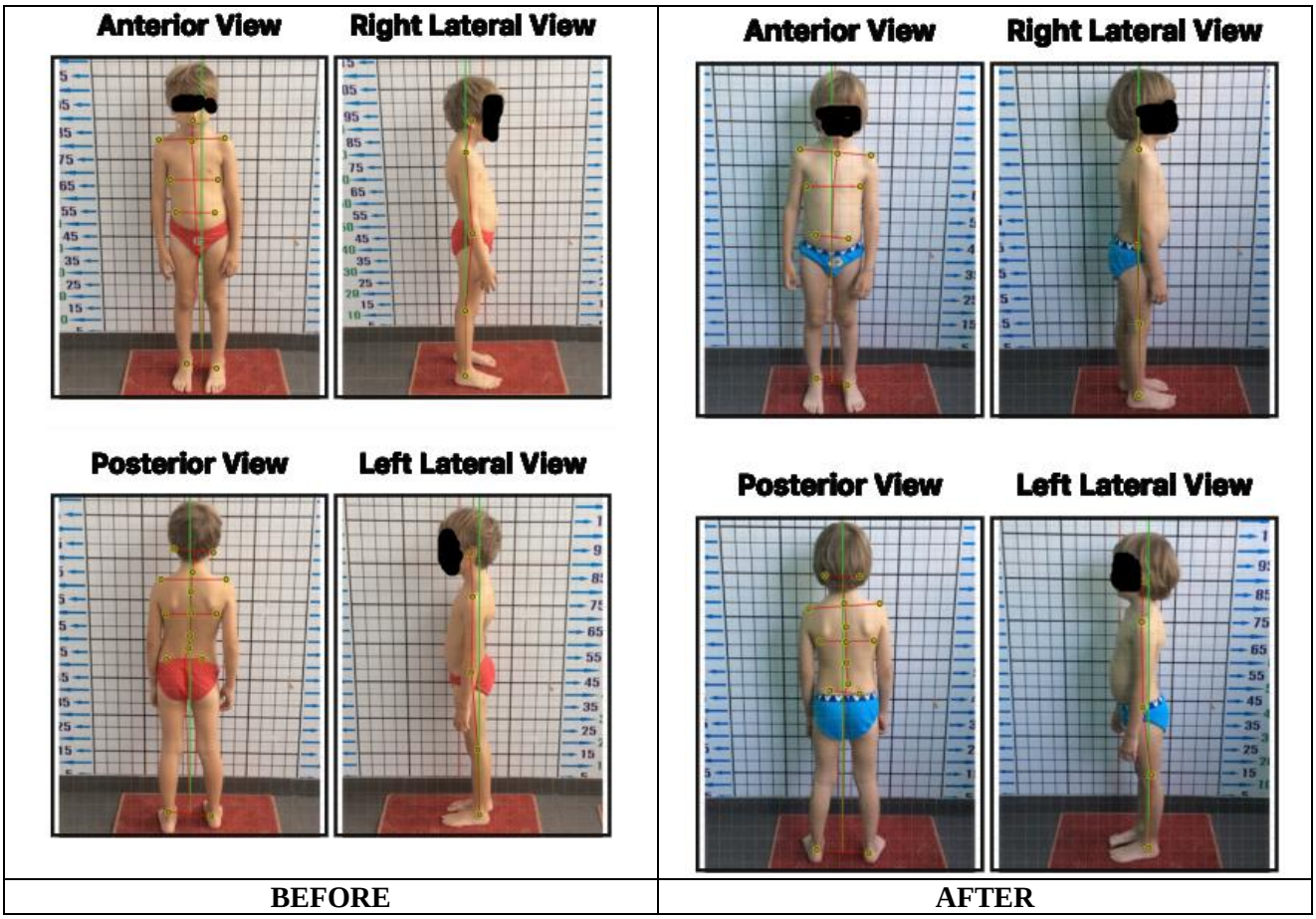


Figure 1: Before and after rehabilitation program posture evaluation

Discussions

The main objective of this study was to investigate the benefits of introducing a kinetic program within beginner groups within sports clubs and beyond. The benefits of early evaluations regarding the posture of a future performance in athletes can be a starting point for a correct evolution of the posture and its body as well as a major influence of its sports quality.

According to the study by Wind WM, Schwend RM and Larson J called "Participation in sports is important for the physical and emotional health of the physically challenged child", sports can improve strength, endurance, and cardiopulmonary fitness while providing companionship, a sense of achievement, and heightened self-esteem. [10]

However, any individual can have a genetic background that contains predispositions to various physical deficiencies, which can be discovered in a timely manner through assessments and recommendations of methods and techniques specific to the area of physical therapy. These methods can prevent the development of deficiencies and even improve them if they exist. Adding the sport factor, we believe that the quality of life of the younger generations in development can be improved.

Conclusions

In conclusion, the exercise program introduced to the training program, even if it did not present statistically significant results, can support and improve the posture of the subjects, this being observed by the individual analysis of the results of the subjects. (Table no. 2)

For the future, we intend to apply the program to a larger number of participants and even an intensification of the program for the correction of vicious positions.

We consider it useful to introduce physiotherapists to beginner groups and not only within sports clubs, which could additionally contribute to the goal of harmonious physical development and to the prevention or amelioration of deficient attitudes.

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