

## APPLICATION OF SPORT ELEMENTS IN GENERAL KINESITHERAPEUTIC PROGRAM IN CHILDREN WITH SPINAL MUSCULAR ATROPHY

*(Preliminary communication)*

**Slava Kostadinova - Petrova**  
*SODTSSII, Sofia, Bulgaria*

### **Abstract**

*The aim of this notice is to present the possibilities of the application of various sports elements and their effectiveness in the overall kinesitherapeutic program for children with spinal muscular atrophy. A group of 8 patients - 3 girls and 5 boys, mean age 5.2g, diagnosed with Spinal Muscular Atrophy Type 3 with walk alone ability preserved was observed in SODTSSII for the period 2009 – 2012. The treatment course consisted of 3 times treatment per week. In regard with the existing muscle imbalance and the degree of involvement of the cardiovascular system and the respiratory system of the disease the following elements of different sports (swimming, tennis, volleyball, darts, etc.) were intentionally applied. To establish the effectiveness of applying sports elements in the kinesitherapeutic program of children with spinal muscular atrophy, we used the following parameters: chest mobility; test Krauss - Weber - static part; manual muscle testing; subjective assessment. The results from monitoring the parameters and the final evaluation show permanently established constant values of the key metrics. In conclusion, we believe that the use of sports elements in the general kinesitherapeutic program for children with SMA may and should become part of the routine practice.*

**Keywords:** *patients, girls, boys, treatment course, muscle imbalance, swimming, tennis, volleyball, darts, chest mobility, Test Krauss-Weber-static part, manual muscle testing, subjective assessment, dosage of workload*

The aim of this notice is to present the possibilities of the application of various sports elements and their effectiveness in the overall kinesitherapeutic program for children with spinal muscular atrophy.

A group of 8 patients - 3 girls and 5 boys, median age 5.2g, diagnosed with Spinal Muscular Atrophy Type 3 with walk alone ability preserved was observed in SODTSSII for the period 2009 – 2012. The treatment course consisted of 3 times treatment per week.

The basic principles which we kept in the application of various elements of the sport kinesitherapeutic program are individual approach, gradual and cumulative effect, which take into account the deteriorating adaptation, recreational opportunities and specific mental characteristics of the children.

In regard to the existing muscle imbalance and the degree of involvement of the cardiovascular system and the respiratory system of the disease the following elements of different sports (swimming, tennis, volleyball, darts, etc.) were intentionally applied.

1. For keeping the mobility of the chest and the state of the respiratory system and cardiovascular

system: elements of swimming, rowing and gymnastics.

2. For keeping the power and endurance of the various muscle groups: elements of tennis, hand-ball, gymnastics

3. For keeping equilibrium and coordination skills - fencing, basketball, volleyball

4. For improving the psycho-emotional tonus - badminton, golf, darts

Contraindicated are elements related to sports speed, jumping, running, and other related sports such as football, weightlifting, boxing, wrestling and judo view of the increased demands on the body of a child with SMA.

To establish the effectiveness of applying sports elements in the kinesitherapeutic program of children with spinal muscular atrophy, we used/observed the following parameters:

- Chest Mobility - performed with centimeter in the final stages of inspiration and expiration (average values of the measured approximately 3.5 cm).

- Test Krauss - Weber - static part. - for determining the power of the his back gluteal and abdominal muscles.

Carry out at the beginning and end of monitored period. The results are averaged for each patient in the test position - lying and occipital leg, measured in seconds (average toughness the observed in patients 10 seconds).

- Manual muscle testing - for large muscle groups (back, abdominal and gluteal and extensors of the knee) if initial assessment 3.

- Subjective assessment - In this category of diseases that assessment is of particular relevance and importance and so is feeling the sick child to his(the child's) condition and report opportunities for their daily activities, according to his individual judgment or that of his parents.

As these are permanently disabling disease we consider mean these methodological guidelines for the use of elements of sport kinesitherapeutic program:

- Careful and accurate dosage of workload - to suit individual functionality and based on the state of the respiratory, cardio - vascular and musculo - skeletal system.

- Variety of applied resources - depending on the characteristics of the observed contingent patients whose concentrated attention on the activity is difficult to be kept for a long time, so that the elements of the sport in the procedure are applied to individual interests and skills of the child.

The results from monitoring the parameters and the final evaluation show permanently established constant values of the key metrics.

1. Chest mobility – permanently preserved values/ constant values in an observation of 5 children , slight decrease in values/slightly reduced values concerning 2 children (0.5 cm) and deteriorated values concerning 1 child (1.5 cm.)

2. Chest, abdominal and gluteal muscle endurance/ resilience – constant values in an observation of 6 children, slightly reduced values concerning 2 children (2 sec.)

3. MMT - We did not find a change/variance of the indication during the observation of all 8 children

4. Subjective assessment/valuation – All patients

felt the positive side of the treatment connected with their ability to react easier and faster ? in different situations

The data gathered from the research/observation gave us the ground to make the following

## CONCLUSIONS

1. Application of various sport elements as part of kinesitherapeutic program in children with spinal muscular atrophy have a positive effect on the damaged organs.

2. It influences positively children with spinal muscular atrophy. Their health condition improves dramatically and this is shown in all stages of the disease

3. It improves the psychological condition of the patients.

In conclusion, we believe that the use of sports elements in the general kinesitherapeutic program for children with SMA may and must become part of the routine practice.

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Correspondence:

Slava Kostadinova - Petrova

SODTSSII, Sofia,

26-28 Slatinska str. z.k. Slatina, 1000 Sofia, Bulgaria

E-mail: hristova.slava@gmail.com