

## THE RESULTS OF KINESIOTAPING IN PATIENTS WITH SCOLIOSIS

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*The kinesiotaping method has put into practice on the Rehabilitation and Sport medicine chair of the RNIMU named by N.I. Pirogov which is situated in the Medical Rehabilitation Department of RDKB. This method showed high treatment efficacy and results were stable and continuous. Kinesiotaping isn't the main treatment method of scoliosis, but its good efficacy in reaching particular rehabilitation goals, potentiation of some methods of treatment of scoliosis, pain elimination and so on, support the idea to invent this method in the rehabilitation process circle in case of such difficult disease as scoliosis.*

***Keywords:*** *rehabilitation; kinesiotaping; disorder; movement.*

### Relevance

At the Department of Rehabilitation and Sports Medicine of RSMU the work on the practical application of kinesiotaping method in rehabilitation of patients with orthopedic and neurological disorders was carried out since March 2013 [6, 7, 9]. Variations of taping during scoliosis are recommended on numerous training courses of kinesiotaping were abandoned because in our opinion, these approaches can not radically change the course of the underlying disease. Searching for information on therapeutic taping during scoliosis has not given any results related to developed and validated clinical approaches. And since, in our practice, there are methods, which often lead to complete healing or significant positive dynamics in this pathology, the taping was regarded as an auxiliary procedure, which removes with high-impact any negative effects of comprehensive rehabilitation. This was especially true for the application of corseting methods by Chenot. According to our data (analysis of 10 years of experience) before the application of taping the pain syndrome in the initial phase of use of

the corset lasted from 1 to 1.5 months. In many cases characterized by significant heaviness that sometimes led to the abandonment of the application or violation of corseting regime. With the use of taping the longest term of pain syndrome was 11 days. In other cases, taping acted as a method that significantly increases the effectiveness of other rehabilitation techniques. The article will show versatile activation of muscle groups that leads to such positive results.

### **Goal of research**

Improving the efficiency of rehabilitation measures at a scoliosis based on the use of kinesiotaping.

### **Materials and Methods**

The objects of research were patients from different departments of Russian children's clinical hospital (RDKB), outpatients between the ages of 9 to 25 years with a diagnosis of scoliosis (Table. 1). Here we are deliberately talking about quite adult patients, as the results of corseting after the end of the growth phase were also very positive.

*Table 1.*

**List of main diagnoses**

	Diseases, syndromes, disturbances
1	Scoliosis
2	Kyphosis (gibbus)

Clinical orthopedic examination was conducted by observing patients, with analysis of spinal pain syndrome intensity and duration, the definition of range of motion in the joint (s), the analysis of dynamics of different pathological symptoms, disorders, analysis of stabilometric studies.

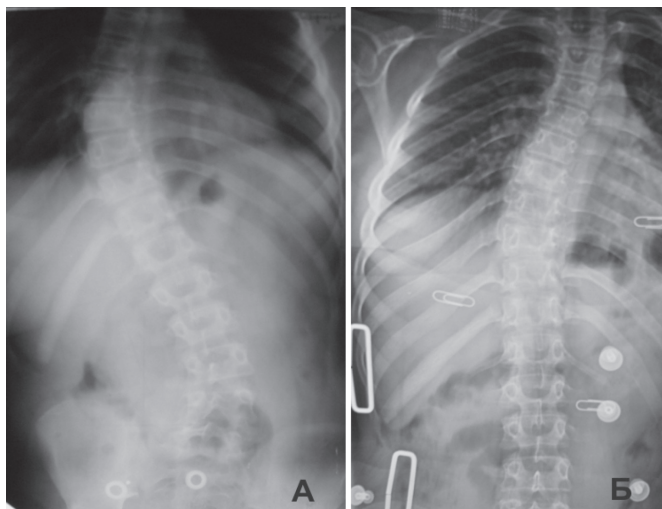
### **Methods of work**

We used 2 types of tapes [6, 7, 9]. Type III tapes «Bio Balance Tape» (Korea) and type IV «RockTape» (USA). Initially, the technical perfor-

mance of kinesiotaping method was carried out not only in accordance with the classical theoretical approaches, but often, the main task was the elimination of pain syndrome while corseting by the methods of Chenot, instead of treatment of the underlying disease by taping. Taping was conducted by a course depending on the length of hospitalization of the patient or was taken the period of application of taping with the duration 1 month with an interval between tapes overlay in 4–7 days. We will put emphasis on the fact that many patients did not use re-taping in 4 days [7.9], as even one taping session per week was enough to provide a pronounced this or that anticipated result.

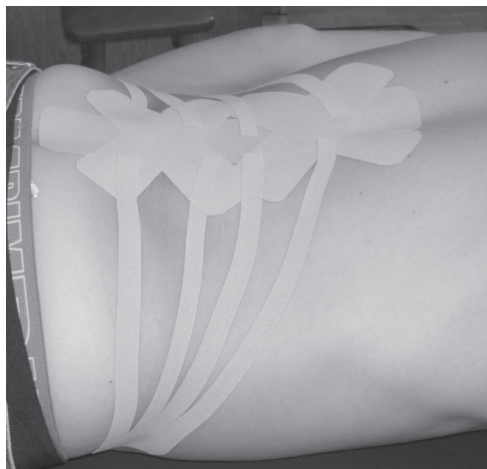
### **Results of research**

Example №1. Patient P., age 13 years. The diagnosis: ICP, spastic diplegia. Combined scoliosis III degree. Complaints: Severe pain in the lower chest on the right of mid-clavicular and underarm line, and in the lumbar spine. On the pic. 1 (A – Without corset, B – in corset) it is shown the comparative radiography of the primary corseting by the methods of Chenot (first week of application, the interval between shots 5 min.).



**Pic. 1.** Radiography of the dorsal spine, patient P.

As already mentioned, such a significant correction is almost always accompanied by pain syndrome, which in this case greatly limited other rehabilitation aimed at treatment of both ICP and scoliosis. The taping was conducted (Pic. 2).



**Pic. 2.** Type of taping

Taping technique: Relaxed correction (tension – 30%) at the lumbar spine with limfotaping (tension – 5%) to the inguinal lymph nodes. The result of the initial taping: Complete pain relief in the area of the lumbar spine, great decrease of pain syndrome in the lower chest in 24 hours. Complete pain relief of pain syndrome in the chest after 38 hours. During the rest period after the initial taping there was no pain syndrome both at rest and during exercise. Taping was repeatedly conducted after 7 days on the basis of the appearance of weak initial displays of pain syndrome. On the presented results of stabilometric research (table 2, pic. 3), conducted before taping, and a day after the taping, it is marked positive dynamics associated with the centralization of the patient, reduction rate «~ X» from 14,9 to 4,36, strengthening stability and increasing support ability: decrease «V» from 9,28 to 8,46; «S» – from 92,0 to 76,9; increase in the stability index, reducing the energy index.

Table 2.

**The results of stabilometric research**

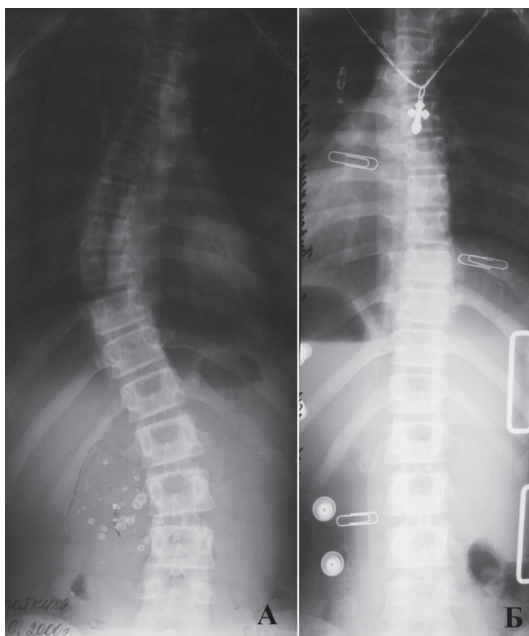
	The average position of the total center of pressure in the frontal plane	The average position of the total center of pressure in sagittal plane	The standard deviation of the total center of pressure in the frontal plane	The standard deviation of the total center of pressure in sagittal plane	Speed of the total center of pressure	Statokineziogram area	Stability index	Energy index
	~ X	~ Y	Max X	Max Y	V	S	Si	Ei
AVGO	14,9	54,6	14,6	15	9,28	92	43,1	4,09
AVGO, 24 hours after the first session of taping	4,36	54,4	6,06	15,3	8,46	76,9	47,3	3,27

Before taping

24 hours after taping

This example is shown first specifically to demonstrate the severity of the whole clinical picture, as in the present case diagnosis and treatment of scoliosis were greatly complicated by the major diagnosis – ICP. But, despite the combination of two heavy pathologies taping gave a good positive result that was immediately noted by experts, who performed other methods of therapeutic exercises, the increase in motor pattern of the patient, emergence of abilities to perform new exercises, introduction to rehabilitation new options for performing procedures, more complex, that has not been implemented previously, and others.

Example №2. Patient K., age 15 years. Diagnosis: S-shaped thoracolumbar scoliosis of the I–II degree. Complaints: Distinct migrating pain in the lumbar region without precise localization, intensifying at different loads. On the pic. 3 (A – Without corset, B – in corset) it is shown the comparative radiography of the primary corseting by the methods of Chenot (first week of application, the interval between shots 2 min.).



**Pic. 3.** Radiography of the dorsal spine, patient K.

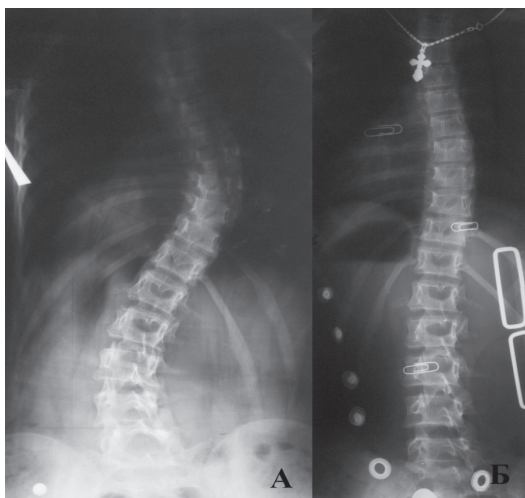
Considering complaints of the patient, taping was conducted (Pic. 4).



**Pic. 4.** Type of taping

Taping technique: Relaxed correction (tension – 30%) at the lumbar spine with limfotaping (tension – 5%) to the inguinal lymph nodes. The result of the initial taping: Complete pain relief in the area of the lumbar spine in three days. By the end of the first day marked decrease in pain syndrome, the patient noted that «...gait is greatly relieved and became better». The intensification and complication in the use of Vojta therapy in the treatment of the disease, that was impossible in conditions of pain syndrome. Taping was repeatedly conducted after 4 days. Totally it was performed 4 taping sessions with an interval of 4 days, after which the patient did not complain about pain syndrome. Observation of the patient was conducted over 2 years.

Example №3. patient A., age 13 years. Diagnosis: S-shaped thoracolumbar scoliosis of the III degree. Complaints: After beginning of use of the Chenot corset the pain in the middle and lower thoracic were with varying intensity, worse in the evening, depending on the various body position. On the pic. 5 (A – without corset, Б – in corset) it is shown the comparative radiography of the primary corseting by the methods of Chenot (first week of application, the interval between shots 2 min.).



**Pic. 5.** Radiography of the dorsal spine, patient A.

Considering complaints of the patient, taping was conducted (Pic. 6).



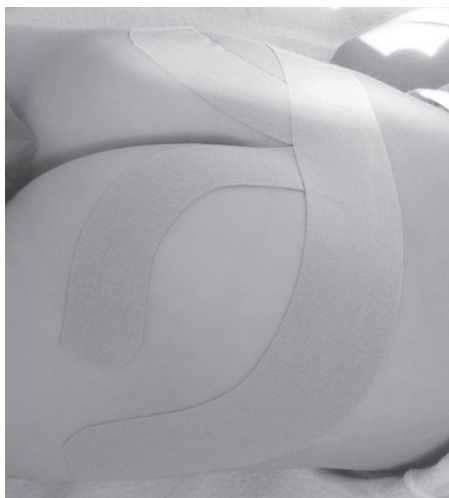
**Pic. 6.** Type of taping

Taping technique: Relaxed correction (tension – 20%) on the lower and middle part of the thoracic spine with lymph taping (tension – 5%) to the inguinal lymph nodes. The result of the initial taping: Complete pain relief in the area of the lumbar spine in 6 days. By the end of the first day marked decrease in pain syndrome, the patient noted that «... the possibility of any movement returned». Taping was repeatedly conducted after 5 days. After the first session of taping became available the intensification and complication in the use of Vojta therapy in the treatment of the disease, that was impossible in conditions of pain syndrome. Totally it was performed 4 taping sessions with an interval of 5–6 days, after which the patient did not complain about pain syndrome. Observation of the patient was conducted over 3 years.

Example №4. Patient 3., age 9 years. Diagnosis: dysplastic thoracic dextroscoliosis II-III degree. Complaints: The shoulders are on different levels, skewed hands, sticking out bladebones. Bladebones on different levels. Round shoulders. From the checkup: Trendelenburg's symptom «+» from 2 sides: strongly expressed on the right: lack of capacity to hold the pelvis; from the left – without loss of the pelvis,

but with a marked departure from the vertical axis of the base lower limb, during injection into axis – complete loss of balance.

From anamnesis: Corseting by Chenot was not conducted. Considering the expressed problems with functioning of muscles of the pelvic girdle, that greatly hampered to conduct intensive course of therapy by Vojta method, methods of teaching the correct gait and particularly carrying out methods of proprioceptive correctors, was carried out taping of the pelvic muscles (Pic. 7)



**Pic. 7.** Taping of the pelvic muscles

Taping technique: First tape is mainly aimed at stimulating m.gluteus maximus applied with a tension 50%, second tape – stimulation mm.glutei med. et min. with a tension 35%. After the first taping session – full implementation of all tasks in teaching the proper gait with the possibility of complication and marked increase in stability in an upright position in a rack on one leg, due to the inclusion to the operation of the muscles “cuffs of the hip joint”. When working by using Vojta therapy: compliance with complicated tasks, especially in the III position, which are the most operating. The appearance of the firm sta-

bility in work by the method of proprioceptive correctors. During the ongoing rehabilitation course (15 sessions every day) such taping was conducted 2 additional times. The result of the course of therapy: The decrease of shoulders pronation, marked reduction of protrusion of the bladebone angles, equalize the level of the bladebones, complete disappearance of the stoop. It is impossible not to note the patient's recall that there is the ability to «... properly hold a back straight».

This article presents four particular examples that show a lot of the results obtained and the effectiveness of methodology. We once again accentuate on the fact that we do not consider that kinesiotaping is the method of scoliosis treatment, but its opportunities associated with potentiation effectiveness of various methods of physical therapy, the inclusion of techniques to the rehabilitation methods which were previously difficult or impracticable, the possibility of complication of the conducted rehabilitation led to the writing of the article with the desire to share with colleagues a good additional method of regenerative therapy [6, 7, 9].

At the very beginning of our practice the most important one was the fact that the rapid elimination of pain syndrome, especially in the practice of corseting by Chenot, provides early inclusion of the complex of rehabilitation therapy in the volume that maximum for the 1–2 months led to the reliable consolidation of the results of corseting. And this is a very significant fact of the proposed therapeutic approach. Having confirmed results of the use of taping in the rehabilitation of other diseases [6, 7, 9], directed primarily at correcting certain postural disorders this work has provided the possibility of complication of the conducted complex of therapeutic exercises, when taping was carried out in order to stimulate specific muscle groups or very specific muscles. By the results of the proposed approach it should be included the high efficiency of taping in the treatment of headaches associated with spinal curvatures in the cervical and upper thoracic spine. Improving state of health of the patient, reduction of headaches also led to an increase in the efficiency of primary therapy.

### **Discussion**

Practical application of kinesiotaping in medical practice, according to classical concepts was conducted at the beginning of our practice. However, we did not notice the efficiency and far less the abilities of taping techniques to impact on scoliosis. But having received the initial results in the form of the above results, we decided to change the very scheme of application, putting taping into the category of not the methods of scoliosis treatment, but as the impact, aimed at supporting and strengthening of other rehabilitation techniques. With the success removing the adverse effects of different therapies, pain syndromes, directionally stimulating muscle activity, we have received positive results. According to our data it is much more effective outlook on kinesiotaping in scoliosis, because today we can not imagine the work without this support, which is enable to intensify other restorative treatment.

### **Conclusions**

- 1) Method of kinesiotaping is effective in the treatment of postural disorder and scoliosis.
- 2) Method of kinesiotaping complements the rehabilitation therapy and is used to potentiate the different methods of therapeutic exercise.
- 3) Kinesiotaping is characterized by diversity of practical approaches in the treatment of scoliosis, which provides impact on the different links of the pathological process, its complications, improving certain tasks of posturological regulation.
- 4) Method of kinesiotaping is a science that needs further research, the development of practical approaches, creation of an information and scientific base dedicated to work with specific pathologies, their complications, for training and introduction into permanent clinical practice.

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