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**APPLICATION OF SCHROTH THERAPY IN ADULTS WITH IDIOPATHIC SCOLIOSIS AND KYPHOSIS**


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**ABSTRAKT**

Schroth therapy is a new method in Bulgaria for conservative physical therapy for patients with adolescent idiopathic scoliosis and kyphosis. The method is a combination of specific physiotherapeutic exercises with breathing and manual techniques and is part of the SOSORT (The international Scientific on Scoliosis Orthopaedic and Rehabilitation Treatment) recommended for the treatment of scoliosis and kyphosis.

The aim of the study is to stop progression, improve posture and reduce back pain of adults with idiopathic scoliosis and kyphosis.

Subjects of the study were 2 adults with diagnosed adolescent idiopathic scoliosis and kyphosis, who followed long-term therapy. Clinical, radiological, kinesiological methods of diagnostics have been used.

Five month treatment with Schroth therapy was reported.

The conclusion is that Schroth therapy for long-term patient compliance is a reliable conservative treatment for scoliosis. Good results are recorded on retaining the degree of distortion, pain reduction, thoracic mobility, posture improvement regardless of gender, degree of scoliosis and age.

**Key words:** adults, idiopathic scoliosis and kyphosis, Schroth therapy, physiotherapy, back pain

**INTRODUCTION**

Scoliosis is a complex of deformation in three planes, characterized by lateral deformation with a Cobb angle more than 10 dg [2]. According to SRS (Scoliosis Research Society) Idiopathic scoliosis is a distortion covering 2-3% of the pediatric population. Adolescent Idiopathic Scoliosis (AIS) is in 80% of all cases of scoliosis. Non-operative treatment is defined in the recommendations of SOSORT 2016 (The International Scientific on Scoliosis Orthopaedic and Rehabilitation Treatment) [5].

Adult idiopathic scoliosis is, in essence, a continuation of adolescent idiopathic scoliosis. Sometimes a spine curvature of an idiopathic (cause not known) nature that began during teenage years may progress during adult life. Curves may increase in size 0.5° to 2° per year. Adolescent curves less than 30° are unlikely to progress

significantly into adulthood, while those over 50° are likely to get bigger, which is why adult scoliosis specialists should monitor the curves over time.

Adults with idiopathic scoliosis have more symptoms than teens because of degeneration in discs and joints leading to narrowing of the openings for the spinal sac and nerves (spinal stenosis). Some patients may lean forward to try and open up space for their nerves. Others may lean forward because of loss of their natural curve (lordosis, sway back) in their lumbar spine (low back). The imbalance causes the patients to compensate by bending their hips and knees to try and maintain an upright posture. Adult patients may have a variety of symptoms, which can lead to gradual loss of function:

Low back pain and stiffness are the 2 most common symptoms

Pain is one of the most common sensations formed in the nervous system. It is a subjective experience caused by nociceptive activation, by changes in sensor

neural pathways, as well as in the brain centers-regulating stress, affect and motivation. Various factors (physical, chemical, psychiatric) can affect the sensation of pain. [3]

Schroth therapy has a long tradition in Germany. It's founder was Katerina Schrot in 1920, and is constantly improving to this day with the treatment of 3000 cases of scoliosis per year. Trained and certified therapists work in Germany, Russia, EU, Canada, America, Australia, Asia [1,6]. 18 therapists for the whole country have been certified in Bulgaria since 2018.

**BACKGROUND**

The purpose of the study is to trace the effect of Schroth therapy in adult patients with AIS and kyphosis, applying scientifically proven and recommended conservative physiotherapy, such as Schroth therapy. Reducing back pain, improving posture and stop curve progression. The therapy should be performed as recommendations by SOSORT main goals. According to the recommendations of SOSORT goals of conservative treatment are [7]:

1.To stop curve progression at puberty (or possibly reduce it)

2.To prevent or treat respiratory dysfunction

3.To prevent or treat spinal pain syndromes

4.To improve aesthetics via postural correction

Recommendations for PSSE (Physiotherapeutic scoliosis-specific exercises) [7]:

Auto-correction in 3D

Training in activities of daily living (ADL)

Stabilizing the corrected posture

Patient education

To the available kyphosis and scoliosis is added the long profession of patients, which is associated with a significant static load on the vertebrae from the forced sitting position and high intensity of repetitive movements of upper limbs.

These movements cause dystrophic and degenerative damage to the muscles, tendons, ligaments lead to systematic overload and damage of the structures of the peripheral nervous system. [4]

We effect to back pain with kinesitherapy by activating available reflex connections: motor-visceral, subcutaneous-connective-tissue-visceral. [3]

#### METHODS

Treated and traced are two women with proven adolescent idiopathic scoliosis and kyphosis. Clinical, Radiological, kinesiological methods of diagnosis have been used before treatment and on the fifth month of treatment.

X-Ray Diagnostics: The first patient is 38 years old. With lumbar scoliosis-10 dg. and Kyphosa-58 dg. The second patient is 72 years old with lumbar scoliosis-15 gr. And Kyphosis -62 gr.

#### Kinesiological Diagnostics:

It includes evaluation of the posture with the Adams Test, Somatoscopy (front, back, side) on the

appropriate anatomical landmarks and staging by Schroth. The result is both patients with impaired posture – skoliokyphotic posture . The two are with lumbar primary curve and kyphosis. Patients are stratification on the system of Schroth classification [6], which comes from the Schroth principle of dividing the body into "blocks". First of all, the primary curve is recorded, then the compensatory curve and the available kyphosis. An individual card is prepared for each patient. This stratification determines the specificity of the exercises in each individual case.

All patients have a compromised posture.

Pain score using the Visual Analog Scale (VAS): Pain score for the first patient is 8. Pain score for the second patient is 7.

Test OTT: First patient 1 sm. Second Patient 0 sm.

The disposition of the persons in the posture assessment is reflected in Fig. 1:

## Patients posture on 1 visit

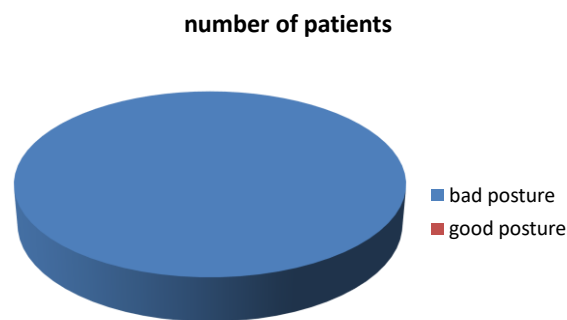


Fig.1

#### RESULTS AND DISCUSSION

A five-month treatment was carried out on an individual program for each patient. It includes 5 days daily training to perform the exercises in the first month. Every next month, 1 day of exercise control. Each of the patients has a written individual program of exercises, which is to be performed at home.

Schroth-Principles of Correction are:

-3D active and passive correction-sagittal, transitive, frontal plane

-proactive, consciously, sensomotor training in maintenance of proper posture

-respiratory 3D techniques of breathing

-muscle activation (strengthening of weak muscles ), Manual mobilisation techniques (relaxation of tense muscles)

- patient self education

We reported the following results on the fifth month of treatment: retention of the degree of curvature reported with X-ray in 2 patients.

All patients there were improvement in posture.

In All patients were VAS score 0.

Test Ott was improved: First patient - 3.5 sm. Second patient - 2,5 sm

Distribution of patients by posture assessment is reflected in Fig. 2

## Patients posture on 5 month

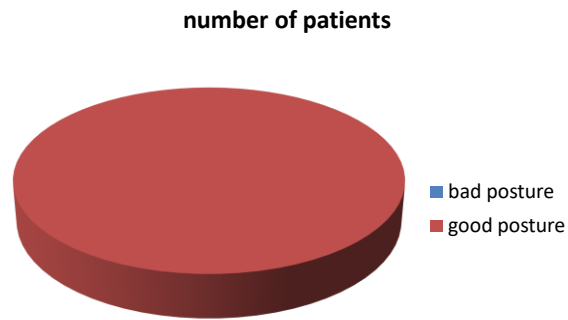


Fig.2

The VAS for first patient is reflected in Fig 3:

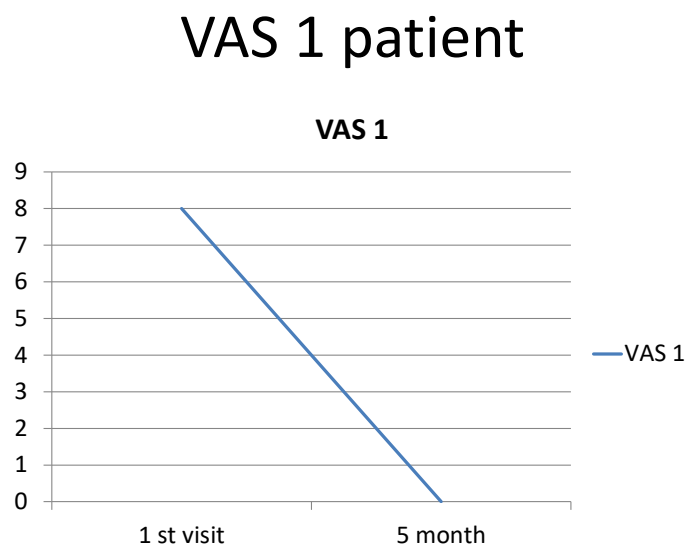
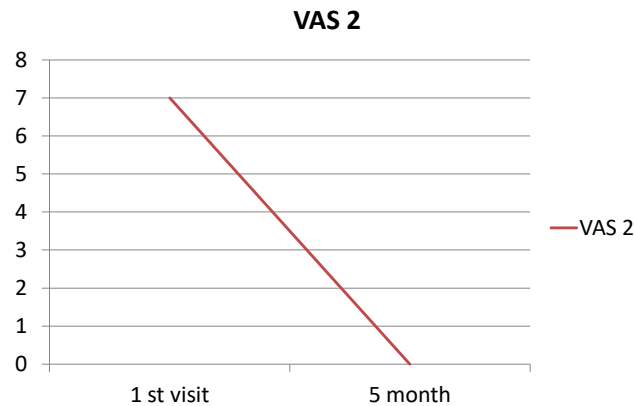


Fig.3

The VAS for second patient is reflected in Fig 4:

## VAS 2 patient



*Fig.4*

### CONCLUSION

In both patients there is a retention of the progression of distortion. Both have an improvement in posture. There was pain reduction in 100% of patients. Improved flexibility in thoracic part was reported. In conclusion, Schroth therapy is a reliable method for long-term treatment of AIS. When using this therapeutic school, the main objectives of conservative treatment are covered. Good results are recorded on retaining the degree of distortion, pain reduction, thoracic mobility and improve quality of live in adults. Good results are reported on posture improvement regardless of gender, degree of scoliosis and age. There is a need for more precise monitoring of adult patients with scoliosis and/or kyphosis with back pain to confirm the results of Schtoth terapy in practice.

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