

Pediatric Prophylaxis Program of Motor System Deformations and Illnesses in Children. Problems of Spine, Hips, Knees and Feet

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Abstract

In everyday praxis of a pediatrician doctor, not only proper diagnosis and proper treatment are important, but also informing about the methods of prophylaxis.

The program to create “the healthy generation” should be the first aim of the orthopedics in every country. In this reviewer article, the authors present general and orthopedic rules of a program of prevention of many deformities in children and youth, as well as pain syndromes in adults, concerning the hip, the knee, the shanks, the pelvis and the spine.

Keywords: Prophylaxis; Hips; Knees; Shanks; Spine; Children

Introduction

The necessity of prophylaxis and its rules are sometimes not easy to explain and to realize by the small patients, but it is the best method to maintain good health all the life. In the article, the authors present the material and observations gathered over many years. They suggest the simple and tested methods of prophylaxis after reviewing many literatures [1-25].

General recommendations for small children

Problems of hat tying: Tying the hat obstructs the free flow of blood from the brain to the heart through the external jugular vein (vena jugularis superficialis). According to our observations - such situation repeated many times in the first month can cause abnormalities in the development of the circular system of the brain. Such hat “tying” is typical for many families in Slavic countries, but not usually in USA and in UK (experience of Katarzyna Karska and Honorata Menet).

Importance of carrying the baby: Constant contact of the child with the parents stimulates positively and calms the child down what is very important from the psychological side of view too. Holding the baby closely and the contact of the baby with the mother at night is very important since it eliminates possible stress connected with the darkness. Stress closes the capillary in the blood circulation system. It causes semi-asphyxia and can lead also to anomalies in the circulatory system of the brain.

Orthopedic rules of prophylactics - aim for orthopedics and pediatric doctors

What is important in development of babies hips: Carrying babies and small children in abduction - importance for the hips (Figure 1a-1c). Carrying should be done with the maximal abduction and flexion of the hips. The child should be carried “face to face” - facing the mother. Only such way of carrying is proper for hips’ development. By carrying the child in a proper manner - we can treat or prevent the wry neck (muscular torticollis) simultaneously, if it’s first symptoms are present (Figure 2a-2c). We discovered that only stretching of the shortened muscle sterno - cleido - mastoideus - by turning the baby’s head to the side of the wry neck (rotation stretching !) is a proper way of treatment and only such a therapy gives good results. This method of treatment was introduced by T Karski in 1974. Such a method can prevent operations of the wry neck. There were publications on this method of treatment in Orthopädische Praxis in Germany in 1991 and in American Research Journal of Medicine and Surgery in 2016.



Figure 1a-1c: Carrying babies and small children in abduction is very important for the hips (Figure 1a). It should be done with the maximal abduction and flexion of the hips. Every other method of carrying is incorrect and lead to the hip dysplasia (Figure 1b, 1c).



Figure 2a- 2c: By carrying the child in a proper manner - we can prevent hip dysplasia and treat or prevent the wry neck (muscular torticollis) on the same time. Only stretching of the shortened muscle sterno-cleido-mastoideus - by turning the baby's head to the side of the wry neck (rotation stretching !) is a proper way of treatment. The age of children for such treatment 1 to 3 years.

The timing of the beginning of standing and walking of the child: It is allowed only after one year or a few weeks or months over one year. It occurs that some children want to stand earlier than to sit. These children have symptoms of Minimal Brain Dysfunctions (MBD). In these cases we observe the extension contracture of the trunk muscles and sub-spasticity of muscles of the legs what enables standing and not sitting and crawling on all fours what should be earlier in proper motor development of the child. Premature standing can lead to the enlargement of varus deformity of the shanks and is not proper for the development of the hip joints [1-5].

Varus deformity of the shanks - how to treat and to prevent: The "O"-shaped deformity (Figure 3a-3c and 4a, 4b) of the shanks exists in three forms: 1) in Blount disease, 2) in rickets, 3) in kidney disease. According to our observations, the Blount varus deformity of shanks is caused by the following four reasons: 1) unusually big varus deformity of the shanks of a newborn. It is caused by the lack of enough space in the mother's uterus, 2) precocious standing and walking - at the age of 8 - 10 months, mostly in children with MBD, 3) obesity, 4) insufficient Vit. D supply. In the therapy of such varus deformities (Blount disease) we recommend preventing the children from standing and walking during 2 - 4 months (!), giving proper doses of Vitamin D3. The presented treatment is for the 1 to 2.5 year old children. After 2 - 4 months - the shanks will spontaneously return to the anatomical proper axis (!). This positive effect of such a therapy has been observed in all the cases. These observations were published in Germany in Orthopädische Praxis (1991) and in USA in American Research Journal of Medicine and Surgery (2016 - T Karski and J Karski).



Figure 3a- 3c: In the figure 3a a child with Blount disease, deformity in upper part of shanks. Figure 3b child with varus deformity in rickets - dominating deformity in lower part of shanks. Figure 3c - child with one side varus deformity - because of Syndrome of Standing on the Right Leg. Primary varus deformity on both sides. Left leg - self correction (see literature about standing - T. Karski).



Figure 4a and 4b: A child at the age of 15 months with Blount disease (Figure 4a) - varus deformity in upper part of shanks. Figure 4b - the child after treatment - "no walking and no standing in period of 3 months", plus vit. D3. Now the child is 18 months old - proper axis of shanks.

Valgus deformity of the knees - causes, therapy: The “X” shaped deformity of the knees (Figure 5a and 5b) appears mostly in children with the laxity of joints. The laxity enables children to sit in improper positions namely with the legs on the sides of the body) which is called “TV sitting”. Such position of sitting diminishes the external rotation, increases the internal rotation of the hips, it can also increase the antetorsion (AT) of femoral neck and heads - as a result, we observe incorrect walking.

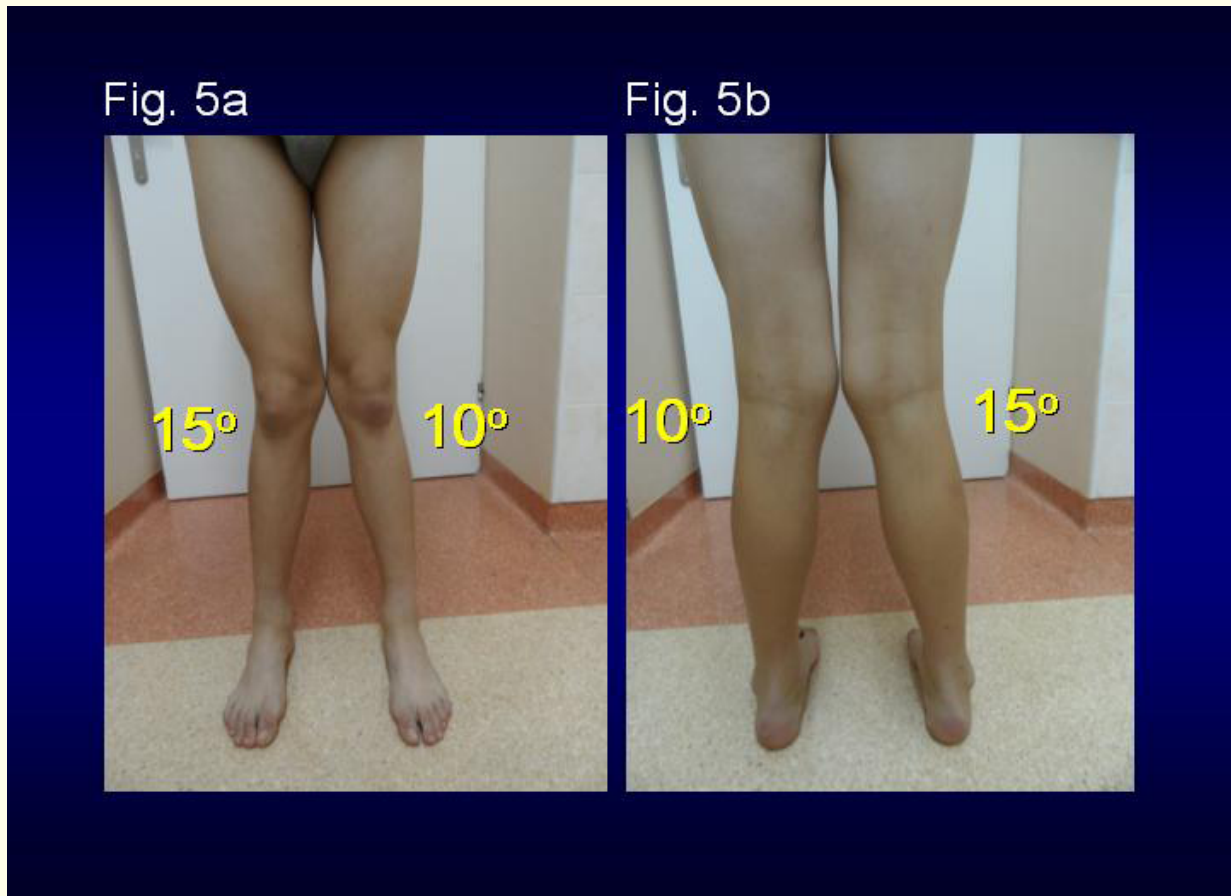


Figure 5a and 5b: 13 year old child. The valgus deformity of knees. The deformity of right leg is bigger because of the Syndrome of Standing on the Right Leg. Treatment - surgery - fasciotomy - elongation of tractus ilio-tibialis on both sides. This therapy has been introduced in Lublin Orthopedic Department in 1995.

Such pathology occurs mostly in children with Minimal Brain Dysfunction (MBD). We should never recommend children to sit in an improper way. The best position is sitting with cross-legged shanks or sitting in “a butterfly position” (a term from karate). In this position - the feet are together, and the knees are flexed at 80 - 90 degrees. It enables proper development of the hips and normal axis of the knees [2-4].

Minimal brain dysfunctions (MBD): Symptoms - the anterior tilt of pelvis with hyperlordosis of lumbar spine. Extension contracture of spine and others (Figure 6a and 6b). The anterior tilt of pelvis is a very common deformity in children with MBD. As a result of the wrong position of the pelvis, hyperlordosis develops. This posture deformity is common in children with Minimal Brain Dysfunction (MBD) and ADHD (Attention Deficit Hyperactivity Disorder) because of the contracture of the flexors of the hips. Such a deformity requires therapy in childhood because in adult age it causes back pain. In therapy, we recommend stretching exercises for flexors of the hips, especially for m. rectus, one of the four parts of m. quadriceps and other flexors of hips. This therapy should start at the age of 4 - 6 years. Exercises typical for karate, taekwondo or aikido are very profitable [3,4,6].

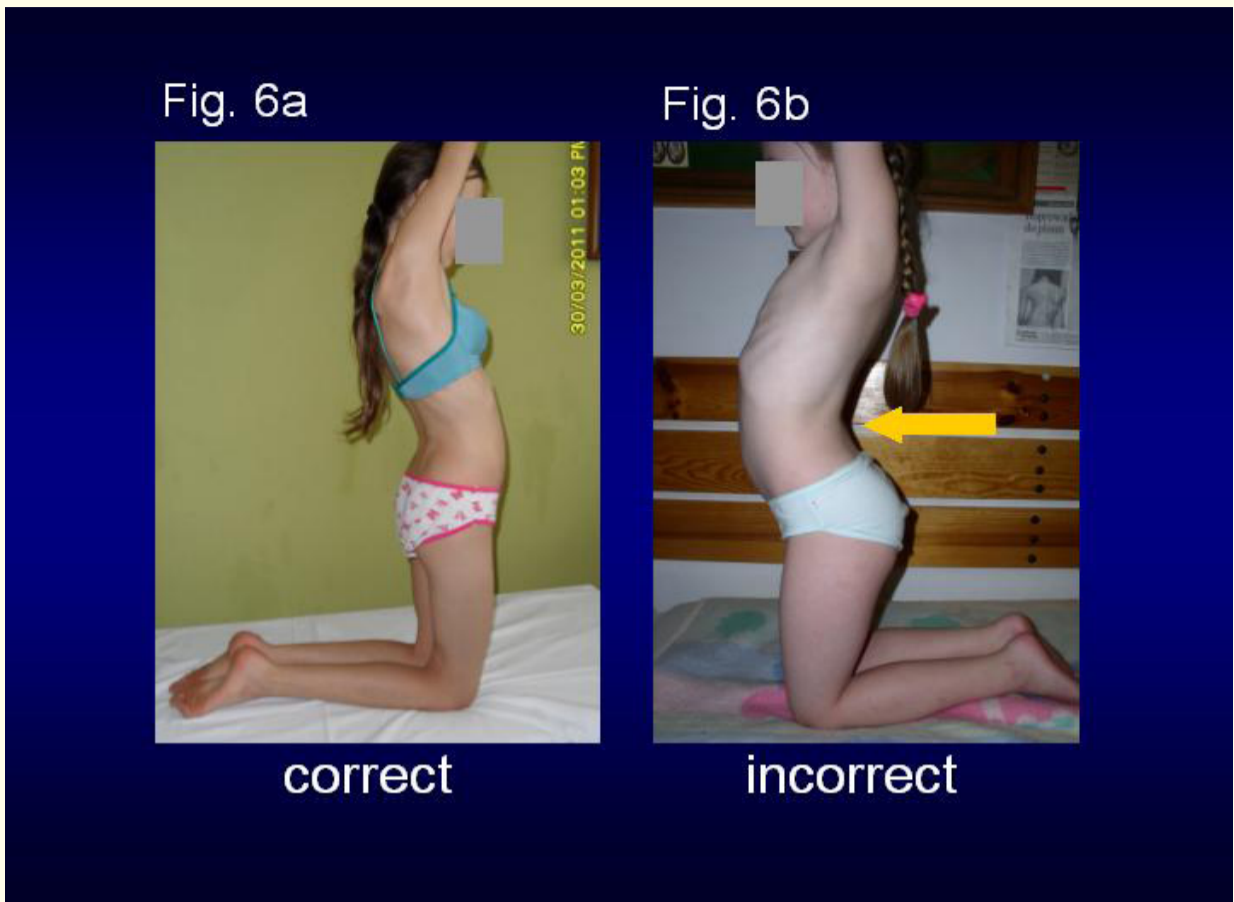


Figure 6a and 6b: The test of kneeling. In figure 6a a child with proper position of the pelvis. In figure 6b a child with Minimal Brain Dysfunctions (MBD). Anterior tilt of pelvis and as a result hyperlordosis of the lumbar spine. The cause of the deformity - shortening of both *m. rectus*. In children - cosmetic problems, in adults it is the cause of lower back pain syndromes.

Valgus deformity of feet. Role of MBD: In Minimal Brain Dysfunctions (MBD) we observe two pathological symptoms. Firstly - there is spasticity or sub-spasticity of the muscles in some muscles groups - mostly flexors of hips, knees, feet and extensors of trunk, secondly - as result of changed properties of the collagen laxity of joints occurs. Both anomalies are connected with asphyxia of the fetus during the pregnancy or the delivery. In children, the typical clinical feature which appears during walking is the plane deformity or the plane-valgus deformity of the feet. If the only problem is the shortened Achilles tendons, children walk in equinus position of the feet (on the toes). When there is laxity at the same time the valgus or the plano-valgus deformity develop. In such cases, all the feet surface is in the contact with the floor, but both feet are slightly deformed. The valgus deformity develops with every step (Figure 7a and 7b) [1,3,4,6-10].



Figure 7a and 7b: Kinga K. 3 y. old. Complications during pregnancy. Symptoms of Minimal Brain Dysfunction (MBD). Shortening of Achilles tendons and *m. triceps surae*. In result - *pedes valgi*. At present flexion contracture of both hips, anterior tilt of pelvis and hyperlordosis.

Etiology of Perthes disease. Possibility of prophylaxis: In the world's orthopedic literature about Perthes disease we can find most of all - the information that the etiology is unknown or a description of various causes none of which has been confirmed. In our observation from 1981 until now we see that the etiology is connected with repeated, permanent low, other words small trauma. The causes are connected with every child's daily activities. One of them is jumping, very typical for children in the age of 4 to 11. It causes necrosis of the femoral head, that means the Legg-Calvé-Perthes-Waldenström disease (Figure 8a-8c and 9a-9c). Over many years of our observations, we found out, that this disease concerns mostly the children with MBD. These children like jumping, during this activity fractures of bones in femoral head appear. The cartilage is resistant and during jumping only the bone structure is being changed. Bone trabecules in femoral head are being broken. This moment is the start of the Perthes disease. These problems were discussed and published in the article in Journal of Locomotor System in the Czech Republic in 2017 (T Karski, J Karski and also article of J. Kałakucki- see literature).

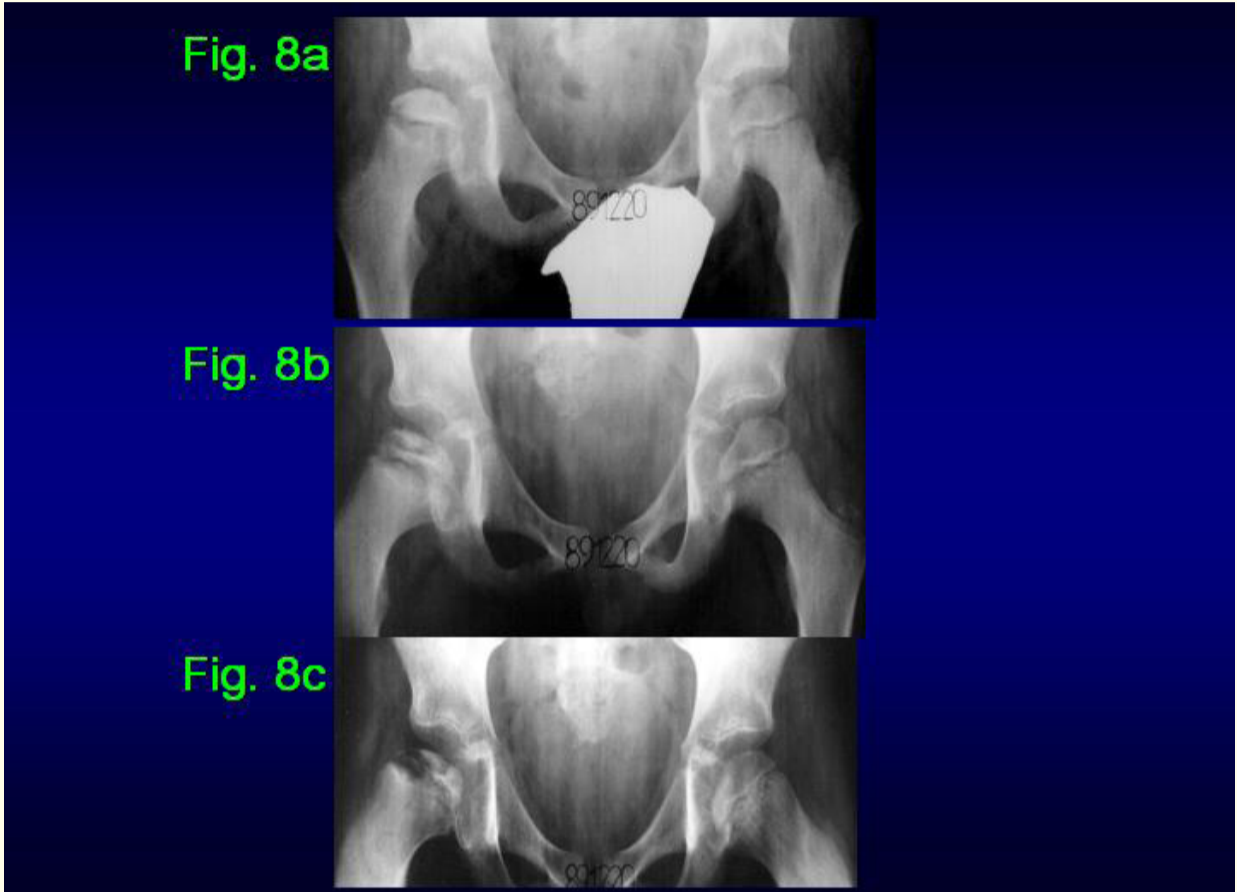


Figure 8a-8c: Adam S born on the 20.12.1989. At the age of 9 first symptoms of Perthes disease in the right hip. The child had the habit of jumping very often at school and at home off the couch on the floor. Three X - rays from the years 1998-2000. Two phases in the process of necrosis in femoral head: the sclerotic phase (Figure 8a) and the fragmentation phase (Figure 8b, 8c).



Figure 9a-9c: Sylwester K born on the 31.12.1990. Clinical symptoms of Perthes disease observed in July 1997. The child has the habit of jumping very often off carpet beater, off trees, even 30-50 times a day. Three X-ray pictures from the years 1997-2001. Perthes disease in the left hip. On the X-ray - the phase of sclerosis (Figure 9a), the fragmentation phase (Figure 9b) and beginning of the repairing phase (Figure 9c).

Standing 'at ease' on the right leg in children and youths and its influence on development on so-called idiopathic scoliosis (Figure 10a-10c). After many centuries of research of many scientists we discovered (T. Karski) in years 1995 - 2007 that the scoliosis develops in children who have the habit of standing 'at ease' on the right leg. Standing on the left leg or both legs is not followed by any pathological changes in movement apparatus as it is never permanent. Standing 'at ease' on the right leg is permanent, what is especially important it causes of the so-called idiopathic scoliosis in two etio-pathological groups - "S" double deformity and "C" deformity.

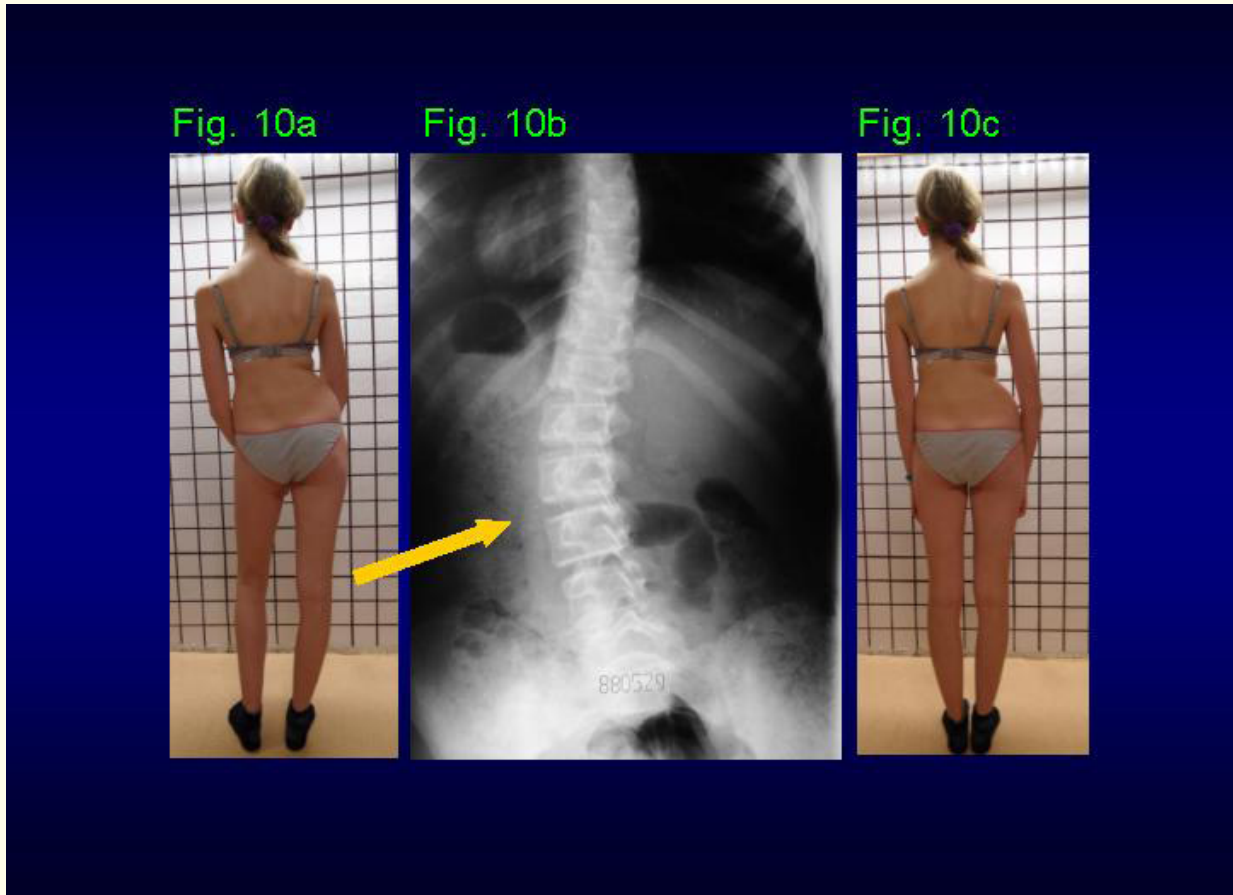


Figure 10a-10c: The child with the habit of standing on the right leg. 13 years old. A lumbar left convex scoliosis is visible on the X-ray and clinically. This deformity belongs to the second group of the new classification- II/B epg of the so-called idiopathic scoliosis.

Explanation of the biomechanical etiology of the so-called idiopathic scoliosis (adolescent idiopathic scoliosis - AIS) and recommendation for a new treatment. The observations of the "spine deformity" were started by the author (T Karski) in 1984 and described in details in years 1995 - 2007 in many articles, mostly in the USA. It was found asymmetry of movement of both hips. In the right hip are restricted the adduction (in straight position of joint), very frequent internal rotation and extension (this movement in both hips). These asymmetries of hips movement, makes asymmetry of function of both sides - left and right of the body - during gait and in standing - here play role time - the standing on the right leg is permanent. So, develop three etiopathological groups (epg) of scoliosis (Table 1).

| | Influence | Character of scoliosis | Model of right hip movement | Model of left hip movement | Curves Gibbous | Progression | Therapy Prophylaxis |
|------------------------|---|------------------------|----------------------------------|---------------------------------|-------------------------------|--|--|
| Scoliosis "S" I epg | Standing on the right leg and walking | Stiff spine | Adduction 0 or -5 or -10 degrees | Adduction from 30 to 50 degrees | Two curves and Gibbous | Progression | Recovering of right hip movements. Flexion exercises for spine. Standing on the left leg |
| Scoliosis "C" II/A epg | Standing on the right leg | Flexible spine | Adduction from 20 to 30 degrees | Adduction from 30 to 50 degrees | One curve | No Progression | Flexion exercises for spine. Standing on the left leg |
| Scoliosis "S" II/B epg | Standing on the right + laxity of joint | Flexible spine | Adduction from 20 to 30 degrees | Adduction from 30 to 50 degrees | Two curves and Gibbous slight | No Progression | Flexion exercises for spine. Standing on the left leg |
| Scoliosis "I" III epg | Walking | Stiff spine | Adduction 0 or -5 or -10 degrees | Adduction from 20 to 0 degrees | No curves or very slight | No included to scoliosis till 1995- 2007 | Flexion exercises for spine. |

Table 1: The new classification of the so-called idiopathic scoliosis (1995 - 2007).

In the new classification (T Karski 1995 - 2007) there are three groups and four types of scoliosis.

- **The first group:** It is the "S" double scoliosis, connected with walking and standing 'at ease' on the right leg. 3D deformity. Lumbar left convex curve, thoracic right convex curve, gibbous on the right side of thorax. The spine is stiff.
- **The second group:** The "C" and the "S" types of scoliosis, 2D deformity. The only cause is standing 'at ease' on the right leg. In the "S" scoliosis additionally - laxity of joints. In both types of scoliosis the spine is flexible.
- **The third group:** It is the "I" type of scoliosis. 2D or 3D deformity. Spine stiffness only, without curves or with very small ones. The cause is only the gait.

The recommendations for treatment of scoliosis and its prophylaxis. Over years, we have elaborated new methods of therapy and prophylaxis. These are:

- a) Standing 'at ease' on the left leg or symmetrically on both legs,
- b) Every day bending/flexion exercises of the body to prevent stiffness of the spine,
- c) Sitting in a relaxed way, the "butterfly position" is the best (description derived from karate),
- d) Sleeping in the embryo position,
- e) Sport - karate, taekwondo, aikido, kung fu and other similar kinds of Far Eastern Sports are very helpful. Such sport and everyday flexions - stretching exercises are the best.

Conclusions

1. In every medical practice/praxis it is important - the proper diagnosis, simple and understandable for patients treatment as well prophylactics.
2. For hips - prophylaxis mean - proper anatomical development of joints and its full range of movement. Here very important role play the proper nursing of child in the first twelve month of life.
3. For proper function of knees in whole life - it is important to cure in child's period the varus deformity of shanks and valgus deformity of knees.
4. In treatment of deformities in locomotor system in childhood the proper physiotherapy are not muscles strengthening exercises but stretching exercises leading to the full movement of joints.
5. In causal prophylaxis of the so-called idiopathic scoliosis it is important to remember about harmfulness of standing 'at ease' on the right leg, about necessity to receive the full movement of right hip through special stretching exercises just in the first years of life, informing about sitting relax and sleeping in embryo position of every child.
6. In treatment of scoliosis it is important to remember about standing only on the left leg, doing the flexions exercises for spine and active practice sport, especially such stretching forms, like karate, taekwondo, aikido, kung fu or yoga.

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