

PATOLOGIE KYČLE, KOLENA, HLEZNA A PÁTEŘE V DŮSLEDKU HABITUÁLNÍHO POSTOJE "POHOV" NA PRAVÉ DOLNÍ KONČETINĚ

PATHOLOGY OF THE HIP, KNEE, SHANK AND SPINE DUE TO THE HABIT OF STANDING 'AT EASE' ON THE RIGHT LEG

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ABSTRACT

During years 1997 to 2018 the authors observed the habit of standing 'at ease' on the right leg and the pathology concerning the knee, hip and spine. They described a new cause of pathology of locomotor system. The standing on the right leg is permanent and because of it makes pathology influence on right shank, knee and hip. The habit of standing 'at ease' on the right leg causes shank and knee axis deformations and two etio-pathological types of scoliosis according to Lublin classification. In adults the habit of standing on the right leg leads to knee, hip and spine pathology, causing the development of degenerative changes. So far, there have been no publications of other authors on this subject of standing.

Message. Standing on the right leg is an etiological factor in many children, adolescent and adult pathologies and is a frequent cause of "back pain". This factor is a new chapter in the medicine. All doctors should remember about 'The Syndrome of Standing on the Right Leg'.

Key words: standing on the right leg syndrome. Pathology of the shank, knee, hip, spine.

INTRODUCTION

So far, the authors have not come across any publications about the manner of standing (1, 26, 27). There are however numerous publications discussing phenomena connected to the gait. In contrary to the popular opinion, there may be many ways of standing, which will be described below. It was in the years 1984–2007 that ‘the mystery of standing’ was solved. Crucial observations were made in 1997. The diversity of standing habits concerns the Polish, but other nationalities too, for example the French (observations of H. Menet) or Americans (observations of K. Karska and H. Menet).

A few words about the people’s actions and behaviour

MATERIAL

During 10 years we sleep or rest in a horizontal position for around 2.5 years, which is essential for the heart, circulation system and the spine. We walk for 2.5 years, we sit for 2.5 years, and we stand for 2.5 years – at work, meeting, in queues, at school, at church, on trips, in museums, etc. (Fig. 1a, 1b, 1c, 1d).



Fig. 1a, 1b, 1c, 1d – Various ways of standing. Standing ‘at ease’ on the left leg. (fig. 1a, 1b) doesn’t influence the limb axis in any pathological way. Standing on both legs has no pathological effect either. Standing on the right leg, due to the fact that it’s permanent is the cause of the pathology (fig. 1c, 1d).

It turns out that around 70 % of people (Material. N-2500 patients in 1984/1997–2018, team's observations) have the habit of standing 'at ease' on the right leg. This manner of standing influences the motor system in children, influences the axis of the limb, as well as joints' functioning in adults.

Standing on the right leg is one of the causes of scoliosis. Standing 'at ease' on the right leg is a phenomenon which starts at the age of 2 (!) and the accumulation of the time of standing is important. Thus, this phenomenon concerns the children, the adolescents and the adults. In children, it leads to the so-called idiopathic scoliosis, in different groups of new classification, in adults it causes degenerative scoliosis and persistent back pain as well as right hip and knee dysfunctions and arthrosis (2–25 and 28).

Walking

Before explaining the influence of standing and its influence on different parts of the motor system, a few words about walking. Every doctor should remember about positive effects of 'Nordic Walking': Every form of activity is beneficial for health, but for adults, the best is walking with help of sticks. Dr Tissot from France and Prof. W. Dega from Poland used to say – the activity can replace a medicine, but a medicine won't replace the activity. They continued – the movement is favourable especially for the heart and the circulatory system.

Nordic Walking, introduced by the Finland's citizen, has this beneficial effect on adults. In 1995 Markko Kantaneva from Olympic Centre in Finland, Vierumäki (placed between Lahti and Heinola – T. Karski has visited this Centrum in 1979) – described how to benefit from Nordic Walking. For adults it is an easy and pleasant form of activity. Such an activity is good for health, it is vital for the heart, respiratory organ and the whole motor system.

Introduction to standing manners

The phenomenon of standing has been analysed in Lublin since 1984/1997 and it is the first such analysis in the world. During standing, the weight can be put equally on both legs. We can stand also 'at ease' putting the body weight on the left foot, 'at ease' putting the weight on the right leg. While standing hips can be in adduction – feet together, or in abduction – feet apart, in internal or external rotation of the hips. Many of those ways of standing are beneficial for the motor system, however other may be harmful. Further explanations in following chapters.

The habit of standing on the right leg

The habit of the standing on the right leg explain "The Syndrome and Contractions of the Newborns and Infants" – (SofCD) according to Prof Hans Mau (in German "Siebenersyndrom"). Prof H. Mau's works come from 1950'–1960'. According to this author, anatomic and functional asymmetries of a newborn's and baby's body are the following: head shape asymmetry (plagiocephaly), torticollis, infant scoliosis, feet deformities, oblique position of pelvis, insufficient left hip abduction, next "Haltungsschwäche" (German), which means "faulty posture position". In Lublin (T. Karski) in the

place of the “Haltungsschwäche”, the abduction contracture of right hip was found. Later it was explained (2006 – T. Karski), that hips’ movement asymmetries – right and left – can have three “clinical models” regarding to adduction examined in a straight position of the joint:

- (1) right hip evidently limited adduction, even abduction contracture, usually 0 or 5 to 10 degrees, left hip full adduction – movement 40 to 50 degrees,
- (2) right hip adduction insufficiency (20 to 30 degrees), full adduction of the left hip – movement 40 to 50 degrees,
- (3) right hip abduction contracture 0 or 5 to 10 degrees, considerably limited left hip adduction (0 to 20 degrees).

As mentioned above, the assessment of the right and left hip adduction, should be conducted in the straight position of the joint, namely the same position as in standing and identical to the “support” phase during walking. Thus, smaller right hip adduction makes standing ‘at ease’ on the right leg easy and comfortable. Children, from the age of two, choose to stand on the right leg. And they continue to do so for the rest of their lives (Literature **2–25** and **28**).

On end of this sub-chapter we want to explain that in 2006 (T. Karski) was add to the “Syndrome of Contractures” the eighth deformity – namely “varus deformity of shanks” and from 2006 in Lublin we called these all asymmetries in children “The Syndrome and Contractions and Deformations” (SofCD).

The influence of standing on the right leg on the knee

In children, we can observe genu valgum (X-shape deformity). Genu valgum often develops in children with minimal central nervous system dysfunctions (in English literature called Minimal

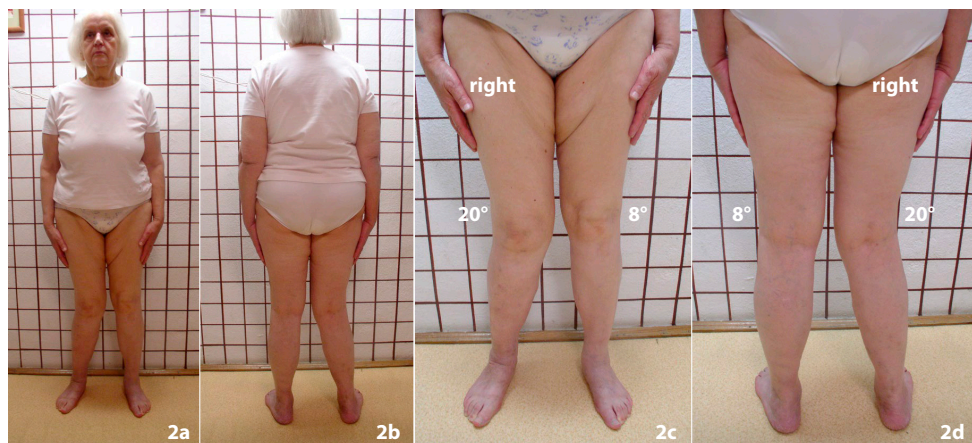


Fig. 2a, 2b, 2c, 2d: Patient 72 years old. Genua valga since childhood. The deformity of the right knee more significant, as an effect of permanent standing on the right leg. Right knee in contraction of 10 degrees, unstable, pain. Problems with walking. Knee arthrosis and patello-femoral joint arthrosis.

Brain Dysfunction – MBD). In children with MBD laxity of joints, caused by a change in the biological properties of collagen (hypermobility often diagnosed by doctors as ‘weakening of the muscles’). This laxity enables sitting in a wrong position, that is ‘television position’, with shanks and feet on the sides of the body. Thus, because of sitting in the wrong position, genu valgum develops. The corrective position is sitting in the ‘butterfly position’ (karate term) or ‘Polish sitting position’ (orthopedic term).

We often observe a genu valgum asymmetry, more significant in the right knee. This is connected to the habit of standing on the right leg. (**Fig. 2a, 2b, 2c, 2d**). When not treated, children’s genu valgum leads to knees’ instability, degenerative changes, pain and problems with walking in adults. Thus, the prophylaxis of the sitting habit is crucial. Only the ‘Polish sitting position’ (called ‘butterfly position’ in karate) is correct and prevents genu valgum and all the knee pathology in adults.

The influence of standing on the right leg on the axis of the shank

The influence of the standing on the right leg on the axis of the right shank we see very frequently in orthopedic praxis. In infants and small children, tibia vara (O-shape deformity) is often observed. Tibia vara occurs even in newborns and infants as one of the symptoms of ‘The Syndrome of Contractures and Deformities’ (this element was added to SofCD in Lublin in 2006 – T. Karski). Premature standing and walking (before the age of one year) and vitamin D deficiency are the causes of tibia vara. A form of this disease, concerning the upper shank, is called the Blount disease. Varus deformity of legs above ankles is caused exclusively by Rickets. It occurs, that the varus deformity of the right shank is more significant. This is connected with standing on the right leg. (**Fig. 3a, 3b, 3c, 3d**). This asymmetrical varus deformity, bigger on the right leg, has been observed in elderly people whose shank axis disorder had not been treated in the childhood.

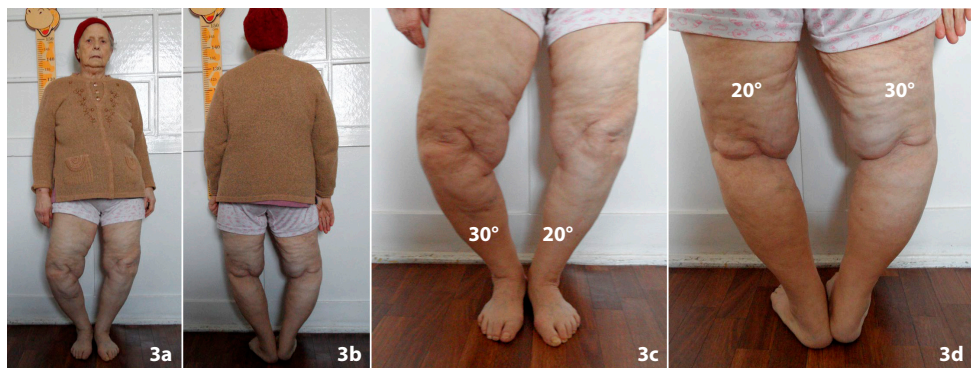


Fig. 3a, 3b, 3c, 3d: Patient 51 years old. Shank varus deformity not been treated in childhood. The pathological axis of the right knee more significant, as an effect of permanent standing on the right leg. Right knee unstable, pain at every step. Problems with walking.

The influence of standing on the right leg on foot functions

Here the influence on the axis and functioning of the right foot is the least significant. Malfunction and pain of the feet, more rarely of the right foot only, are usually connected with valgus deformity of tarsus, as one of the symptoms of the MBD and with insufficient toes' flexion, recognized in pathological toe flexion test. Feet deformities require special kinesiotherapy. These issues are often the subject of Podology Symposia.

The influence of standing on the right leg on the right hip

In our patients, we observe the right hip pain syndrome due to standing on the right leg. This knowledge has been familiar to the Lublin Orthopedic team for over 30 years (since 1984). It has been confirmed by many clinical proofs in the 1990' and in all the years until today.

As it was mentioned above, every person who has the habit of standing 'at ease' on the right leg, what means permanent standing on this leg, without changing the position, or doing it very rarely for a short time, after years has the problem with the right hip.

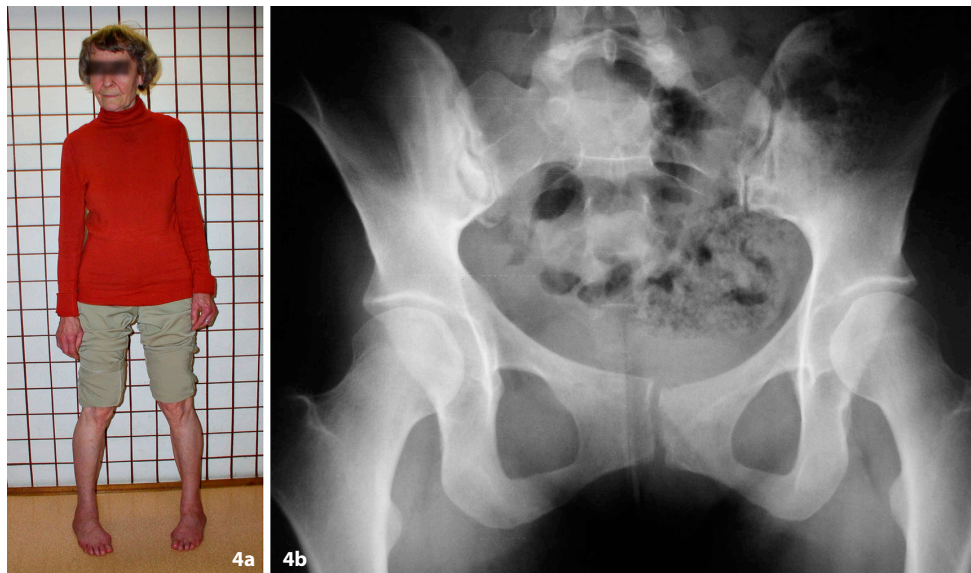


Fig. 4a, 4b: Patient 65 years old. Right hip pain. On x-ray small lateralization of both femoral heads. Clinically painfully limited movement of right hip due to the habit of permanent standing on the right leg. Corrective standing position showed in fig. 4a.

During walking, in each loading phase, there occurs a massive overloading of the right hip. In the „new emerging pathology” it is the accumulation of the time of standing that is the most important. The right hip is being overloaded, the head of the femur is moved to the side and the phenomenon of so called lateralization (expulsion) occurs. For example, for a person who weights 70 kg, the load is 280 kg at each step. This gives an overload of over one tone after four steps.

The right hip undergoes then anatomic changes. The overloaded areas of the head of the femur undergo degenerative changes, i.e. hyaline cartilage disappears, the osteolysis occurs over the head area, the shape of femur head is deformed. The joint space between the femoral head and the roof of the joint disappears (**Fig. 4a, 4b**). This is the cause of limitation of movements of the hip. The hip loses especially the ability to abduction, internal rotation and extension.

Insufficiency of the right hip joint, in the „standing ‘at ease’ on the right leg syndrome”, as mentioned above, concerns older people. These patients often suffer from osteoporosis at the same time, as well as from degenerative scoliosis of the lumbar spine. In such case, the treatment should combine physiotherapy and pharmacotherapy. The most important recommendations are those concerning standing, sitting and sleeping. Adequate nutrition, vitamins and mineral salts present in fruits and vegetables are very important and last but not least supplementation of vitamin D. Traction treatment may be also necessary, especially if knee contracture additionally occurs.

In order to prevent hip arthritis we recommend **(1)** standing in abduction and internal rotation of the hips (known in the karate), **(2)** walking – in abduction of 20–30 degrees, **(3)** sitting – in internal hips’ rotation – knees together and feet maximally apart, **(4)** sleeping in prone position with the affected limb in abduction and flexion. During a part of the night it is recommended to sleep in foetal position which is beneficial for the spine. This will be explained in the following chapter.

The influence of standing on the right leg in development of scoliosis

We waited for over 2 thousand years to understand the aetiology of scoliosis, a common spine pathology of many children in many countries. The changes of the spine axis concern mostly girls – 80 %, boys only in 20 %. Around 7% of the Polish society is affected by this problem. So far there was a mystery – the cause of the deformity, the age at which it begins to form, why lumbar curvature is always left-sided and the thoracic one always right-sided, why the rib hump is always on the right side of the chest – all was unknown. It wasn’t possible to explain, why during the accelerated growth period of the child the deformity becomes rapidly more significant, what was called „progression”. Doctors used to say about this progression, but it’s causes were secret / obscure. They didn’t know what treatment to recommend, orthopaedic braces were being used, many operations have been carried out; but usually the treatment wasn’t efficient. Even after the operation, the curvature and the hump were visible, and were becoming more significant over the years. The stiffness of the spine unable normal activity of the child, as in sport for example.

The aetiology of the ‘so called’ idiopathic scoliosis was described in the years 1995–2007 (T. Karski). In 1997 it was discovered, that the children who suffer from scoliosis have the habit of standing ‘at

"S" type scoliosis

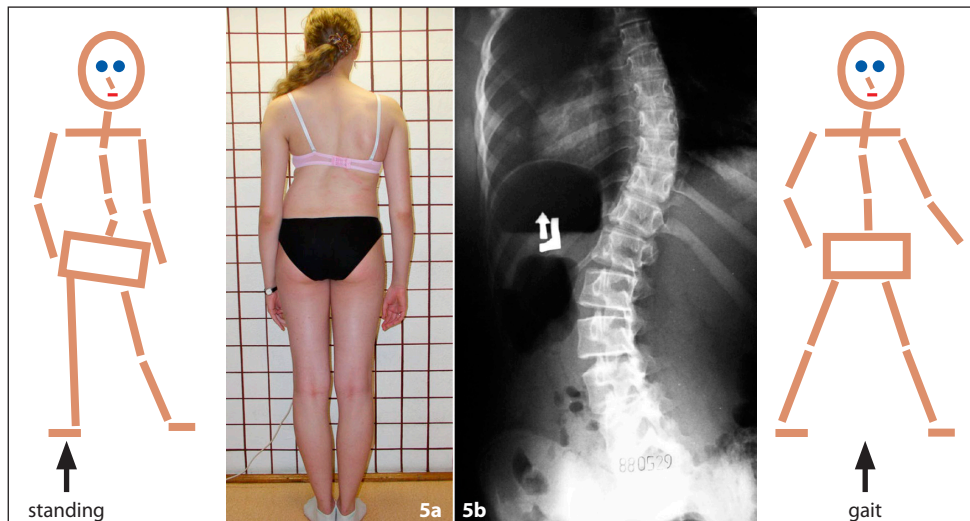


Fig. 5a, 5b: Patient 15 years old. „S” type scoliosis, I epg. The causes are: the habit of standing on the right leg and the gait. Two curves. Spine stiffness. A hump on the right side of thorax. 3D. Progression.

"C" type scoliosis

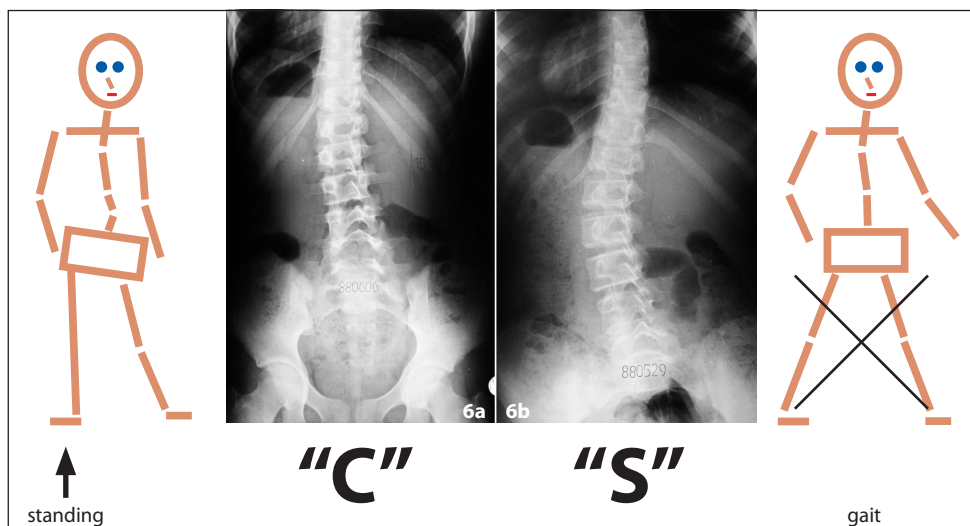


Fig. 6a, 6b: Patient 13 years old (fig. 6a) „C” type II/A epg scoliosis and 16 years old (fig. 6b) „S” type II/B epg scoliosis. The cause of the spine deformity is the standing 'at ease' on the right leg. In „S” type scoliosis habit of standing and additionally laxity. In both types of scoliosis the spine is not stiff.

"I" type scoliosis

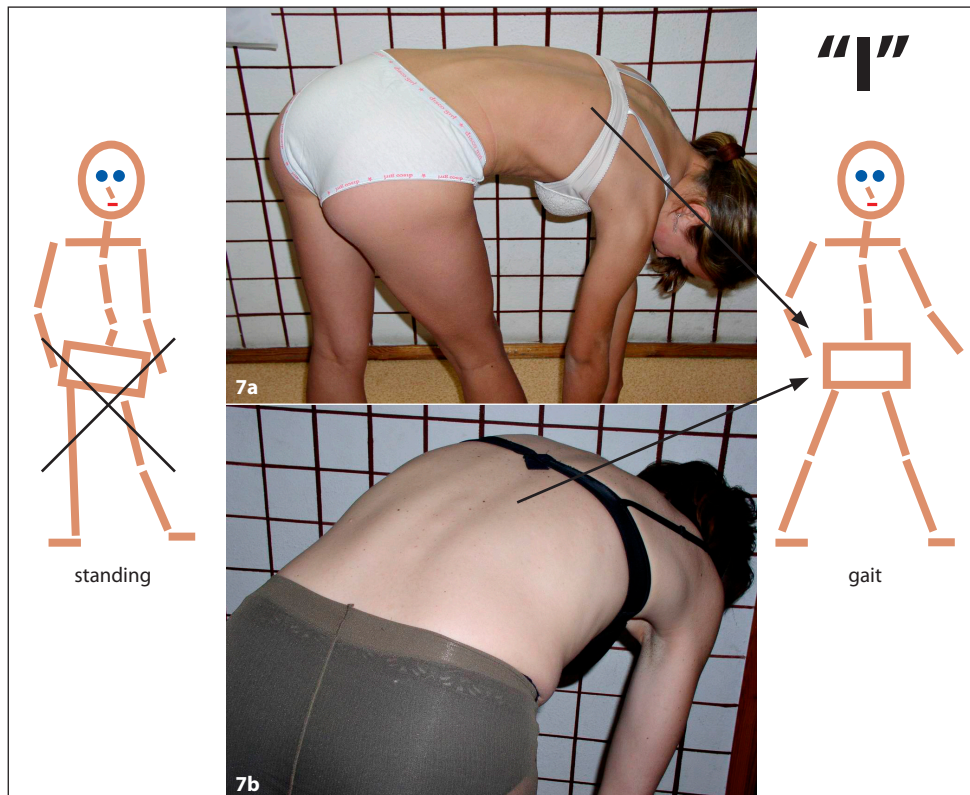


Fig. 7a, 7b: Two patients – 20 years old (fig. 7a), 35 years old (fig. 7b) – both „I” type scoliosis, III epg. Deformity connected only with walking. Spine stiff and painful. No curves or very small ones. Until 2004 this type of deformity was not classified as a scoliosis.

ease’ on the right leg permanently. This habit becomes visible at around the age of 2 years. Thus standing on the right leg causes functional, reversible changes of the spine axis, but after 8–10 years the scoliosis appears.

Thus standing ‘at ease’ on the right leg, altogether with the walking factor, is an important etiological biomechanical factor – in double curve scoliosis “S” in the 1st etio-pathological group (epg). In this type of deformation, the spine is stiff.

Standing on the right leg is the only one factor in “C” scoliosis II/A epg. If ‘the standing factor’ is connected with laxity (or if the child has been previously treated with wrong methods) “S” type, II/B epg. scoliosis develops. In this type of the “S” II/B epg. scoliosis, the spine is flexible.

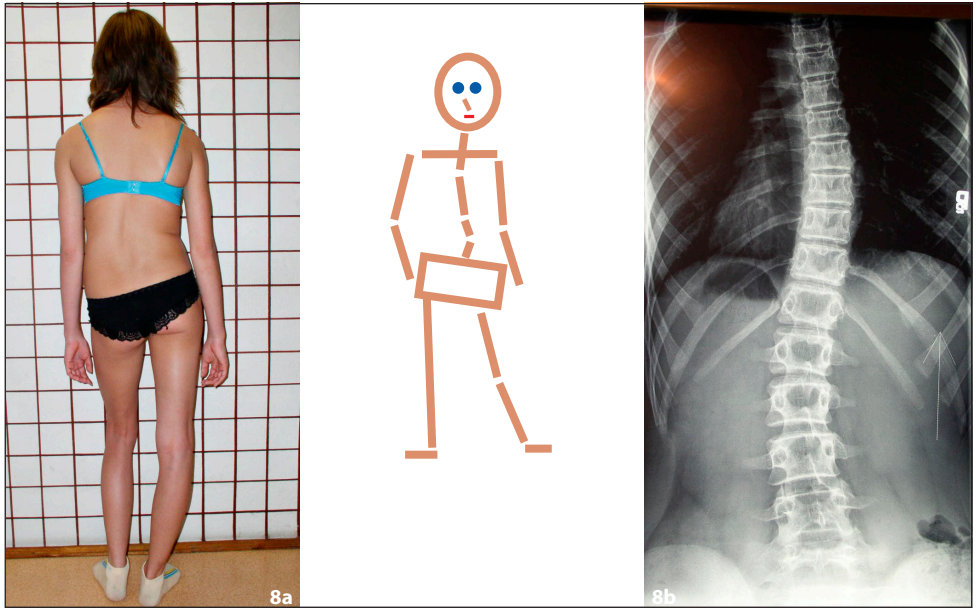


Fig. 8a, 8b. 13 years old patient. „S” type scoliosis, II/B epg. The cause of the spine deformation is 1. the habit of standing on the right leg since the 2nd year of life and 2. the soft tissue laxity. The permanent standing on the right leg leads to „degenerative scoliosis”.

There are also “I” type, III epg scoliosis. **Here the etiological factor is connected only with walking.** The spine is stiff, no curves occur, or they are minimal. (Fig. 5a, 5b, 6a, 6b, 7a, 7b, 8a, 8b).

Every scoliosis type becomes ‘a degenerative scoliosis’ in older people. (Fig. 9a, 9b, 9c).

To summarize this subchapter we can say: the aetiology (causes) of scoliosis was not known before 1995 and this typical spine deformation described above, was called “idiopathic scoliosis” (idiopathic – not founded causes). In 1995 we exactly described pathogenesis of the so-called “idiopathic scoliosis”. The causes are connected with biomechanical reasons, and these are based on “asymmetry of loading of left and right side of body and on limited range of movements of the right hip. The limited movement of right hip is “as compensatory movement” transmitted to the pelvis and to the spine during gait and on this way influence the spine growth, making the scoliosis (see many publications – also in the Journal *Pohybové ústrojí*).

Prophylaxis and therapeutic recommendations

If the habit of standing on the right foot is noticed; the observation is confirmed in clinical examination of the adduction of the hips in extension position of the joints. We confirm a smaller adduction of the right hip comparing to the left one.

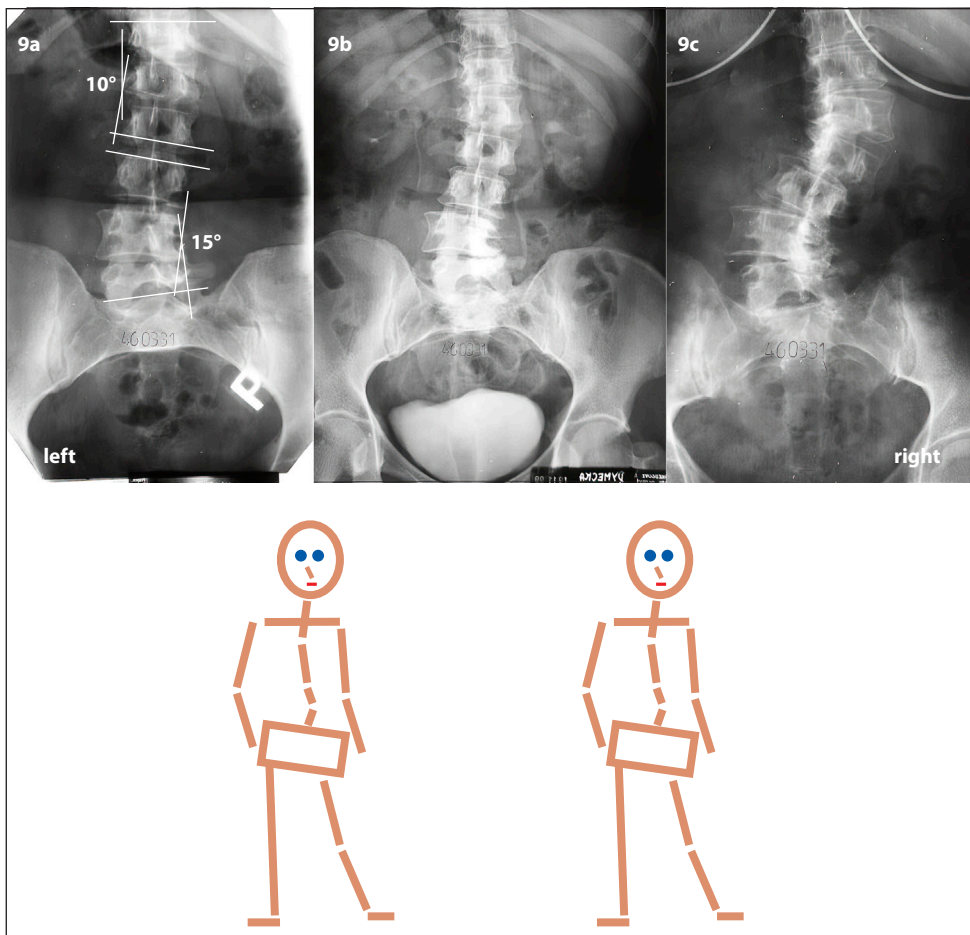


Fig. 9a, 9b, 9c: 15 years old patient (fig. 9a) and the same patient at the age 39 (fig. 9b) and of 62 (fig. 9c). „S” type scoliosis II/B epg caused by the habit of standing on the right leg. Over the years the scoliosis becomes to be degenerative.

We inform the patient about the necessity of changing the way of standing. The children and the adolescents with early scoliosis symptoms should stand on the left leg or on both equally (**Fig. 10**). The adults with symptoms of the degenerative scoliosis (lower back pain) and/or with symptoms of the early hip arthrosis, should stand with the hips in abduction and internal rotation and sleep in prone position (on the abdomen / stomach) with one hip flexed and abducted and some part of the night in embryo position.

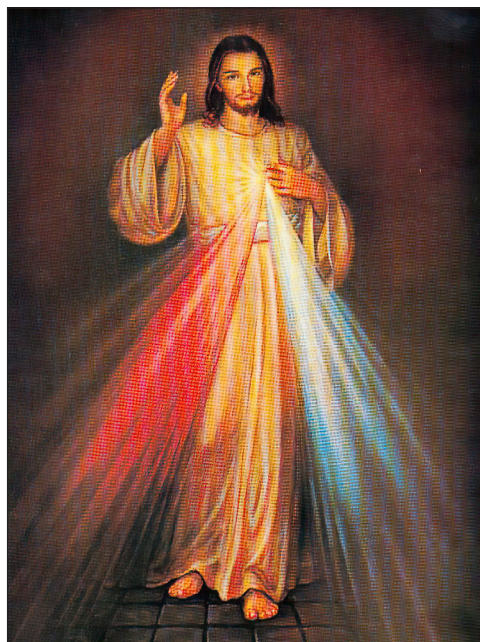


Fig. 10. The picture of Jesus Christ informs about correct standing. (1) Scoliosis affected children should only stand on the left leg. (2) Healthy children should stand on the left, right, both legs for 33 % of the time. (3) The children and adults should control their manner of standing. (4) The doctors should become familiar with „The Syndrome of Standing on the Right Leg“.

Varus shank axis (bow deformity) and knee deformity (genu valgum) with degenerative changes in adults should be treated in the childhood. In mature age there defects are often connected with knee contracture and it's instability. In treatment, in some cases, surgery can be necessary.

In adults in knees conservative treatment – everyday, repetitive isometric quadriceps femoris muscle exercises are recommended, with simultaneous axial traction. Here we inform, that in the knee treatment no “flexion to extension” exercises should be done. Additionally, thermotherapy, diadynamic, iontophoresis and cryotherapy, doing exercises in warm salt spring water or geothermal waters (in Poland many Geothermal Rehabilitation Centres are being built now). Correct rehabilitation is the best way to prevent hip, knee and spine arthrosis.

CONCLUSIONS

1. There is, as a new orthopaedic unit – ‘The Syndrome of Standing ‘at Ease’ on the Right Leg (SofSRL).
2. Permanent standing on the right leg begins at the age of two and lasts for the whole life.
3. The children and the adults stand on the right leg – because it is more stable, comfortable and not tiring. It results from a smaller adduction of the right hip, due to a shortened ilio-tibial band (tractus ilio – tibialis and fascia lata), therefore a better stabilization of the hip during standing.

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4. Smaller adduction of the right hip – is one of the symptoms of asymmetry in “The Syndrome of Contracture and Deformities” according to prof. Hans Mau.
 5. Permanent standing on the right leg influence the axis of the spine, causing two etio-pathogenetic types of scoliosis in the children and the adolescents. These are the: “S” I epg, “C” II/A epg and “S” II/B epg (according to Lublin / T. Karski classification, 1995–2007).
 6. In adults the “Syndrome of Standing on the Right Leg” is the cause of nagging back pain due to the left-side lumbar spine degenerative scoliosis and hip pain due to degenerative changes.
 7. All doctors should become familiar with “The Syndrome of Standing on the Right Leg” and take this knowledge into consideration in the therapy of patient with motor system problems.
 8. Many years of experience teach, that in rehabilitation and prophylaxis, besides controlling the way of standing, the stretching exercises are very important for the recovering of full range of movement of the spine, hips and knee.

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