

## Research Article

# Early therapy of children with orthopedic disorders - the chance of healthy and active function status of adults. Common causes of pathology

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**Abstract**

Often the health status of adult's people is connected with proper or improper therapy of various disorders in children. We should early make diagnosis in newborn, babies and young children to find symptoms of Minimal Brain Dysfunction (MBD) and symptoms of Syndrome of Contracture and Deformities (SofCD) and cure these children fully and perfectly. Of course there are others causes of pathology of locomotor system in adults – like disorders post inflammation, post trauma and others. In therapy important is not to receive “strong muscles” but full movement of joints, proper and symmetrical positions of body parts, proper function. Well - important is “standing position”, “sitting position” what is described in article.

**Key words:** Syndrome of Contractures and Deformities (SofCD), Minimal Brain Dysfunction (MBD). Hips, Knees. Shanks. Spine

**Introduction**

It is very important to realize the prophylaxis program for newborns and babies in situations of various orthopedic problems. Immediately after delivery and in the next months after birth – the prophylaxis program is especially important for hips, neck, and the axis of legs. For older children, it is important to diagnose the status of the spine, position of the pelvis, axis of legs, range of movement of hips, knees, shoulder, and feet.

If pathology exists, it can have various causes; the first cause is connected with symptoms of Minimal Brain Dysfunction (MBD) caused by asphyxia of the fetus in the gravidity or delivery period [1-53].

The second cause of pathology is Syndrome of Contracture and Deformities (SofCD), first described by Professor Hans Mau (Tübingen, Germany) as “Siebener Syndrome” (Eng. “Seven Deformities Syndrome”). In SofCD, there are various asymmetries of the body, spine, hips, pelvis, feet connected with insufficient space in the mother's uterus during the gravidity period [1-53].

T. Karski, added the eighth deformity to SofCD, varus of shanks [30]. In the article, we described easy and successful therapy for this pathological axis of shanks.

In this article, we describe other causes of pathology, namely those connected with a form of standing and sitting. In this article, we describe the principles of diagnosis and give methods of therapy [1-53].

**In observation / material**

More than 25,000 cases from the years 1995-2025 – patients treated in the Pediatric Orthopedic and Rehabilitation Department (1995 – 2009) and in the Out-Patient Clinic of authors T. Karski and J. Karski (1995 – 2025).

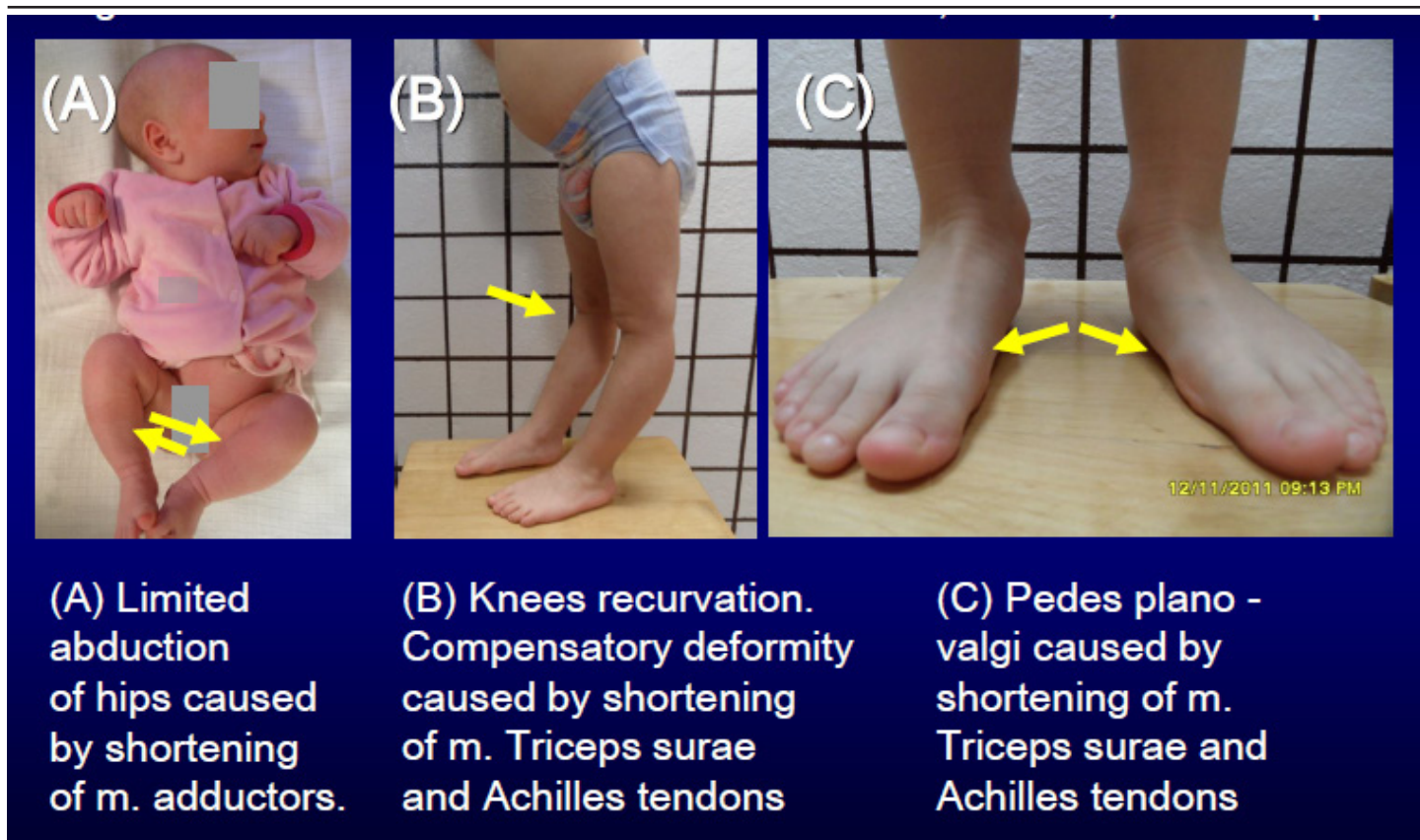
**Importance of anamnesis - for proper diagnosis of MBD, SofCD**

It is important to have complete information about the pregnancy and delivery period of a child. We should ask parents, particularly the mother, about the pregnancy period. We ask about prospective bleeding from the birth canal, high or low blood pressure, smoking of cigarettes by the mother during pregnancy - yes or no, anemia, stress, and excessive noise.

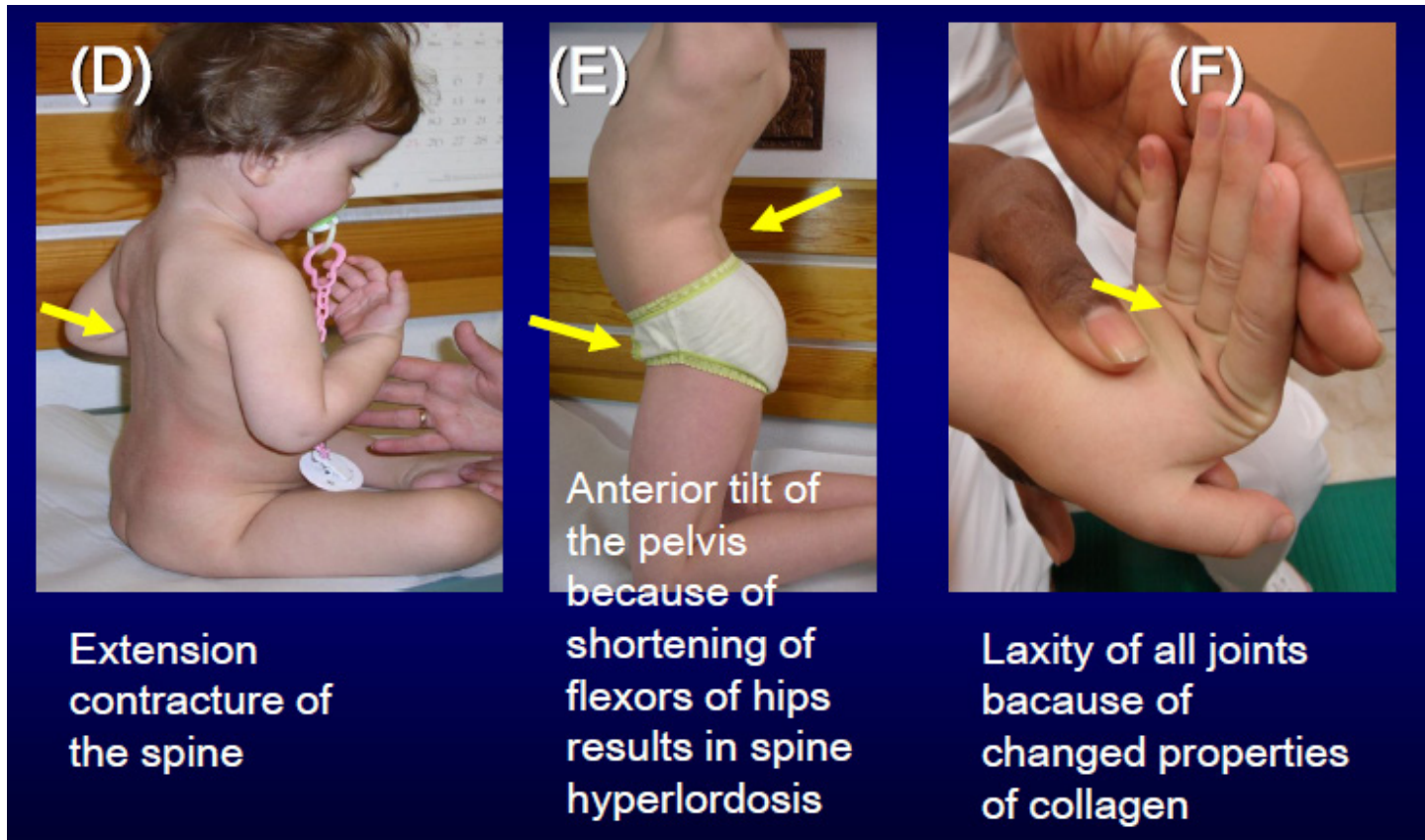
We also ask if it was too difficult and too long or other complications of delivery. For example, the use of forceps or vacuum extractors – because it is not neutral for the child.

If there are some complications during pregnancy and/or the delivery period, does the child have symptoms of MBD.

In the mother's uterus, if there was too small a space for the fetus, can appear a symptoms of SofCD - described by Prof. Hans Mau [Author – T. Karski – had the occasion to discuss in personal speech - about the Syndrome of Contractures and Deformities during the Orthopaedic and Traumatology Congress in Hungary, 1995].

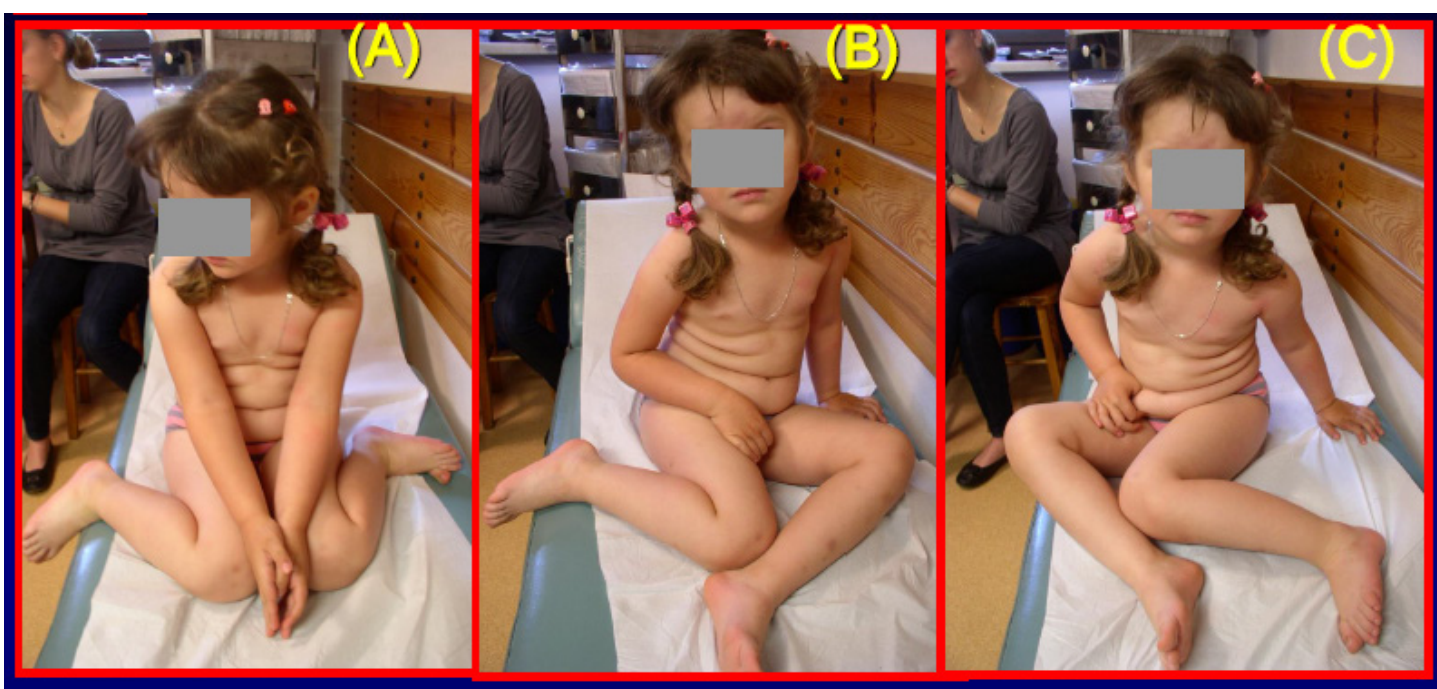


**Figure. 1.** Minimal Brain Dysfunction (MBD). Sub-spasticity of the muscles. (A) Limited abduction of hips caused by shortening of m. adductors. (B) Knees recurvation. Compensatory deformity caused by shortening of m. Triceps surae and Achilles tendons. (C) Pedes plano - valgi caused by shortening of m. Triceps surae and Achilles tendons. Authors articles about MBD written in USA, Canada, Czech Republic.



**Figure. 2.** Minimal Brain Dysfunction (MBD). Sub-spasticity of the muscles. (D) Extension contracture of the spine, (E) Anterior tilt of the pelvis & hyperlordosis of the lumbar spine. (F) Changed collagen - in effect laxity of the joints. (D) (E) (F) – Easy development of scoliosis. Similar opinion Prof. M. Roth-1923, Prof. D. Tylman & Prof. K. Rapala-1960-1970. Authors articles written in USA, Canada, Czech Republic.

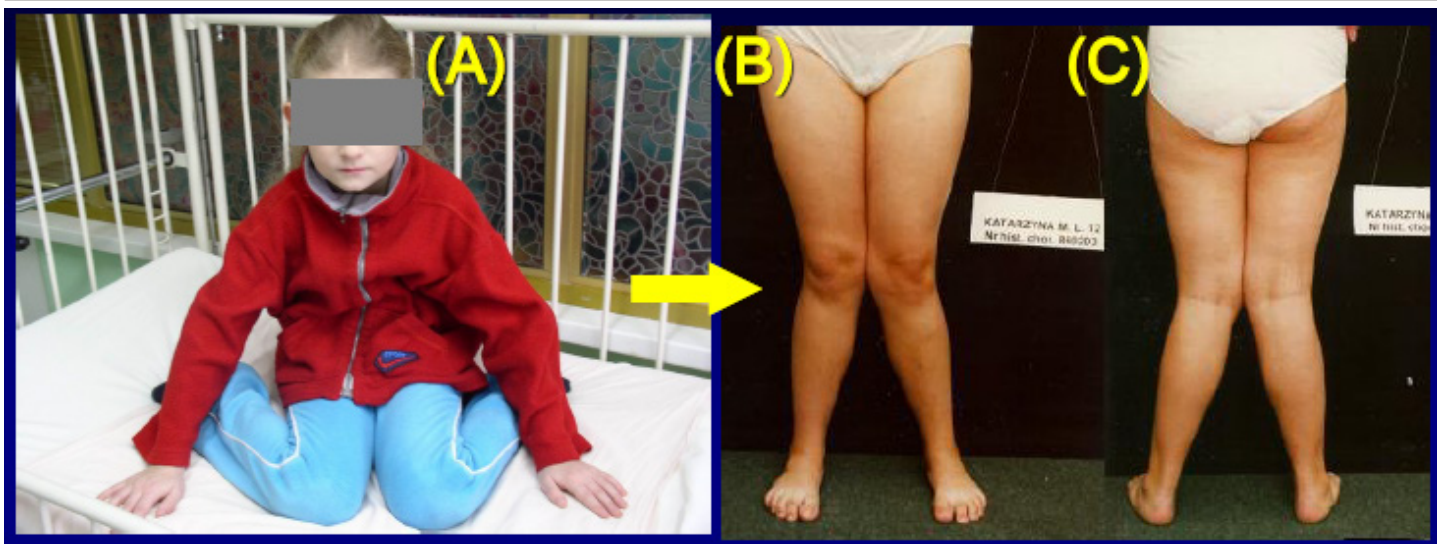




**Figure. 3.** Girl 5 years old – In anamnesis and in clinical examination symptoms of MBD. General laxity of joints enables pathological sitting (A) (B) (C). As a result of wrong position – will develop valgus deformity of knees. Bigger Antetorsion (AT) of the femur neck, results in dysplasia of hips. The gait - „toes in”.



**Figure. 4.** The same girl as in Fig. 3. In this figure – proper sitting position, what we call in orthopedic language „Polish position of sitting” or „butterfly position of sitting” in karate language. All children in the world should sit in this position. Such sitting enables proper development of hips, proper axis of legs, proper conditions for growth and development of the spine.

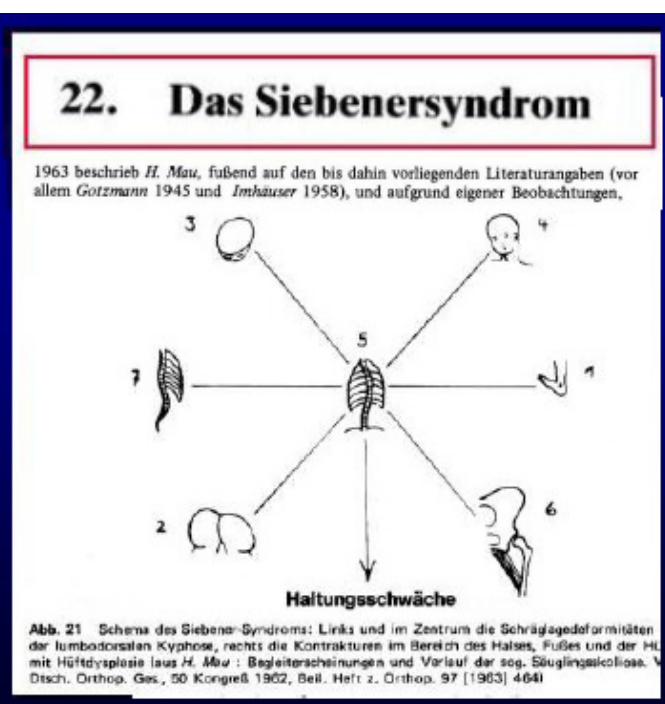
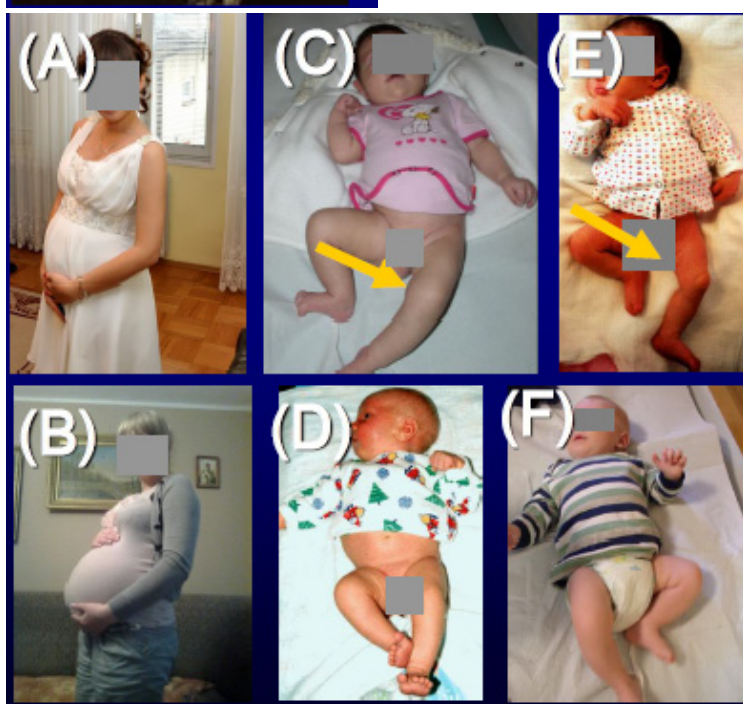
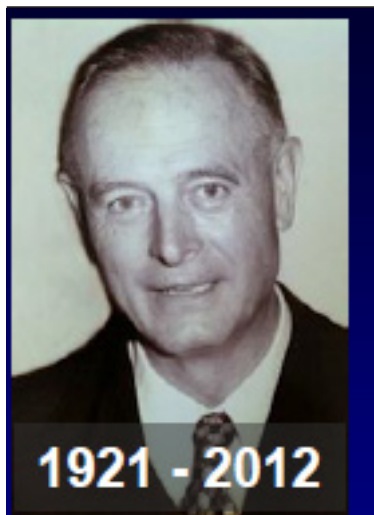


**Figure. 5.** Girl Katarzyna M. In all photos (A) (B) (C) - the same girl - 12 years old with symptoms of MBD. Laxity of joints. Permanent sitting in “the TV position” (description used at Sophie Minde Orthopaedics Hospital, Oslo, Norway – T. Karski education stay in 1981) is the cause of the valgus deformity of the knees. With time comes to shortening (contracture) of m. tensor fasciae latae, fascia lata, tracts ilio-tibialis and capsules of the knee joints. After some years of such sitting, the deformity is fully fixed. Prophylaxes: only “butterfly sitting” (term from karate).

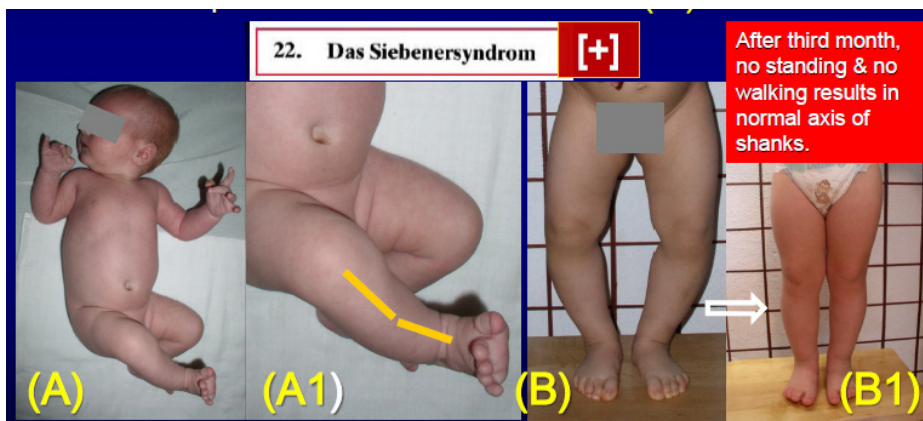


**Figure. 6.** Patient with symptoms of Minimal Brain Dysfunction (MBD). Sub-spasticity of the muscles. Clinically: Pedes plano-valgi and recurvation of knees, anterior tilt of the pelvis & hyperlordosis of the lumbar spine. In pictures (A) and (B) – shows methods of therapy - stretching exercises (A) for flexors of knee and feet, on (B) stretching exercises for flexors of hips. In the therapy of orthopedic disorders in children and adults – only proper stretching exercises lead to full and symmetrical movement of all joints. Very beneficial exercises for children – karate, taekwondo, kung fu, for adults – yoga.

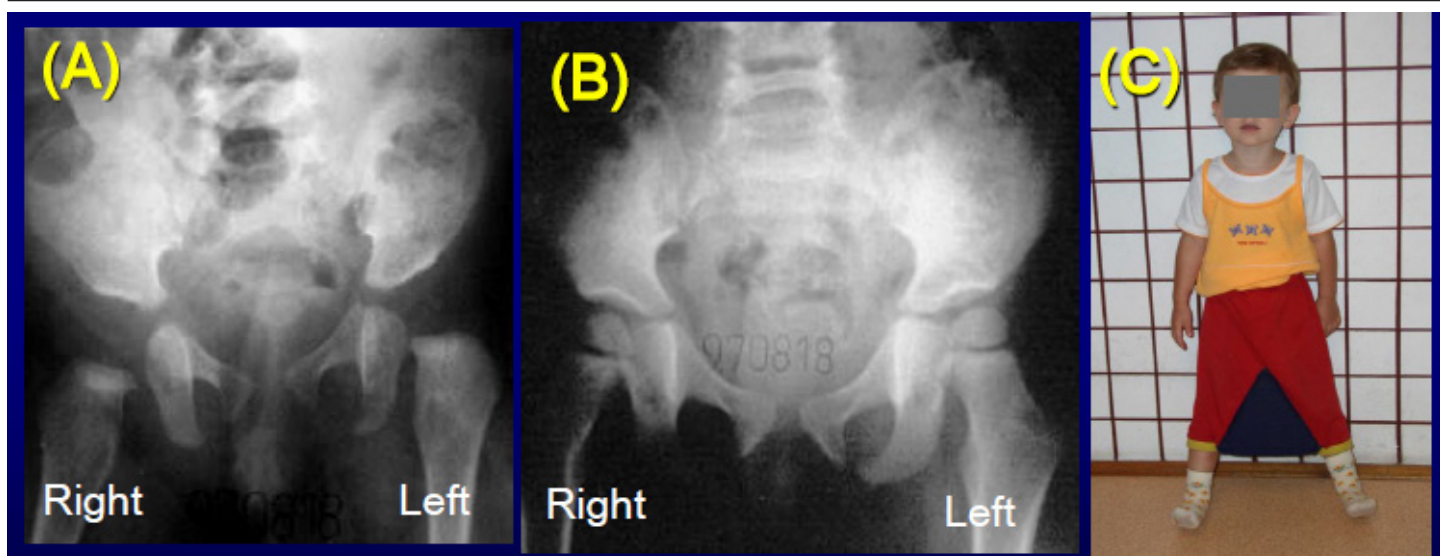




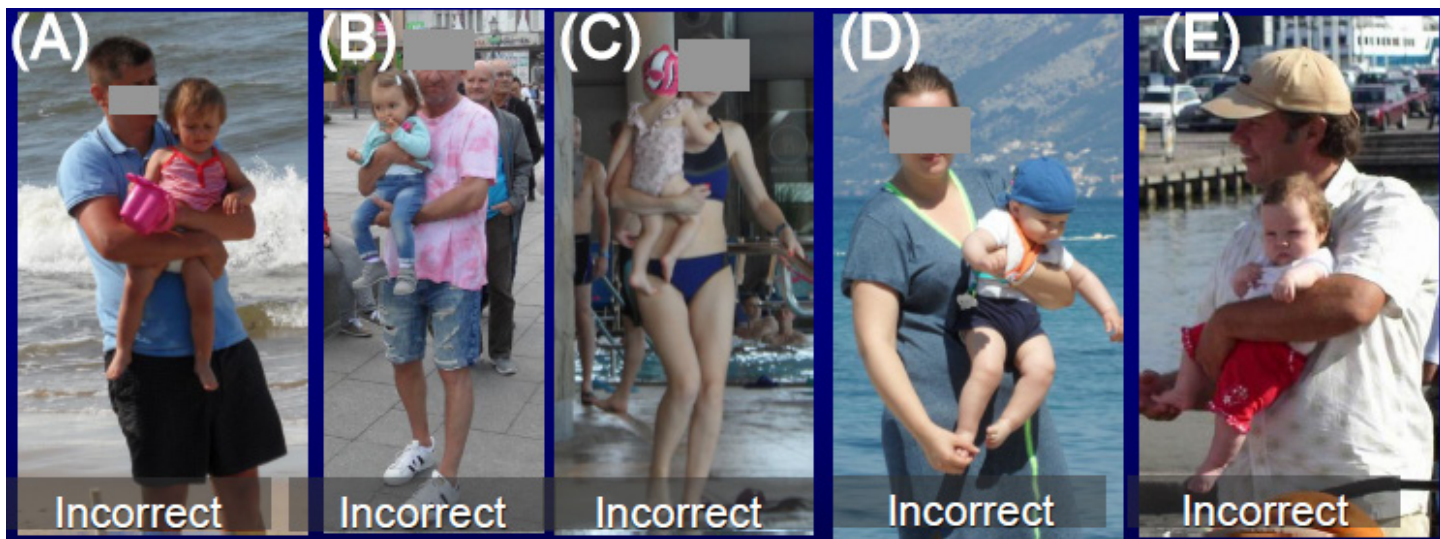
**Figure. 7.** Symptoms of the „Syndrome of Contractures and Deformities (SofCD) primary described Prof. H. Mau (Photo) in years 1960 - 1970 as “Siebenersyndrom” (English: „Seven Contractures Syndrome”). In Lublin we added varus deformity of shanks in 2006. Causes of this „pathology” – insufficient space (A) in mother’s uterus, (B) Proper space. Author’s publications of this problem: USA, Canada, India/UK, Czech Republic.



**Figure. 8.** Deformity of shanks / crus varum (A) (A1) was added [+] to the Symptoms of the „Syndrome of Contractures and Deformities” (SofCD) in 2006– T. Karski & J. Karski. The conservative methods of therapy of this deformity was found in 1981. When there is no function of Delpeche – Wolff / Hueter – Volkmann law – the axis will become normal. A child’s age for this therapy is 1 – 2 years. Method – absolutely „no standing” and „no walking” for 3 – 4 months plus Vit. D – results in a normal axis (B1).

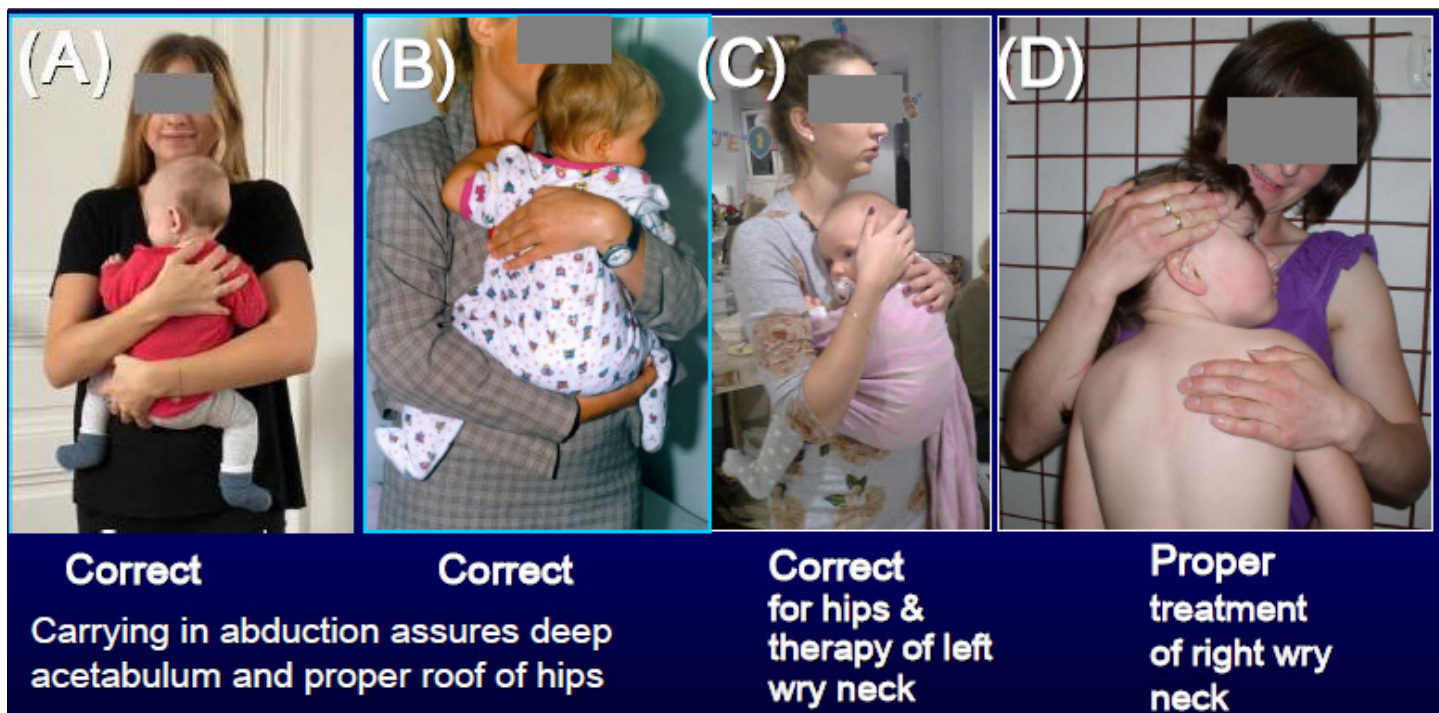


**Figure 9.** Child. History number: 970818. (A) 5-month-old child. Dysplasia of left hip. Oblique line of left joint's roof. (B) The same child at 3 years of age. Sufficiently, but not fully developed hips. Therapy necessary – proper nursing - carrying in abduction of hips, „butterfly sitting” for many years and walking in abduction (C).



**Figure 10.** Wrong way of carrying a child - no abduction of the hips. Danger of development of dysplasia. Such carrying is recommended by „poorly” educated or „over – educated” doctors in many countries in Europe - there was much discussion about this problem by our Clinical Team. In 1970 – 1995 Prof. I. Wośko was the Head of Pediatric Orthopedic Department in Lublin, Poland. Pictures taken in Poland (A, B, C) and abroad (D, E). Nursing / carrying of children without abduction of hips – very frequent in Poland. The next generation of children will be with dysplasia, adults with imperfect hips – leading to arthrosis.





**Figure. 11.** The correct way of carrying a child. Prophylaxis of hip dysplasia (A) (B) (C). Proper therapy of the wry neck / torticollis – in (C) on the left side – and in (D) on the right side. Permanent rotation stretching of the head to the wry neck side is the only proper method of therapy. Carrying in abduction assures deep acetabulum and proper roof of hips. Articles of this treatment in Germany and in USA [T. Karski 1991 & 2017, 2020].

### Newborn and babies status of hips, spine, axis of legs (Fig. 1 – 11)

We should examine and cure especially these three forms of pathology in the early period of life:

a/ dysplasia of the hip or hips - this pathology can be in SofCD, in MBD by laxity of joints, or in spasticity of adductor muscles of hips.

b/ wry neck - this pathology can be in SofCD, or after traumatic delivery,

c/ varus deformity of a shank in SofCD – if the space in the uterus of mother was too small for the fetus.

### Hips (Fig. 9 – 11)

Examination of hips - important range of abduction, should be full 80 or 90 degrees, full external rotation, till 80 or 90 degrees and internal rotation 20 or 30 degrees. The hips should be stable and shown no Ortolani or Barlow signs. During therapy or in prophylaxis program, hips should be in full abduction and flexion more than 90 degrees all the time – it means such “abduction nursing” one year or longer. Proper nursing is important, but in some cases, we use orthopedic “abduction devices”. Please note - after birth, the infant should not stand and walk earlier than one year. Why? Because the hips are not fully developed for standing and walking. The hip joints must be deep, the roof horizontal, and concave for proper loading – and it is not after birth. The child at the age of one year may stand and walk if the clinical and X-ray examination shows normal anatomy and movement. Professor Reinhard Graf from Stolzalpe / Murau (Austria) [T. Karski visited twice for education this Orthopedic Department in Stolz-alpe], founder of sonography, also advised making X-rays to know exactly the developmental status of hips. Therapy of hips in child's period of life is very important – if false or insufficient – in adults age “imperfect hips” and next arthrosis.

### Neck – torticollis/wry neck deformity (Fig. 11)

If this pathology exists, the cause is a shortening of m. sternocleidomastoids and the head will deviate laterally to the side of the shortened muscle and rotate to the opposite side. The proper therapy from our (T. Karski) experience since 1974 is “rotation stretching therapy” to the side of torti-

collis. The head should be turned to the left in wry neck left-sided and to the right in wry neck right-sided. Therapy consists of proper nursing by mother or father during several hours every day. Surgery is not necessary. This method of therapy was introduced by author - T. Karski in July 1974 with the first case involving a newborn 3-week-old with heavy wry neck left side. There have been two publications about this therapy, one in 1991 in Germany and the second in 2018 in the USA. From 1974, we have used operative methods for torticollis / wry neck only for older children and only in cases coming to Lublin from far regions of Poland.

### Axis of shanks (Fig. 8)

In some newborns and babies, the varus deformity of shanks is bigger. Why? It happens when the space in the uterus of the mother is too small for the fetus. So - this varus deformity of shanks, we add to SofCD as the eighth symptom. The deformity can be bigger in children if they start to stand and walk too early – in age of 8 or 9 months. This varus deformity in older children is described as Blount disease. Our new conservative therapy of children aged 1 to 2.5 years old is by excluding the Delpeche - Wolf / Hueter – Volkmann law. This new method of therapy was introduced in Lublin, Poland, in 1981 and is the groundbreaking therapy to exclude the “factor of loading”, meaning “no standing” and “no walking” 3 or 4 months plus proper doses of vitamin D. After such therapy, we found the axis of shanks normalizes. Up until 1981 we used orthopedic devices, but mostly the results of such apparatus therapy were not sufficient so we operated on many children with the shank varus deformity. Since 1981, we have not operated on children with varus deformity because we introduced a new “idea of therapy”. If the new therapy is/was introduced in proper time – it means children aged 1 to 2.5 years – the results in all cases were good. In all cases after 3 or 4 months time of “no walking” and “no standing”, the axis of shanks normalizes. Our publications about these methods were in Germany and in the USA [1-41].

After 1981, we made “corrective shank osteotomy” only in older children, mostly coming to Lublin from far parts / regions of Poland.

## Older children (5 – 15 years old)

Problems of the feet in the form of valgus or plano – valgus deformity are in MBD cases (Fig. 1). In cases of MBD, there is a shortened Achilles tendon and muscle triceps surae what is called “contracture” - it happens mostly on both sides. This shortening – together with the laxity of joints makes a compensatory pronation position of the feet during walking. After several years gives a “valgus or plano – valgus deformity”. The first who described this cause of feet pathology was Professor Jean Meary from Paris, France, in the 70th years of the XX century - information from my teacher of orthopedics and founder of University Orthopedics Department (1954) in Lublin – Prof. Stanisław Piątkowski – who very often visited (1954 – 1980) the France Orthopedic Departments.

The treatment consists of the lengthening of Achilles tendons by “stretching exercises”. In the first years (1954 – 1970) in the Orthopedic Department in Lublin, we made surgery, operative lengthening of Achilles tendons (T. Karski - was active as an orthopedic surgeon from 1961). Now in almost all cases, we treat this valgus or plano – valgus deformity of feet by conservative methods - by stretching exercises – to lengthen the Achilles tendon and m. triceps surae plus using inserts for shoes.

## Older children in age of 5 – 15 years

Problems of knees (Fig. 3, 4, 5). Pathology can be in the form of a changed axis - varus or valgus deformity of shanks and knee joints, contracture (not full extension of the knee joint), or due to instability. This pathology can cause pain in the knee in older children and adults. Varus deformity of shanks is described in chapter above.

Valgus deformity of knees is mostly connected with the improper sitting

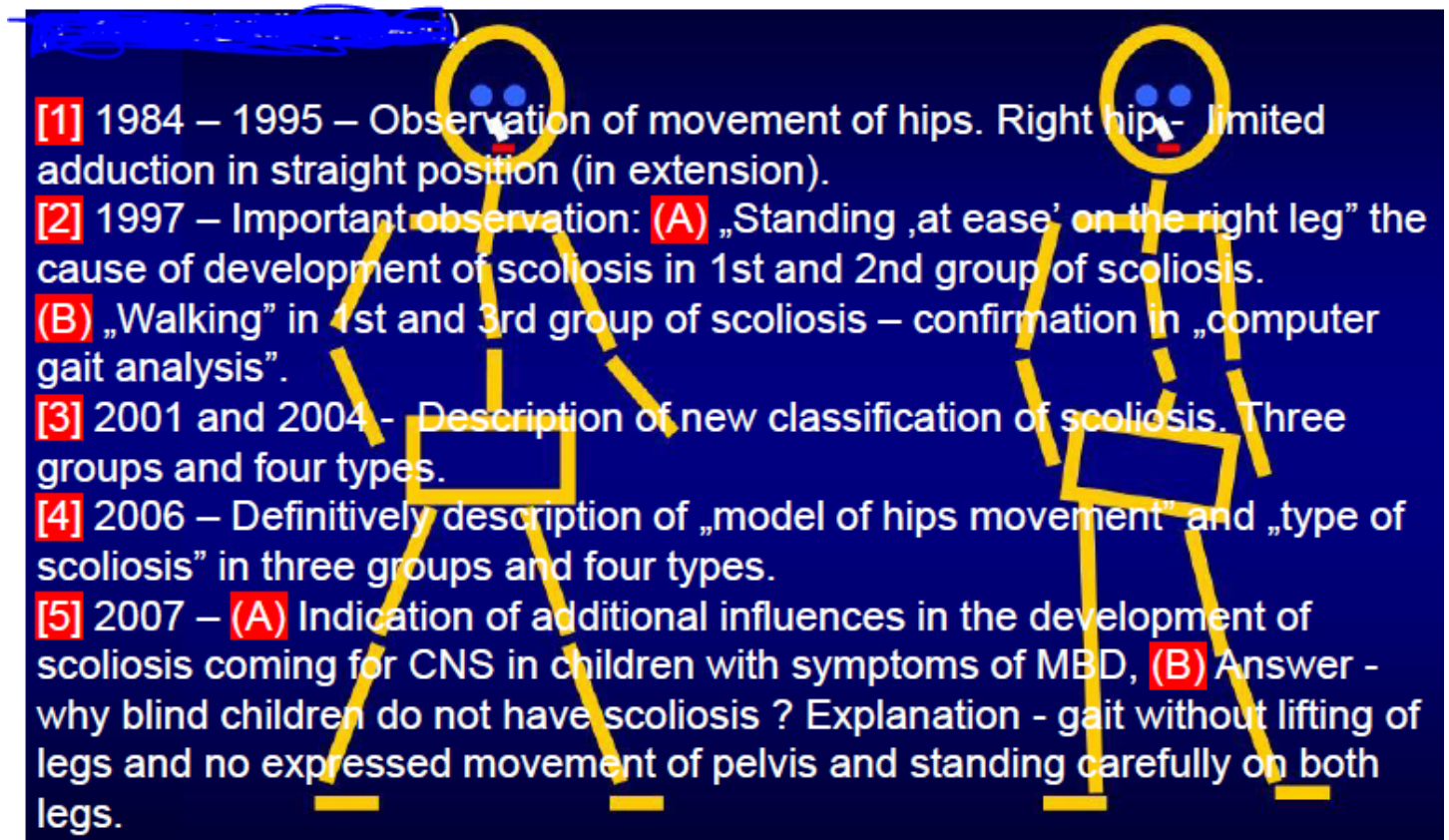
position of children. Clinically, during the examination, we see instability of the knee joint and an altered way of movement in “extension of the knee from flexion position”. A new test – “changed way from flexion to extension” is described by T. Karski and Co-authors in the Journal of Orthopedic Science and Research India / UK / 2020 – and underlines that the extension movement of the knee from a flexion position to extension should be exactly in the sagittal plane. In the pathology of the knee, in syndromes of pain - often in “last degrees of the movement”, is the rotation of the shank, mostly external rotation. We emphasize that it is a new test, and a new method of examination which was published in the article Journal of India / UK – and should be used by all orthopedic surgeons. What is the cause of such pathology? We find and publish in some articles [14-19], that the cause is “pathological sitting” (Fig. 3).

## Therapy

Important is proper sitting and exercises of m. rectus, only in the extension position of the knee and never from flexion to extension, plus thermotherapy for the knee.

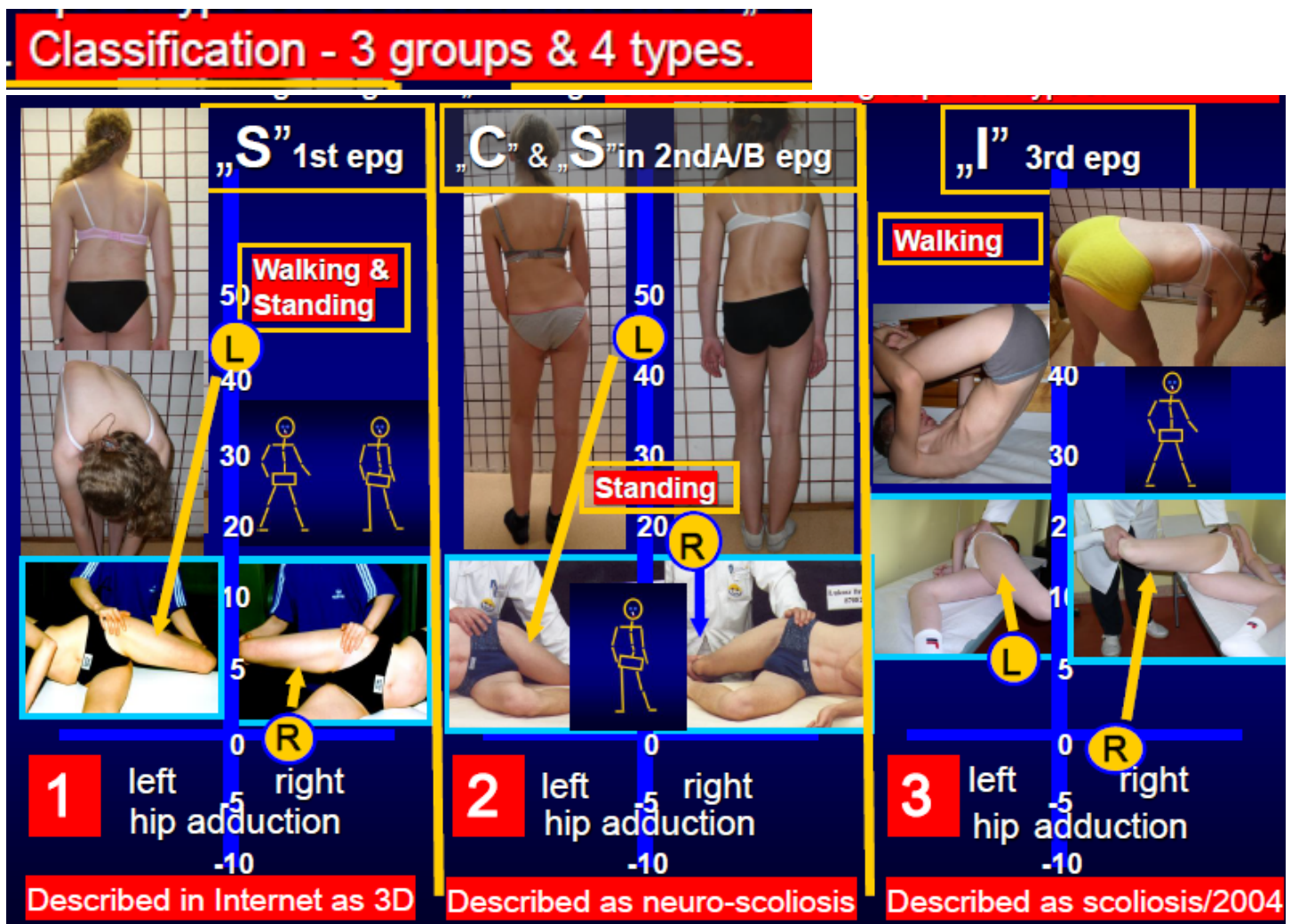
## Older children. Spine. Scoliosis (Fig. 12 – 15)

In all countries of the world, we can see children with „Idiopathic Scoliosis” – other description - Adolescents Idiopathic Scoliosis (AIS). “Idiopathic” means that the etiology of deformity is unknown, not found. In Lublin, we say „So-Called Idiopathic Scoliosis” because in the years 1984/1995 – 2007, me (T. Karski) had described the etiology of this spine deformity. It was also given the new classification of spine deformity and was presented the new, proper therapy. There are also described rules of the causal prophylaxis.

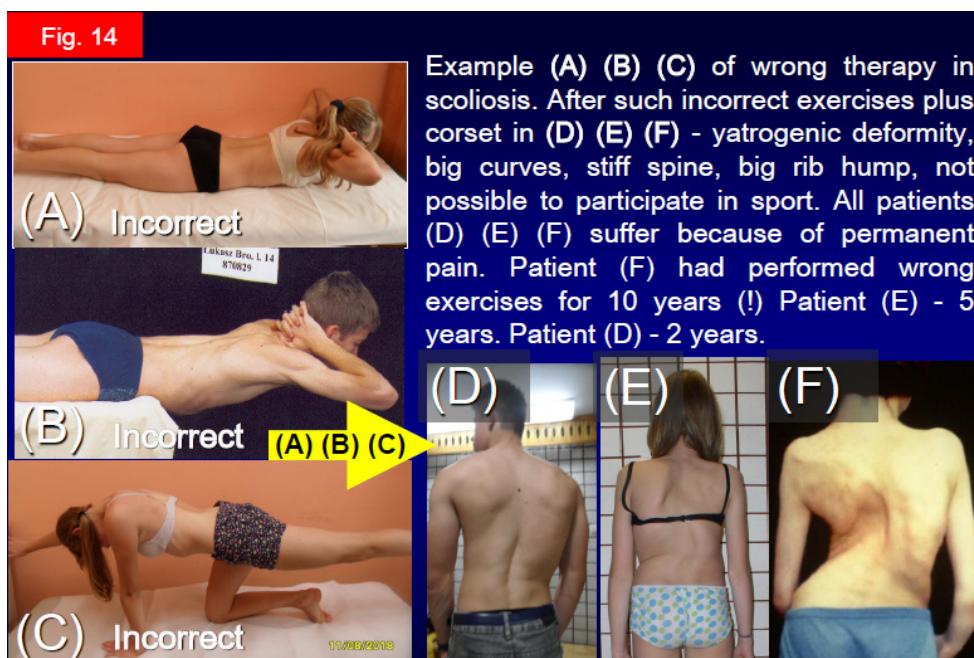


**Figure. 12.** History of So-Called Idiopathic Scoliosis - Important dates in discoveries (1984/1995 – 2007) - full and definitive description of biomechanical etiology (T. Karski, Lublin, Poland).

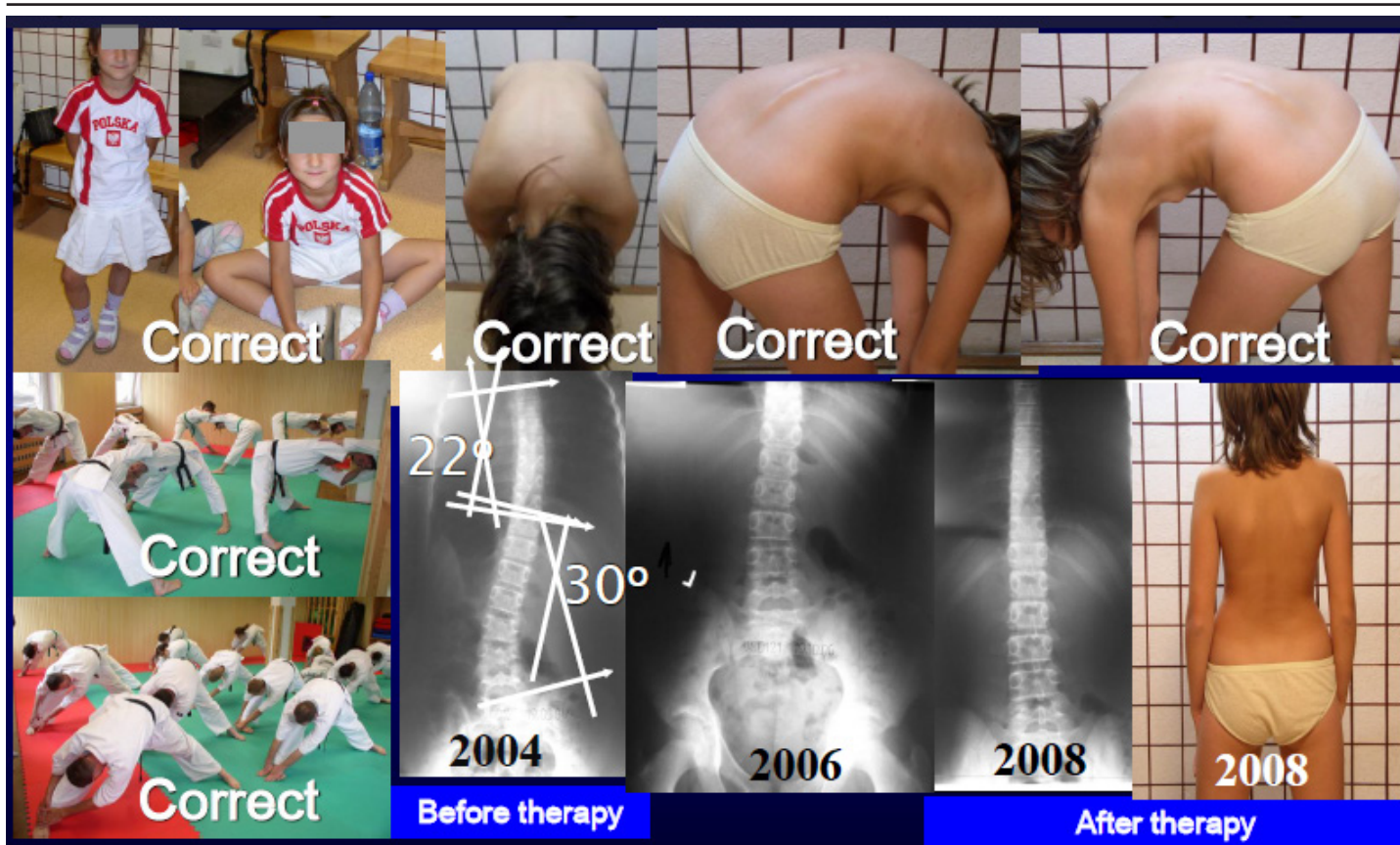




**Figure 13.** Biomechanical etiology of the So-Called Idiopathic Scoliosis (AIS) [Karski T. 1995-2007]. Range of adduction of the hips & type of scoliosis. Influence: „Standing ‘at ease’ on the Right Leg” and „Walking”. Classification - 3 groups & 4 types.



**Figure 14.** Example (A) (B) (C) of wrong therapy in scoliosis. After such incorrect exercises plus corset in (D) (E) (F) - yatrogenic deformity, big curves, stiff spine, big rib hump, not possible to participate in sport. All patients (D) (E) (F) suffer because of permanent pain. Patient (F) had performed wrong exercises for 10 years (!) Patient (E) - 5 years. Patient (D) - 2 years.



**Figure. 15.** For scoliosis proper stretching exercises. Prof. S. Malawski (1960-1970) from Warsaw was the first who recommended flexion exercises. Important standing on the left leg & karate, taekwondo, aikido, kung fu, yoga.

### The were following steps in discovery of etiology of the so-called idiopathic scoliosis

[1- 8, 20 – 53]. History with dates (Fig. 12, 13) – in years - 1984 till 2025. The final and completely description about So-Called Idiopathic Scoliosis was in years 1995 – 2007. The research of "So-Called Idiopathic Scoliosis" took many years. The first observation was made from 1984 to 1995. It was confirmed that scoliosis is connected with biomechanical causes – "walking" and "standing at ease" on the right leg.

**1984** – First my - T. Karski - observation about the etiology of scoliosis – was during the "Scholarship study in Invalid Foundation Hospital" in Helsinki / Finland. In one month of observations and examination of many children with scoliosis, focus was given not only on the spine but also on pelvis and hips. During this time, I also assisted during many operations on children with scoliosis - operator Doctor Olai Snelman.

**1984 – 1995** – My own observation of children with scoliosis in Lublin, Poland, and the discovery that every child with scoliosis had limited adduction movement in extension position of the right hip joint, often limited internal rotation and extension of this hip joints too. To explain this difference of movement of the left and the right hip, I have referred to the Syndrome of Contracture and Deformities according to Prof. Hans Mau.

**1996** – First publication about the biomechanical etiology of the "So-Called Idiopathic Scoliosis" in the Journal "Orthopädische Praxis" in Germany.

**1997** – Confirmation that "standing 'at ease' on the right leg makes the lumbar left convex scoliosis. Permanent standing on the right leg – just form the second year of life after 8 or 10 years makes the scoliosis visible and fully fixed. Confirmation of these observations come from the exam-

ination of many children not only in Poland, but also during my educative stays or Congresses in Germany, Austria, Denmark, Finland, China, Cuba, Hungary, Czech Republic.

**2001** – New classification and description of two groups of scoliosis: 1st group - "S" ethio-pathological-group (epg). Deformity 3D. This type is connected with "walking" and "standing 'at ease' on the right leg". In this type, the spine is stiff, gibbous on the right side of thorax, progression. A special model of hip's movements – the left hip – full movement, the right hip – movement maximally limited. This type of scoliosis is described in the Internet.

**2nd group** - "C" and "S" (epg). Deformity 2D - one or two curves, connected only with standing 'at ease' on the right leg. In "S" forms of scoliosis, additionally exist – laxity of joints and / or wrong previously therapy. The spine is flexible, small progression, no gibbous or small. Special model of hip's movements – the left hip – full movement, the right hip – movement limited partially.

**2004** – The 3rd group of scoliosis "I" (epg) - was described. Deformity 2D. Clinically only stiffness of the spine, small curves, or no curves. Connection only with "waking". Special model of hip's movements – the left hip – movement limited partially, the right hip – movement limited maximally.

**2006** – Ultimately were described three models of hips movement and three groups and four types of scoliosis.

**2007** – Additional causes in the development of scoliosis were described, namely symptoms typical for MBD, a/ tendency to extension position of the trunk, b/ wrong position of the pelvis – anterior tilt and c/ laxity of



joints. In this year (2007) was also given the answer – why fully blind children never have scoliosis. Answer – gait is without lifting of legs – and because of this any additional movement of the pelvis – no influence to the spine. Also, standing on both legs – never permanently on the right leg.

### **Therapy of scoliosis in points – A, B, C, D**

Here, it is important to inform that previous therapies – exercises to receive strong muscles – were not correct, leading to bigger deformity and completely stiffness of the spine and a bigger rib hump. Why was such therapy? The reason – generally, it was thought that scoliosis is because of “weak muscles” and all methods of therapy in all countries in the world were similarly – exercises to “make strong muscles”. It was recommended to do strengthening exercises. After such therapy, the deformity was in all cases only bigger. In discussion with colleagues, I knew that only in Szeged, Hungary, and in Copenhagen, Denmark, the doctors did not recommend such therapy, because it was seen that it only led to wrong results.

### **The new therapy we recommend in Lublin from 1984 and definitely from 1997**

**A/** No standing 'at ease' on the right leg but standing 'at ease' only on the left leg.

**B/** Stretching exercises to receive full movement of the right hip and proper position of the pelvis,

**C/** Receiving full movement of the spine – by flexion and rotation exercises – forwards, to the left and to the right side. Here we would like to remember – these flexion exercises in therapy of scoliosis made as first – Professor Stefan Malawski from Warsaw, Poland, in years 1970 – 1980.

**D/** Important special forms of sport. Stretching exercises of muscles and fascia of the concave side of curves and in the whole spine are the best. They give an increasing of flexibility and create the possibility for proper growth of the spine. The best results are in children doing sports described as “martial arts”, such as karate, taekwondo, aikido, kung fu. In these forms of sport are permanently done stretching exercises for all parts of the body, for all joints, also for the spine. In results, growth and development of the spine are proper and symmetrical.

### **Pathology of spine in form of "bigger than normal hyperlordosis of lumbar spine" and "bigger than normal hyperkyphosis of thoracic spine" – in children with MBD**

**a/** Hyperlordosis of lumbar spine is a symptom of MBD and is connected with spastic or sub spastic shortening of flexors muscles of hips (Fig. 2). The result is “anterior tilt of the pelvis” – and this deformity increases the “lordosis of lumbar spine”. A test to find this pathology is similarly a test, which have various descriptions – the Elly Dunckan test, or Staheli test, or Thom test. Therapy includes stretching exercises to cure the flexion contracture of hips – the anterior tilt of the pelvis – the same like in “martial arts” in karate, taekwondo, aikido, kung fu. These forms of sport are called by me (T. Karski) “Far East stretching form of sport”.

**b/** Hyperkyphosis of the thoracic spine in girls is connected with the habit of “antepron position of shoulders” – the ground is psychological. Another cause of hyperkyphosis of the thoracic spine is Scheuermann disease. Therapy involves stretching exercises for the shoulder and thoracic spine.

### **Laxity of joints (Fig. 2)**

In children with MBD, a typical observation is bigger than normal laxity of all joints. For confirmation of this pathology, we use one of ten tests of Dr. Ruth Wynne Davies – orthopedic surgeon and rehabilitation doctor in the UK. The laxity of joints can be congenital, inherited from the mother of the father, and can come from improper course of women's pregnancy. Mostly, it is an effect of asphyxia of the fetus in the gravidity period or due to complicated delivery. According to our experience, the therapy of laxity of joints is impossible. This pathology diminishes after years, and in adults, it is not maximally so visible.

### **Pathology of adults patients (Fig. 16 – 19)**

Are connected with “persistent changes of symptoms of MBD or SofCD from childhood. They are also connected with not proper “standing”, “sitting” and function – rotation distortion of some joints – knee, ankle joint.

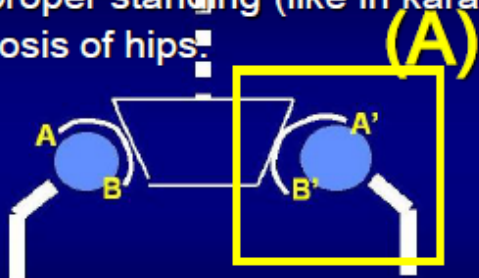
**16** Improper / wrong position of sitting. Such sitting is the cause of instability of the knee joints and pain. It is also the cause of limited movement of the hip or hips and is also cause of the hip pain. Articles: T. Karski - India/UK.



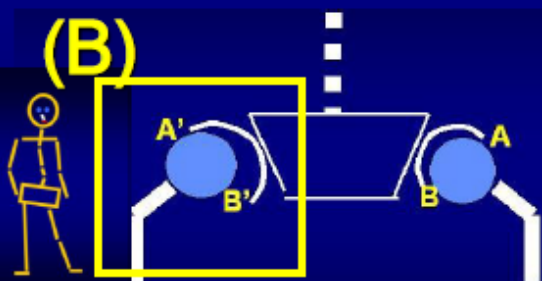
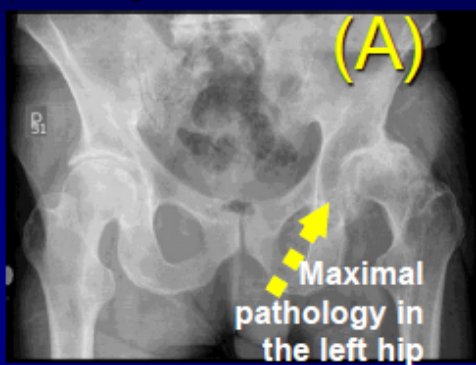
**Figure. 16.** Improper / wrong position of sitting. Such sitting is the cause of instability of the knee joints and pain. It is also the cause of limited movement of the hip or hips and is also cause of the hip pain. Articles: T. Karski - India/UK.



**17** (A) Example of advanced arthrosis in the left hip with heavy symptoms - pain, limping. In childhood never treated. (B) Pain in both hips – in right hip because of permanent standing ‘at ease’ on the right leg. (C) and (D) proper standing (like in karate) – easy method for effective prophylaxis of arthrosis of hips:



(A) Not fully cured dysplasia of the left hip in childhood period of life

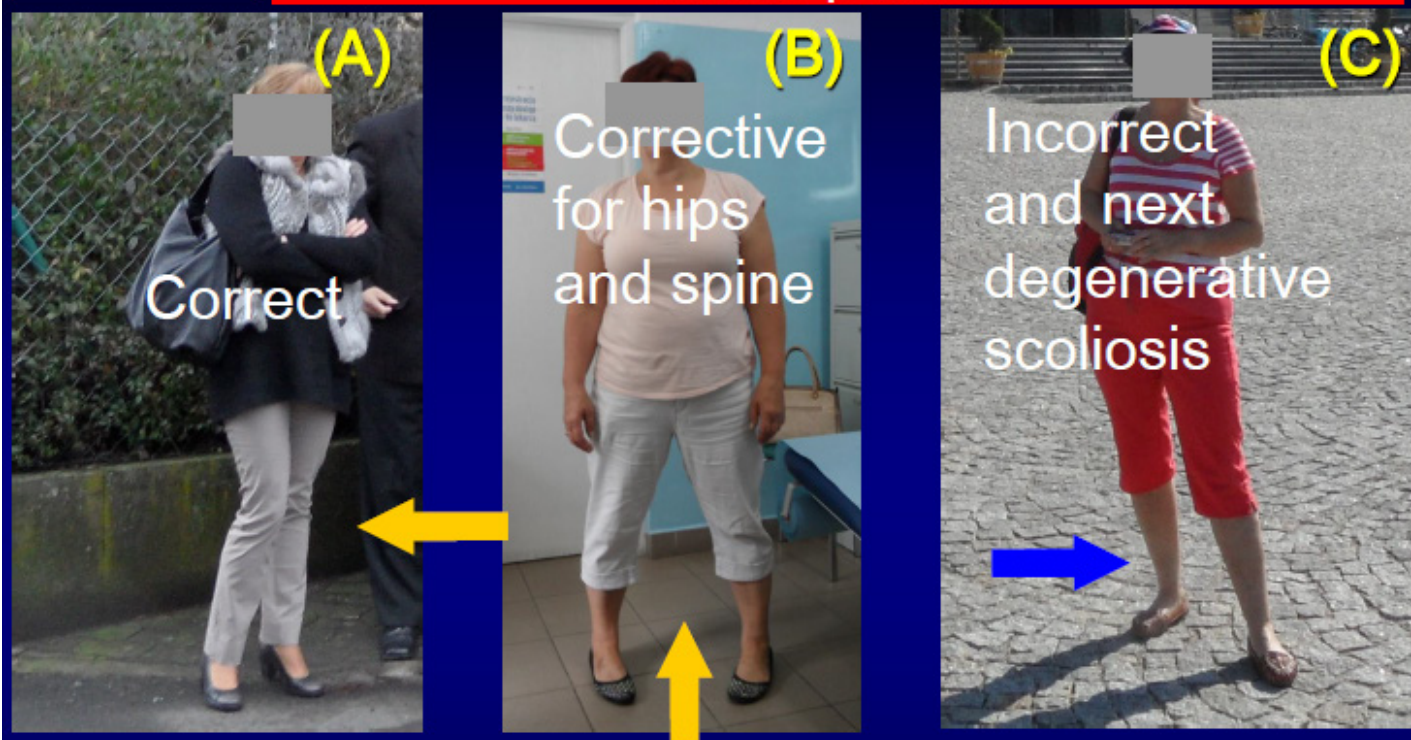


(B) Arthrosis of the right hip in result of „Syndrome of Standing ‘at ease’ on the Right Leg” (T. Karski, 1997)



**Adults patients**

**Figure. 17.** (A) Example of advanced arthrosis in the left hip with heavy symptoms - pain, limping. In childhood never treated. (B) Pain in both hips – in right hip because of permanent standing “at ease” on the right leg. (C) and (D) proper standing (like in karate) – easy method for effective prophylaxis of arthrosis of hips.

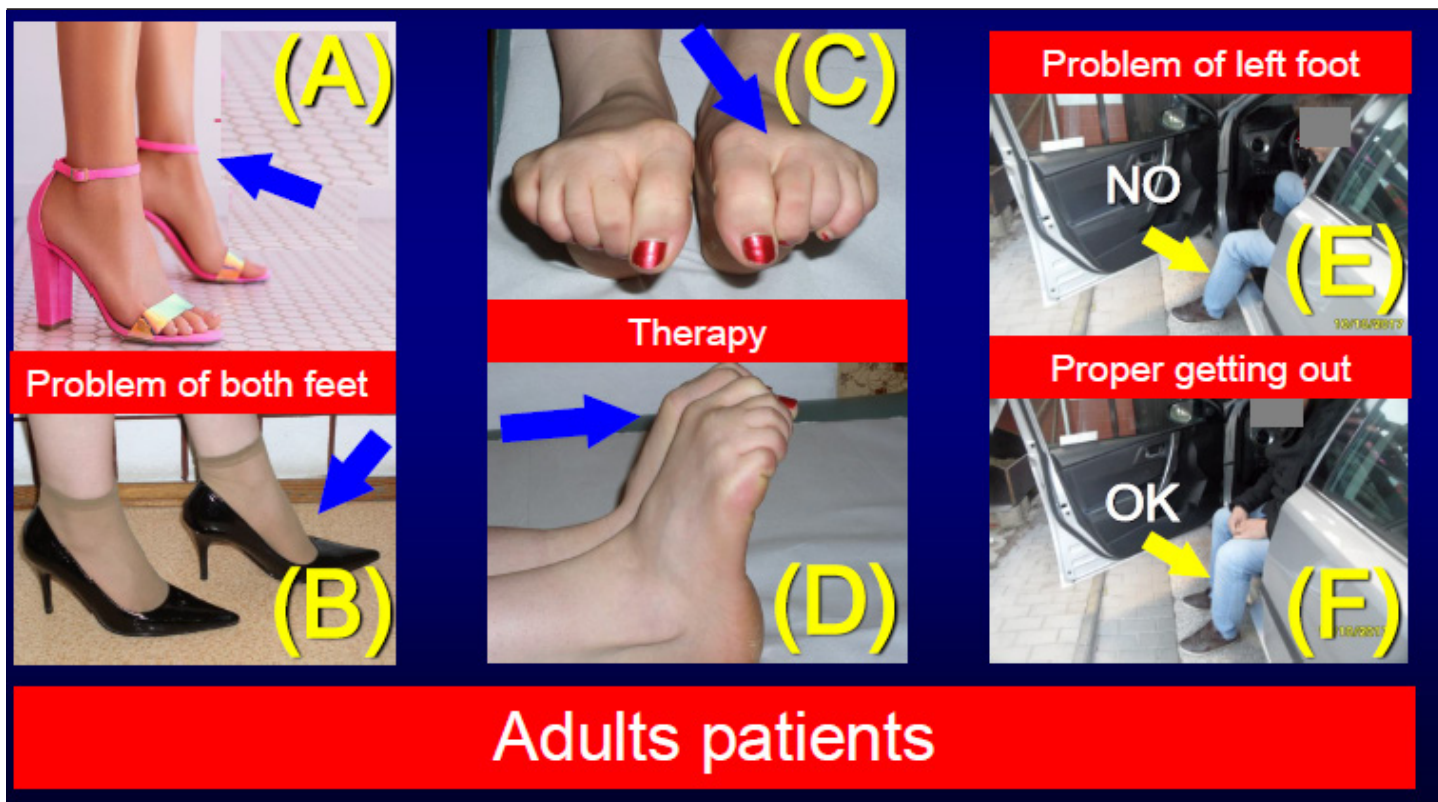
**Fig. 18****Adults patients**

**Figure. 18.** Manner of standing (A) (B) (C). Correct standing (A) on the left leg – protects from scoliosis. (B) Standing in abduction and internal rotation is very beneficial for the hips and spine. Such standing is typical for karate. (C) Standing “at ease” on the right leg is permanent and because of this is the cause of scoliosis in two groups and pathology for the right hip and right knee.

**Adults and children. Therapeutic sitting and standing.**

**Figure. 19.** Corrective sitting. Methods of prophylaxis of arthrosis of the hips. A special form of standing & sitting should be introduced at the age of 45 – 50. Sitting with internal rotation of hips increase this movement. Similar opinion Prof. Britta Fuchs / University Idstein (2013). Patients should sit in this position every day in every situation. „Nordic walking” and exercises in geothermal water are also important.





**Figure 20.** Podology. (A) & (B) improper shoes - reduce dorsal flexion in ankle joint (A) and reduce the plantar flexion of toes in metatarsal phalange joints (B). Proper exercise for the toes (C) & (D). In picture (E) improper method of getting out of the car - one leg - results in rotation distortion of ankle joint and knee. Proper getting out of the car - two legs (F). Author's publications in USA, India/UK, Czech Republic (2016 – 2021).

## Discussion

In children, even babies and newborns, we can diagnose the symptoms of MBD and symptoms connected with SofCD. Both forms of pathology can cause changes in positions, in anatomy and in function of the spine, pelvis, hips, knees, feet. It can be asymmetries in the range of movement of hips – left and right - next causing the changes in function in form and character of standing and walking. Also, we should diagnose the status of the stability of the knees and ankle joints. All abnormalities in MBD and SofCD should be treated in the child's period of life. It is the condition of proper and pain free function of the locomotor system when they reach adults age - so that they may perform without problems their job, take part in sport and in every day activities. Good results of therapy are only after receiving full and symmetrical movement of all joints and all parts of the body – in children for growth and in adults for perfect function.

## Conclusion

1/ Important is proper and early diagnosis of MBD and SofCD in newborns and babies.

2/ The symptoms of MBD and SofCD are in the hips – limited abduction – in result dysplasia, in the neck – in form of wry neck (torticollis muscularis), in the knees - varus of shanks, in feet - valgus deformity.

3/ It is important proper nursing of children one year or longer in flexion and abduction of hips as therapy of dysplasia, to cure the wry neck – by rotation stretching, to prevent or cure the varus deformity of shanks.

4/ We underline - proper therapy – not exercises to receive strong muscles but stretching exercises to receive full movement of joints, good development of all parts of the body – spine, pelvis, hips, knees, feet.

5/ It is important to avoid all situations leading to the instability of joints.

First, we recommend – in therapy, care for proper axis and full stability of knees and remember about proper sitting. For children it is “butterfly sitting” (term from karate).

6/ Spine – etiology of “idiopathic scoliosis” was described in 1995 - 2007 (T. Karski) – and now this pathology we call “The So-Called Idiopathic Scoliosis”. Curves develop from the 2-3 years of life and the cause is fully biomechanical - “permanent standing ‘at ease’ on the right leg” and “walking” – confirmed in “computer gait analysis”.

7/ In the new classification of “the So-called Idiopathic Scoliosis” – there are three groups and four types. The cause is “standing ‘at ease’ on the right leg” in 1st group – “S” deformity together with “walking”. In this form of deformity - the spine is stiff, progression. In 2nd group – “C” and “S” deformity the cause is only “standing ‘at ease’ on the right leg. The spine is flexible. In 3rd group “I” deformity – it is only stiffness of the spine – curves small or absent. The cause – only “walking”.

8/ The therapy of scoliosis and in causal prophylaxis – only stretching exercises are proper to receive full and symmetrical movement of hips, of the spine in all directions. It is the condition for symmetrical growth and function. Important is the same time of standing left and right leg. When is symmetrical movement of hips – it is also symmetry of function left – right side of the body - during walking.

9/ Beneficial therapy includes such kinds of sport like karate, taekwondo, aikido, kung fu, yoga, because the program contains many elements of stretching for feet, knees, hips, pelvis and what is very important for the spine.

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