

INSTRUMENTAL SOMATOSCOPY OF THE SPINE'S FUNCTIONAL PHYSICAL DEFICIENCIES

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Abstract: The current article outlines certain general aspects based on an on-going study and aims at discussing the necessity of the clinical assessment, respectively the instrumental somatoscopy as a starting point for the accomplishment of a complex postural assessment, in the purpose of elaborating prophylactic or therapeutic programs regarding the functional physical deficiency at prepubertal children.

Introduction: The somatoscopic and anthropometric evaluation share as main objective the surveillance of the physical growing and developing process at prepubertal children with the purpose of preventing the appearance of functional physical deficiencies at the spine.

Somatoscopy: visual examination of the alignment of the body from forward, backward and in profile, either static or dynamic.

Instrumental somatoscopy is an objective method employed for assessing the alignment of the body with the help of an anthropometric frame or of a plummet. The postural analysis of the body in statics and dynamics has always been a priority for the specialists studying the movement and the human behavior. The dynamics of daily movements has an accelerated trend, while the human body is often overstretched regarding its biological capacities, the overloaded program producing physiological misbalances. This is the reason why the researches concerning the increase of the capacity of adjusting and keeping an optimal state of health renders the study of movement itself, as well as the elements participating to its accomplishment, be a subject of actuality.

In order to consolidate the hypothesis issued, we proceeded to the interviewing of a number of over 100 parents, as well as specialists in the domain with the help of certain questionnaires in order to gather

information on their knowledge regarding the physical deficiency and the somatoscopic assessment.

We selected a number of questions from the elaborated questionnaires in such sense and we will present the interviewers' answers under the form of a table (table no. 1):

1. What is functional physical deficiency?
2. Which are the spine's functional physical deficiencies?
3. What is somatoscopic assessment?
4. What is anthropometric assessment?
5. What is functional assessment?

The percentages marked in green are considered to be positive, those in yellow are satisfactory while the remaining in red are negative.

The results obtained confirm the necessity of elaborating instructional-educational projects concerning children's postural education at prepubertal age.

Table no. 1

N0.	Variant1	Variant2	Variant3	Variant4	Variant5
1.	1.9%	18.09%	70.47%	7.61%	1.9%
2.	0%	1.6%	74.28%	11.42%	0%
3.	8.57%	13.33%	64.76%	4.76%	0%
4.	88.57%	0%	3.8%	0.95%	6.66%
5.	0.95%	14.28%	75.23%	5.71%	3.8%

The photography method is at everybody's hand and may be successfully used if the investigations are conducted within some programs and well-established norms in line with the proposed objectives. For identifying the abnormalities of the body's posture, the photo method comes in the help of somatoscopy and anthropometrics in statics, while the video technique is employed in dynamics.

Once registered, the results of the investigations effected may be analyzed, measured, quantified, compared, stored and used in necessity. The level of objectivity is high, given that the same results may be examined by several persons, while the results of the observations are kept unchanged. It must be specified that instrumental somatoscopy cannot present a singular assessment manner regarding the issue of a positive diagnosis, allotted to certain postural deficiencies or misalignments, but comes in the completion of the other forms of evaluation. It is employed in the purpose of confirming or infirming certain investigations effected by means of classic methods of postural analysis.

Material and method:

For arguing and supporting the issued hypothesis that is the significance of the clinical assessment, instrumental somatoscopy, in the purpose of effecting the postural analysis, we will present a case study. Both somatoscopic and anthropometric examinations may be subjective and may comprise a cumulus of variables, both in terms of method and from the point of view of the professionalism of the person conducting the evaluation. In order to avoid and eliminate as much as possible these variables, we came with an assessment model, which will be referred to as *instrumental somatoscopy*, that is beside the classic instruments used in somatoscopy, we introduced the photo camera. Both photo and film will emphasize, in what regards the analysis of the posture and the movement of a lot more greater number of aspects, which could be analysed during a simple observation.

The postural insurance and the movement of the body are effected by the musculature around the joints, separated into groups and chains. Given that the majority of human movements are complex, there is always a combination between the dynamic activity and the static activity elements.

We will proceed to the exemplification of a mode of postural analysis in the view of establishing the global postural alignment, physiological as well as a case of scoliosis. The subjects are chosen

randomly and we will examine the postural alignment from the backwards.

The position under which is effected the evaluation is in standing: shoulders relaxed, superior members near the body, palms in intermediary position of pronosupination, fingers easily flexed, horizontal chin, anterior look, heels one next the other, ends at a distance of approximately 45^0 . (Maria Cordun 1999 p 59)

The 0.0 axe is the referential vertical axe for the other anthropometrical measurements!!!

The anthropometric references are marked while the lines uniting them horizontally must be parallel between them and perpendicular to the vertical axe 0.0. The establishment of the anthropometric references as well as the effectuation of the proper measuring and evaluating measures need the utilization of certain unitary measuring norms which would compete with the level of objectivity of the results of the final postural analysis. We will enlist here the following aspects which may vitiate the result of the analysis: the evaluator's professionalism, the position of the evaluated, the environment, the distance from with is effected the observation, the technical means and methods employed, the equipment of the evaluated.

The alignment of the body from the backwards, gradient to the axe 0.0, It is checked by: vertex, external occipital protuberance, apophysis of the cervical, thoracic, lumbar vertebrae, intergluteal cleft, among intern femoral epicondyles, intern tibial malleols and is projected in the middle of the sustaining basis.

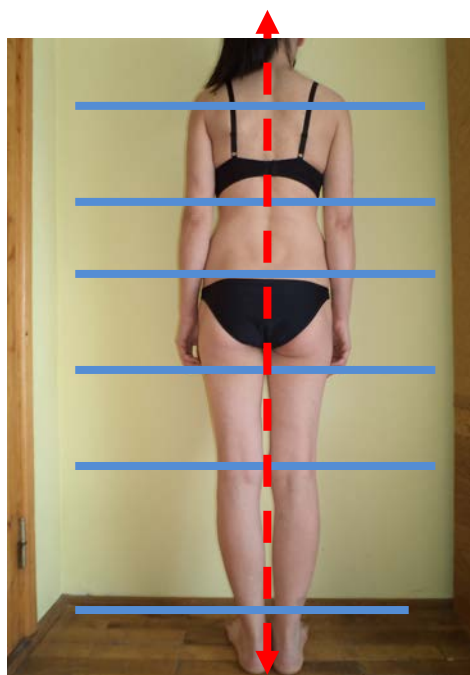


Fig. nr.3

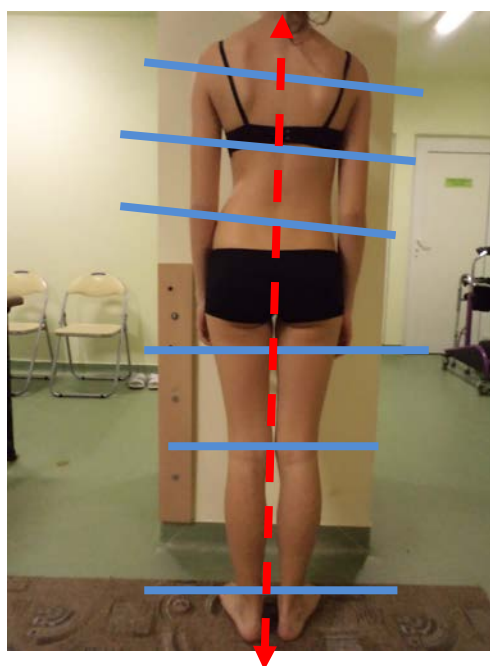


Fig. nr.4

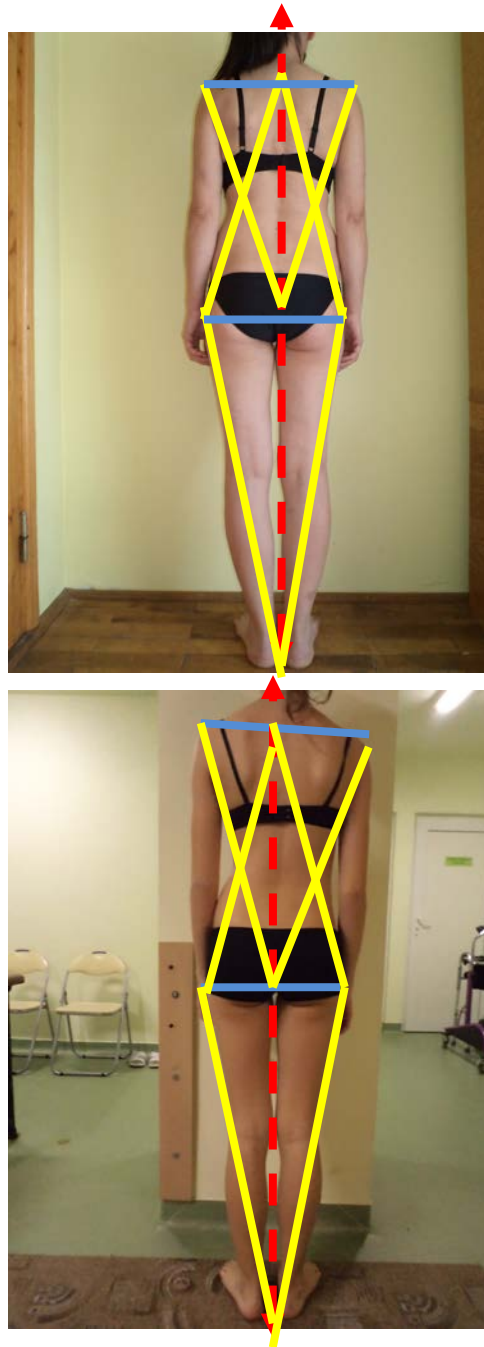


Fig.5,6

To this vertical reports a set of horizontal lines: 1 - *biacromial breadth*, (acromial extremities); 2 - *shoulder blades' points*; 3 - *bicrete breadth*, (iliac apex); 4 - *bitrohanterian* (great trochanters); 5 - *medial femoral*

epicondyle line of the knees; 6 - *bimalleolar* (tibial malleoli). In fig.3, 4 is presented a model of photo-somatic evaluation accompanied by a system of line (the lines colored in blue parallel with the "00" axe).

For the optimization of the observation process, we will emphasize a system of symmetric lines which are used in somatoscopic assessments, that is a set of triangles which should be symmetric with reference to the 0.0 axe and with the parallels perpendicular on them (the postural assessment will be effected on electronic or photo support) fig.5, 6.

The asymmetries which are evidenced by means of this system of lines and triangles lead through a visual analysis and then an applicative measurable one to an objective postural diagnostic which will allow those conducting recovery programs beneficiate from a simple and practical method of investigation. Of a great importance is the establishment of muscular chains which suffered modifications of tone and form (contractures, shortenings, extensions, hypotony), given that these aspects are an integrant part of the rehabilitation program proposed in the purpose of the stabilization and management of a possible postural deficiency. Postural reeducation may benefit from these pieces of information in order to establish a set of rules of postural prophylactic or recovery hygiene.

Such technique does not replace the investigation of the imagistic type such the radiography or any other types of analysis of the posture (posturography), but wishes to complete the existent ones.

Results and discussions:

The presentation of the two cases of somatoscopic postural analysis may confirm the significance of regular assessments. The persons who are able to observe in time such deficiencies are the parents. The fact that they accuse the lack of knowledge in the domain makes these misalignments not to be seized on time. We appreciate that in the moment of observation of these postural deficiencies we cannot tell for sure if they are developmental or not, given the fact that they appear on dynamic ground, that is the growth and development, and cannot allow the stabilization and full recovery. In particular, due to this permanent state of morphological changes of the body at this age, it is necessary a surveillance and a registration of the evolution in the process of growth and development. Instrumental somatoscopy, even though incapable of replacing the imagistic investigation (radiography, NMR), is still a helpful technique in consolidating the clinical assessment effected by the

specialists. Such assessment model may be extended to all the postural deficiencies or misalignments on different corporal segments (arms, thorax, pelvis, legs).

Conclusions:

- The postural assessment implies the acknowledgement of the anatomic-functional structures, as well as elementary notions of kinetology.

- Instrumental somatoscopy offers a practical framework of postural analysis in the view of establishing the global postural alignment.

- The necessity of the imagistic investigation is mandatory when aiming to monitor and manage with objectivity the recovery program in spine's functional physical deficiencies.

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Somatoscopia instrumentală a deficiențelor fizice funcționale ale coloanei vertebrale

Cuvinte cheie: somatoscopia, deficiență fizică funcțională, analiză posturală.

Abstract: Acest articol prezintă unele aspecte generale ce au la bază, un studiu aflat în derulare, și dorește să argumenteze necesitatea examenului clinic, respectiv somatoscopia instrumentală ca bază de plecare în efectuarea unei analize posturale complexe, în vederea elaborării de programe profilactice sau terapeutice cu privire la deficiența fizică funcțională la copii de vârstă prepubertară.