IDIAG

RADIATION-FREE BACK SCAN



IDIAG M360

Simple, fast, precise

Idiag M360 — The radiation-free back scan: Simple, fast, precise

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1. What is the Idiag M360?

With the help of the Idiag M360, a computer-based analysis of the spine is carried out, which enables a precise and radiation-free back scan. The doctor, therapist or medical trainer rolls the Idiag M360 over the spinal processes of the patient's thoracic and lumbar spine. Thereby, information on the position of the individual spinal segments is obtained. The subsequent analysis protocol provides information on the posture, mobility and muscular stability of the back and compares the information with empirical standard values. Within a few minutes, the patient or customer can be informed of the condition of their back with the help of an easy-to-understand 3D display and a suitable training plan can be put together. The analyses can be repeated as often as required and the results compared with the previously performed sessions. In this way, the progress is transparently visualised and documented. The trainee understands his goals and sees the success, which in turn increases his motivation and improves the result.

2. IN WHICH AREAS IS THE IDIAG M360 USED?



Analysis Medicine

- Individual radiation-free back scan for targeted therapies.
- Optimized treatment success and reduced risks.
- Supplementary functional diagnostics for radiological examinations.

Control of therapy

- Transparent patient information in form of simple, easy-to-understand graphics.
- Precise data on the geometry of the spine to document the success of the treatment.

Prevention

- Identification of possible abnormalities through in-depth analysis of posture, mobility and muscular stability.
- Generation of relevant clinical data for the development of successful therapies.

Training guidance

- Visualization of problem areas and comprehensible demonstration of goals and effectiveness of the training.
- Increasing motivation and improving results - clear added value for the customer and an intensified experience.

3. WHO IS THE IDIAG M360 SUITABLE FOR?



The many possible applications include, for example:

- Manual medicine, chiropractic
- Physical and rehabilitative medicine
- Physiotherapy
- Orthopaedics
- Preventive medicine
- Sports medicine
- Conventional and occupational medicine
- Ergonomics, corporate health management
- Osteopathy
- Fitness center

4. CUSTOMER OPINIONS FROM VARIOUS SPECIALIST AREAS

Clinic



Private lecturer Dr. med. Philip Catalá-Lehnen, LANS MEDICUM, Hamburg
„In today's sports medicine diagnostics and therapy, it is of fundamental importance to obtain an analysis of the cause of pathologies. The Idiag M360 is an indispensable tool for us in the practice in order to generate the greatest possible information quickly and easily and thus to be able to plan the patient's individual structured therapy."

Orthopaedics / Sports medicine



Dr. med. Stefan Bärreiter, specialist in orthopaedics and trauma surgery, Cologne
„Clearly processed examination results and recommendations for action help us in dealing with back patients. The back scan with the Idiag M360 is firmly integrated into our everyday practice, the investment was amortized very quickly."

Physiotherapy



Dipl. Ing. Norman Dombo, Owner Dombo Zentrum für Gesundheit, Maisach
„We have been using the Idiag M360 in our PhysioAktiv practice since the beginning of 2020. Therapists and trainers, as well as patients and members, are enthusiastic about the analysis and the valuable information that the system provides (also as PDF). The results of the Spine Check serve as an aid in therapy and support us in the transition to self-pay customers. This ensures that we are constantly recruiting new members."

Neurosurgery



Dr. Raul Rincon-Navarro, Owner Neuro Spine & Pain Clinic, Mexico
„I was initially very surprised at how exactly the X-ray images matched the measurements from the Idiag M360. The tool is useful to me in early diagnosis and decision making, as well as in later follow-up. The Idiag M360 is extremely efficient and cost-effective, especially when I decide on conservative treatment.bet"

Corporate health management

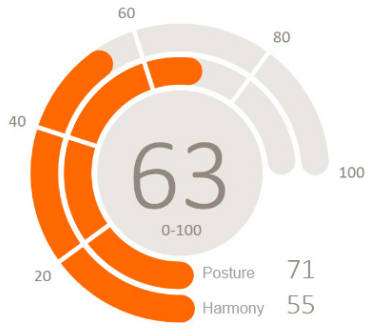


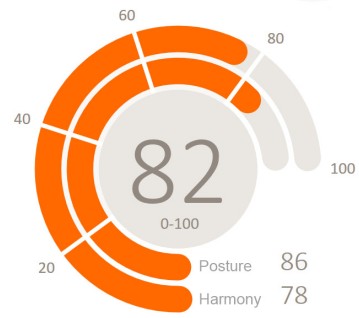
Marc Henkel, Owner Physiotherapie und MACC.FITNESS, Bochum

„The Idiag M360 is our daily technical partner for diagnostics, creating training plans and monitoring the success of therapy. It is the ideal complement for measuring movement patterns and not just being limited to imaging procedures."

5. IDIAG M360 - MAKING TREATMENT SUCCESS VISIBLE







Efficient monitoring of effectiveness: Idiag Spine Score before and after training.



Improving the quality of diagnosis and treatment

- Rapid determination of geometric data of the spine: posture, mobility and muscular stability.
- Uncomplicated analyses - fast and precise .
- Reveal deviations and problem areas.
- Targeted treatment and training planning - increased training success.

Efficient monitoring of the effectiveness of therapy and training

- Automated training planner
- High-quality documentation of status and progress
- Quality assurance of therapy and training
- Efficient trust-building communication with physicians

Increasing the satisfaction of patients and customers

- Automated evaluations (Idiag Spine Score)
- Building trust through understandable and transparent patient information.
- Increased training motivation and thus optimized results.

Tool for customer acquisition and retention - Idiang Center concept and back days

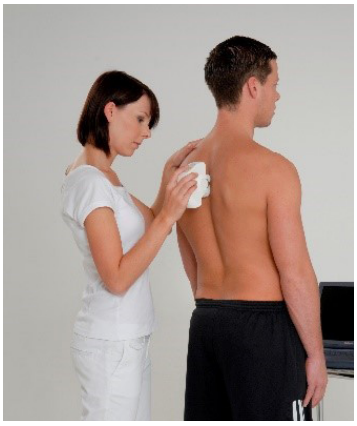
- As an Idiag Center, you benefit from numerous Idiag campaigns and the extensive range of training courses offered by the Idiag Academy.
- Idiag supports you in informing patients in your office and environment with marketing material and event organization.
- The Idiag M360 is an ideal tool for carrying out back campaigns in-house and on-the-road.

Demonstrate your expertise as a back specialist

- Targeted therapy enables you to achieve better treatment results and stand out from the crowd as a premium provider.

6. PROCEDURE OF AN IDIAG SPINE CHECK

In principle, any sequence of tests in the sagittal and frontal plane can be selected and saved as a specific plan. As one of the preset standard plans, the Idiag Spine Check can be used to determine the basic parameters of posture, mobility and muscular stability. This involves scanning in the three typical positions.



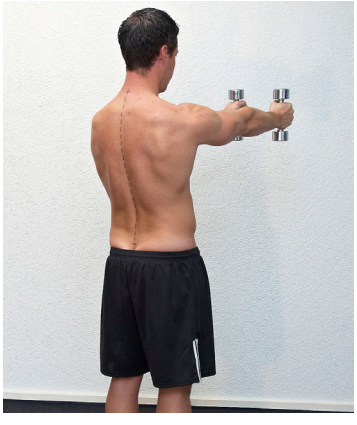
Neutral, sagittal standing

In the upright position, the sagittal starting position is used. This serves to assess the posture of the spine and sacrum in relation to the perpendicular.



Flexion stretched arms

The mobility of the spine and sacrum is assessed on the basis of the analysis in flexion with the arms extended. The software calculates the difference in angles between the upright posture and flexion.



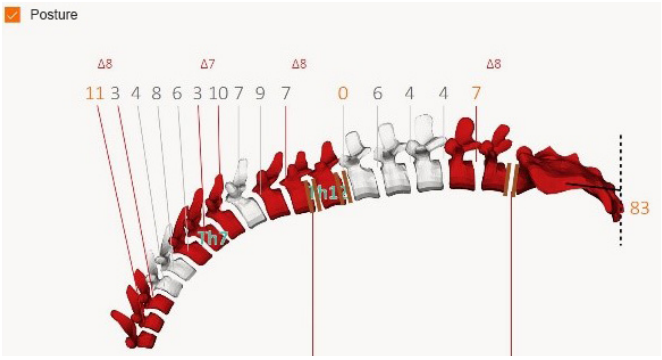
Matthiass arm-raising test

The Matthiass arm-raising test is used to determine the holding competence or muscular stability of the test person. The status after 30 seconds of holding specific weights is compared with the incoming upright position in the sagittal standing position. The size of the possible displacements that arise in this way provides an indication of the holding ability of the muscles in the corresponding spinal segment.

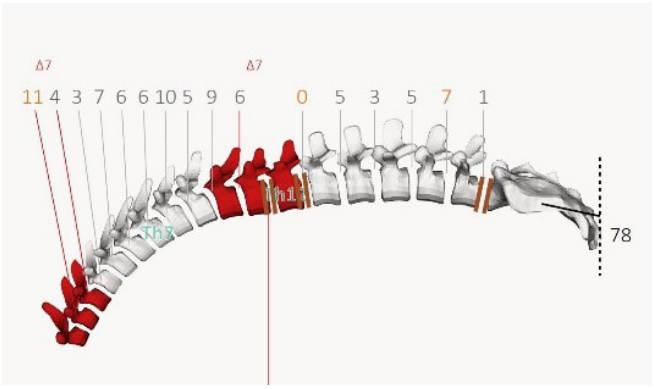
7. DOCUMENTATION

Report

All registered data is saved. The Idiag M360 provides valuable support for treatment planning and progress monitoring. Detailed documentation for specialist colleagues, treating physicians or even health insurance companies can be created at the touch of a button. Necessary therapies or measures can be clearly and comprehensibly documented.



A) Anamnesis of deviations



B) Significantly reduced deviations after targeted training

Quality assurance of therapy and training

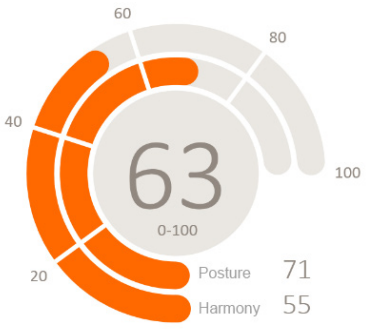
The Idiag M360 provides you with objective data on the condition of the spine. The evaluations and graphics enable standardized treatment at the highest level. The documentation enables systematic and professional care.

Efficient progress control

The Idiag M360 manages any number of examinations for each patient or customer. These are clearly displayed in the progress and changes are visible in the results table and in the graphical evaluations. Figure A) top left shows the status before training and figure B) below shows the status after training. Half of the angular jumps as well as the paradoxical angular positions in the thoracic and lumbar spine were normalized in the course of the training.

Idiag Spine Score

Each analysis is summarized in the Idiag Spine Score. This gives you a clear value for the condition of the spine and an immediate indicator of the effectiveness of the treatment or training. The Idiag Spine Score is made up of three different scores relating to posture (Idiag Posture Score), flexibility (Idiag Flexion Score) and muscular stability (Idiag Stability Score). It compares the analyzed spine with the values of a healthy reference group. A higher score indicates greater congruence, while a lower score indicates less congruence with the reference group.



8. TARGETED TRAINING PLANNING







Automated training recommendations

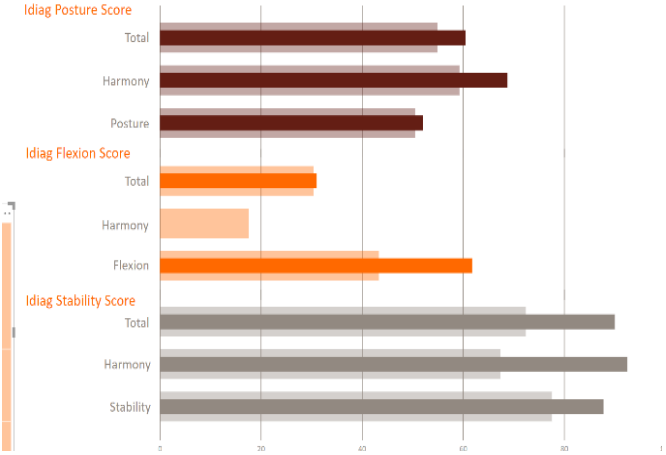
Based on the results of the examination, the software generates a training plan to treat the detected abnormalities. The therapist can modify and customize this as desired.

The patient or client can understand the necessity and later the success of the prescribed or offered therapy or training measure. He recognizes the value for the investment of money, time and „sweat", which leads to increased motivation.

Better information about the condition of the spine, risks, posture and muscular stability facilitates the selection of suitable measures to improve the condition.

Based on the results of the Idiag M360 analysis, the software can be used to compile detailed training plans. The effect of the training can be checked at any time with repeated analysis.

9. PROFESSIONAL STATISTICS



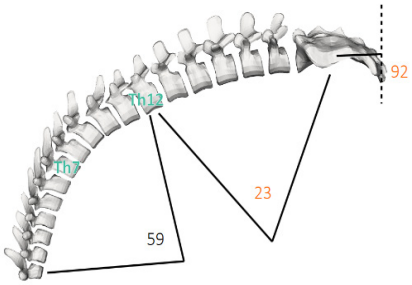
The unique statistics module gives you a quick overview of a group of patients or customers. It calculates mean values and the distribution of your population and compares anonymized individuals with the group. This makes it possible to survey back health as part of company health promotion. Entire groups of test persons can be automatically evaluated during event days.

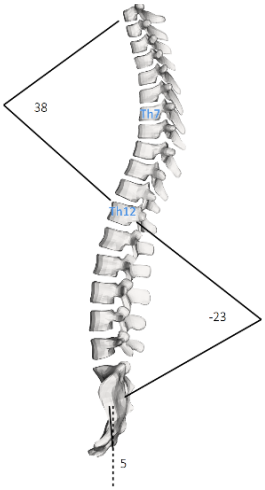
10. APPLICATION EXAMPLE SAGITTAL PLANE

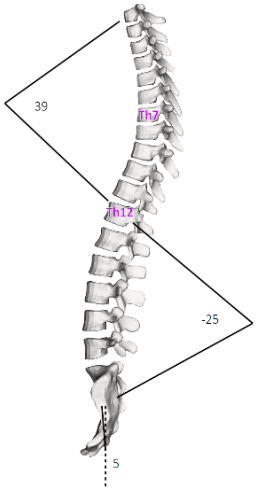
Regional view of posture

The left image shows the flexion posture, in the middle the scan of the upright posture and on the right the posture after the 30-second arm-raising test. Black numbers mean that the value is within the reference range, red numbers mean that the value is outside the norm. The reference groups are people of the same age and gender who are free of complaints.

When looking at the posture on a regional level, it can be seen that the person in the upright posture has a normal thoracic kyphosis and a normal lumbar lordosis and the sacrum is tilted forward normally with a 5° tilt to ventral. The posture according to the Matthiass test is also within the reference range in all areas.

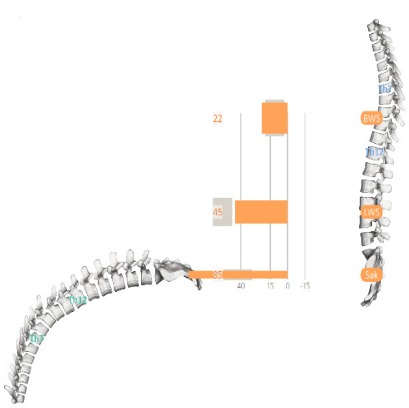


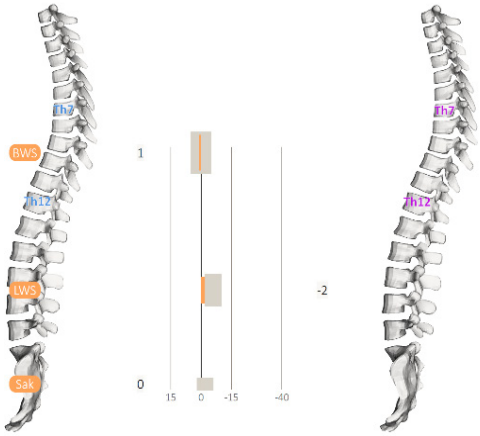




Regional view of movement

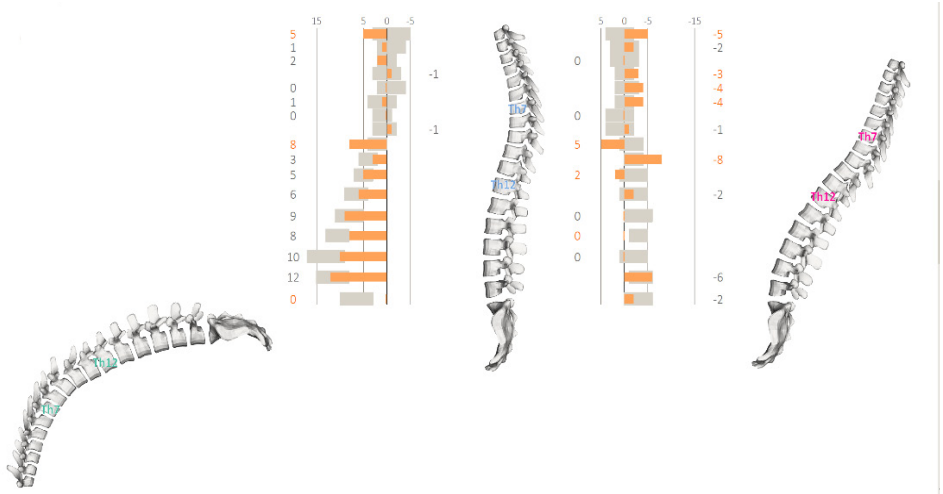
When looking at the movement on a regional level, it can be seen that the person has very good postural competence. The pelvis remains stable even after the Matthiass arm-raising test, and there is hardly any regional movement in the thoracic and lumbar spine.
Flexion reveals hypermobility in the sacrum/hip joint and in the thoracic spine. There is hypomobility in the lumbar spine. However, these values should be examined in more detail below, also at segmental level, in order to derive the correct measures for training.

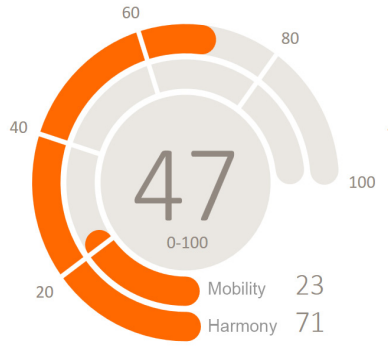




Segmental view of movement

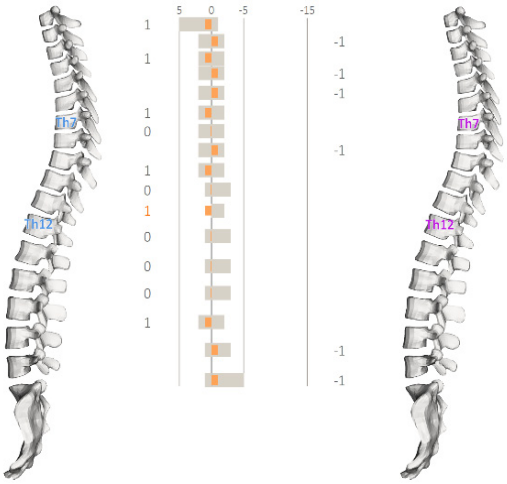
The movement of the individual segments is displayed more precisely at the segmental level. From Th1-L5 you can see the joint movement of each individual vertebral segment. The segments Th1/2 and Th10/ 11 show a greater movement towards the ventral than the reference group in this segment (orange number). From Th2/3-Th9/ 10 there is hardly any movement to be seen (values between 1°-0°- -1°), which corresponds to the norm (black number - the value lies within the gray bar). The L5/S1 segment shows hypomobility.
The segmental movement values are reflected in the score. On the one hand, the harmony of movement is assessed and, on the other, the flexibility in the individual segments. Both values are added together and then divided by two to give the Idiag Flexion Score.

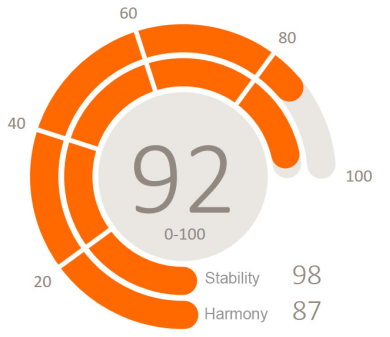




Segmental view of postural competence

In the case of postural competence, one speaks of good posture competence if there is virtually no movement in the individual segments. Values between 1°- -1° are rated as „good". This means that the person tested has very good postural competence, which is reflected in a high stability score.





Exercise recommendation

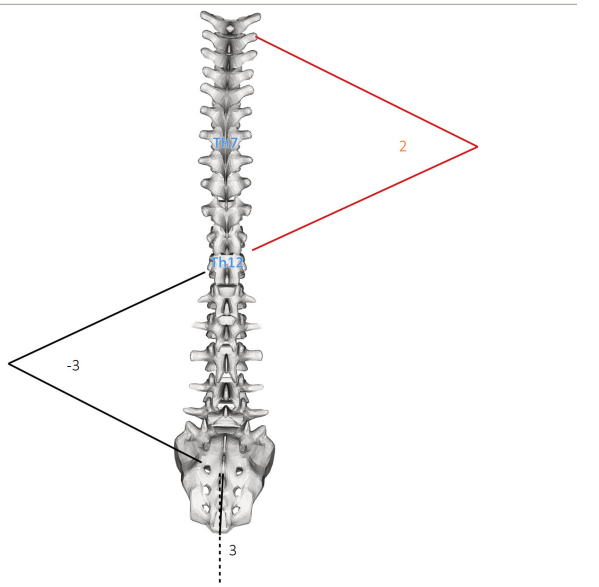
From the overall result, it can be deduced that the training focus for this person should be on mobilization movements of the thoracic and lumbar spine as well as the gluteal muscles.

11. APPLICATION EXAMPLE FRONTAL PLANE

Segmental view upright posture

In the upright posture, the thoracic spine is tilted 2° to the right and the lumbar spine 3° to the left. The pelvis is tilted to the right by 3°.

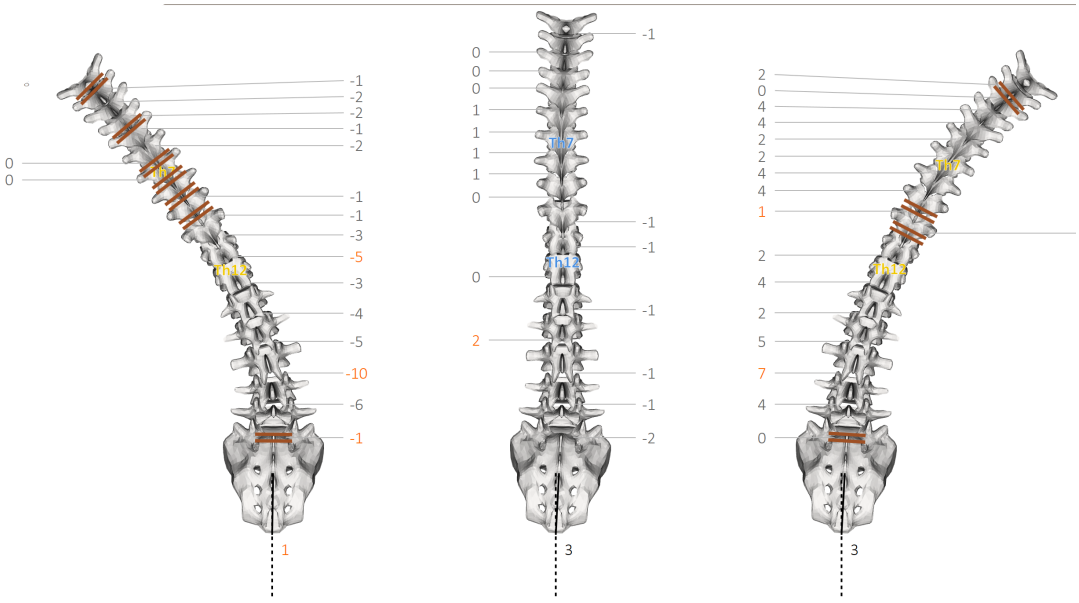
Upright posture



Segmental view lateral flexion left-right

At the segmental level, you can now look at the posture of the individual vertebral segments in detail again and would possibly see here if right or left convexities are present. These would be present if individual values were >=2° or <=-2°, which in this example is only the case for 2 segments of the lumbar spine in the upright position. For the lateral inclination, positive values always indicate an opening of the segment to the left, negative values mean that the segment is open to the right in the respective posture. Brown bars indicate when segments are parallel to each other despite the „Side tilt" movement task.

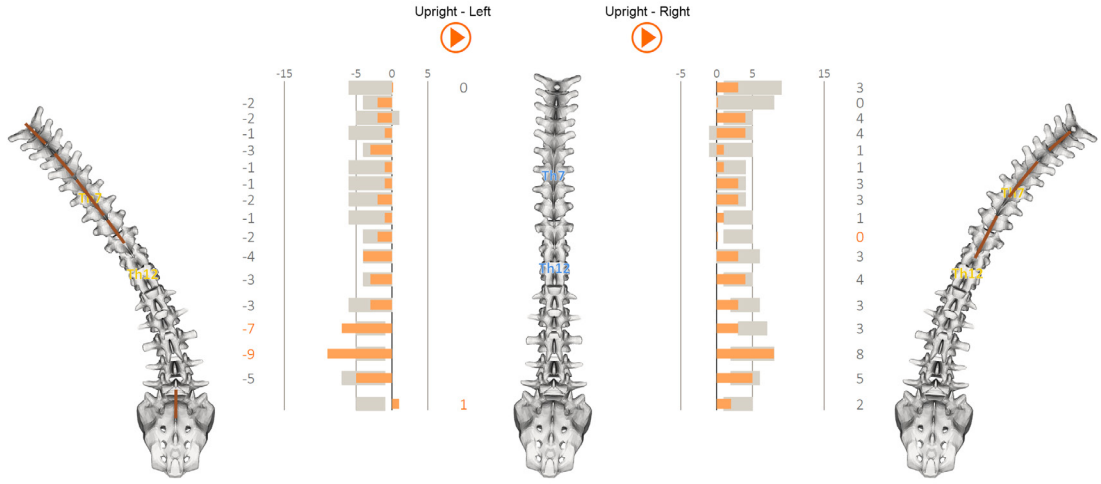
Segmental view



Mobility - segmental and regional view

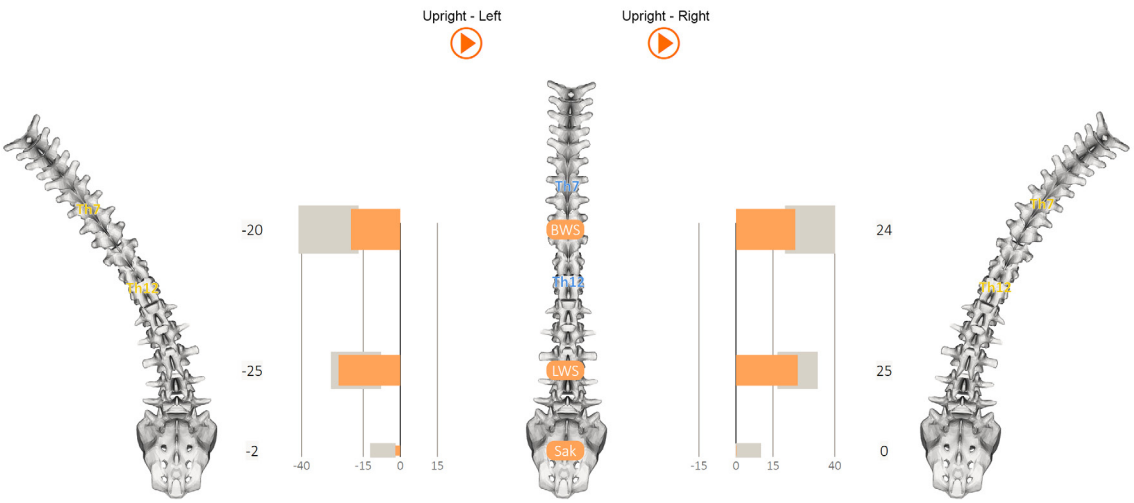
As in the sagittal plane, the movements can also be viewed regionally and segmentally in the frontal plane. This is primarily used for the right-left comparison to see how symmetrical the movement to the right and left is in the three areas (thoracic spine, lumbar spine, sacrum). The gray boxes mark the movement of the reference group. In the example below, you can see that the movement of the person is relatively symmetrical when viewed regionally in the thoracic spine, lumbar spine and sacrum. However, the movement on both sides in the thoracic spine is at the lower end of the range in relation to the reference group. The movement of the individual segments can now be examined in detail. Optimal is when all bars move to the left with a left tilt and vice versa to the right.
Values of 1°, 0°, <1° mean that NO movement has taken place in the respective segment. This is also indicated by the brown bar on the spine.

Mobility - segmental view



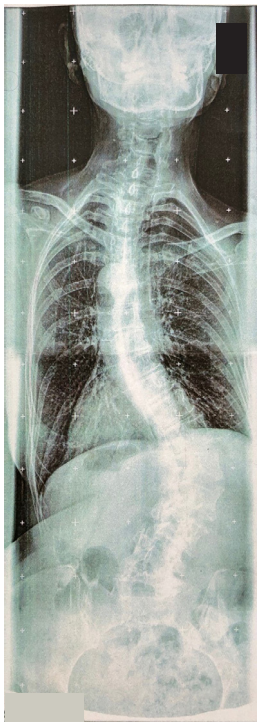
The functional mobility of the spine can be simulated by operating the play buttons in the software.

Mobility - regional view

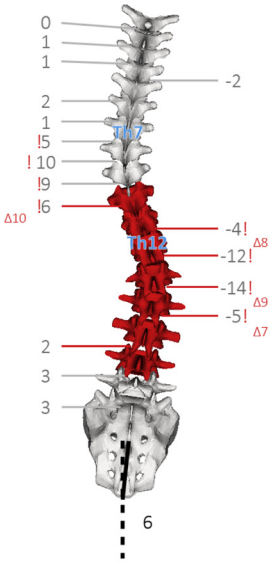


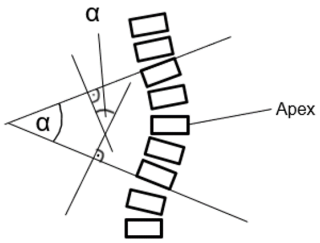
12. PRACTICAL EXAMPLE

Scoliosis



Diagnosis: Progressive scoliosis thoracolumbar right-convex





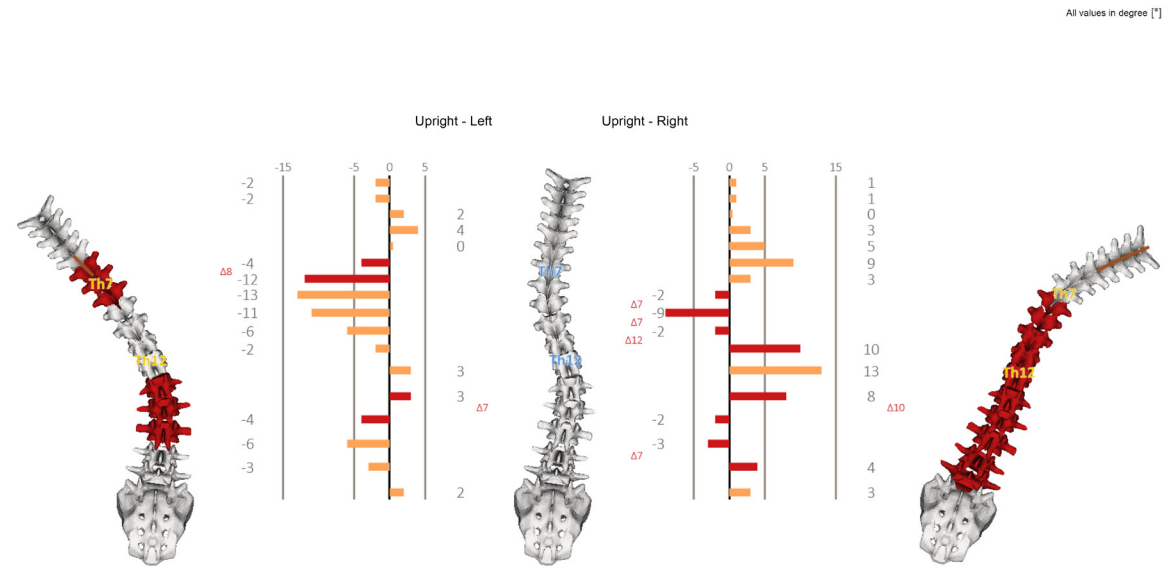
When measuring the spine in the frontal plane, the scoliotic curvature of the spine can be clearly seen in the upright position. Positive segment angles show how much the individual vertebral column segments tilt to the left, negative values show the right convexity of individual vertebral segments in the upright posture. The exclamation marks behind individual figures indicate large deviations from the norm.

When looking at the segmental mobility, it is now possible to see the extent to which the individual segments tilt symmetrically to one side. If the beams move to the right despite moving to the left and vice versa, this is called paradoxical movement, which is characteristic of scoliotic movements.

As part of the treatment, the progress of treatment can be documented objectively and radiation-free using before-and-after measurements.

In order to quantify scoliotic curvatures, Cobb angles can also be determined with the software. This is used to obtain an objective initial assessment of the degree of severity and to determine the further course of treatment.

Mobility - regional view with deviations



13. FINDINGS FROM SCIENCE

The validity, reliability and objectivity of the Idiag M360 was evaluated in various studies and compared with the gold standard, the X-ray function recording . A significant correlation between X-ray function recordings and Idiag M360 recordings of posture (r = 0.97) and mobility (r = 0.82) was shown (Schulz et al. 1999). Thus, the use of the Idiag M360 with an accuracy of ±1.96° (Schulz et al. 1999) is a good, radiation-free and time-saving alternative for the evaluation of posture, mobility and muscular stability of the spine (Guermazi et al. 2006, Mannion et al. 2004, Post et al. 2004). Safety, validity and reliability have also been confirmed in use with children (ICC = 0.872-0.962) and the application recommended (Kellis et al. 2008). Thanks to the scientific collection of age- and gender-specific norm values in healthy adults and children aged 6 years and older, the interpretation of the data and the identification of disease patterns is well supported (Steinbeis et al. 1999). The Idiag M360 has already been documented in over 50 scientific studies in various disease areas such as back pain (Liebig et al. 2000), post-menopausal osteoporosis (Miyakoshi et al. 2007) or Parkinson's disease (Verheyden et al. 2007).

14. PUBLICATION EXCERPT

A continuously updated list of studies can be found at www.idiag.net/idiag-m360.html

Schulz, S., & Seichert, N. (1999). Measurement of shape and mobility of the spinal column: Validation of the SpinalMouse® by comparison with functional radiographs., 6–8.

Guermazi, M., Ghroubi, S., Kassis, M., Jaziri, O., Keskes, H., Kessomtini, W., … Elleuch, M. H. (2006). Validité et reproductibilité du Spinal Mouse® pour l'étude de la mobilité en flexion du rachis lombaire. Annales de Readaptation et de Medecine Physique, 49(4), 172–177.

Mannion, A. F., Knecht, K., Balaban, G., Dvorak, J., & Grob, D. (2004). A new skin-surface device for measuring the curvature and global and segmental ranges of motion of the spine: reliability of measurements and comparison with data reviewed from the literature. European Spine Journal, 13(2), 122–136.

Post, R. B., & Leferink, V. J. M. (2004). Spinal mobility: Sagittal range of motion measured with the SpinalMouse, a new non-invasive device. Archives of Orthopaedic and Trauma Surgery, 124(3), 187–192.

Kellis, E., Adamou, G., Tzilios, G., & Emmanouilidou, M. (2008). Reliability of Spinal Range of Motion in Healthy Boys Using a Skin-Surface Device. Journal of Manipulative and Physiological Therapeutics, 31(8), 570–576.

Liebig, E., Kothe, R., Mannion, A. F., D, G., EM, L., R, K., … D., G. (2000). The clinical significance of the lumbar lordosis: relationship between lumbar spinal curvature and low back pain. Spine, 9(4), 2000–2000.

Miyakoshi, N., Hongo, M., Maekawa, S., Ishikawa, Y., Shimada, Y., & Itoi, E. (2007). Back extensor strength and lumbar spinal mobility are predictors of quality of life in patients with postmenopausal osteoporosis. Osteoporosis International, 18(10), 1397–1403.

Verheyden, G., Willems, A. M., Ooms, L., & Nieuwboer, A. (2007). Validity of the Trunk Impairment Scale as a Measure of Trunk Performance in People With Parkinson's Disease. Archives of Physical Medicine and Rehabilitation, 88(10), 1304–1308.

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