Multitom Rax

Move beyond traditional X-ray

siemens-healthineers.com/multitom-rax

SIEMENS Healthineers

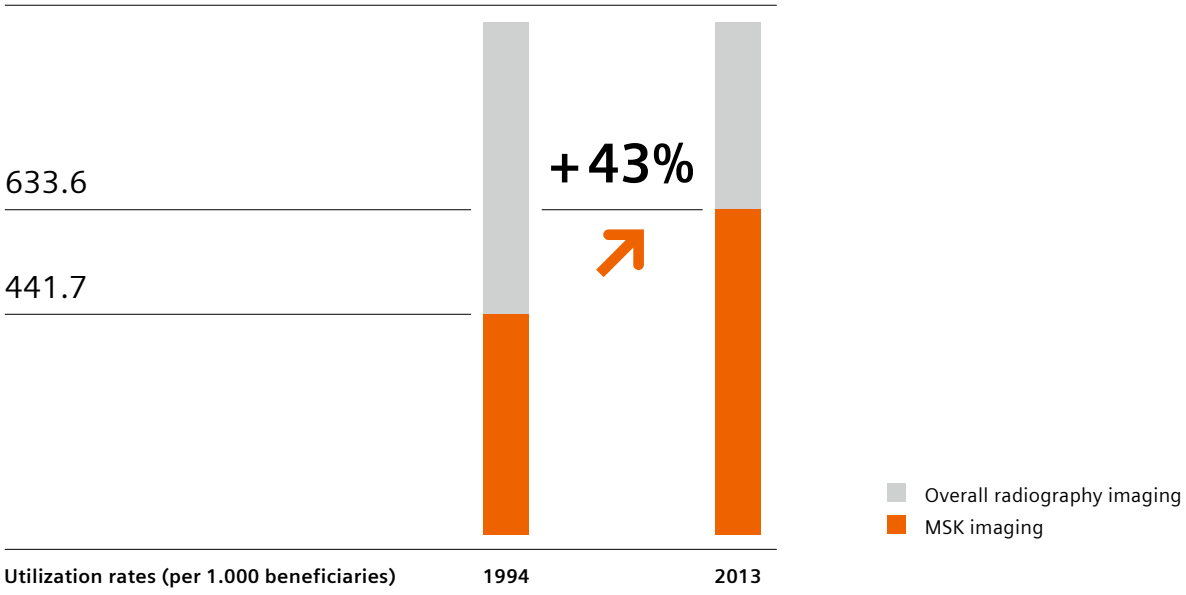
Radiography remains key

Around the globe, musculoskeletal (MSK) conditions are highly prevalent, affecting more than 1 in 5 people.[1] In fact, MSK disorders are the biggest contributor to years lived with disability (YLDs), accounting for 17% of all YLDs worldwide.[2]

While the prevalence of musculoskeletal conditions increases with age – and the global population is clearly growing older[3] – all age groups are affected. Low back pain is currently the main culprit in disability-related early retirement, and its incidence is projected to increase.[4]
What's more, lifestyle factors such as obesity strain the musculoskeletal system – and cost pressures on healthcare systems intensify as a result.[5]

In the United States, radiography remains the most common modality for MSK imaging (63.4% in 2013) and plays a key role when initially screening patients' extremities in trauma and chronic pain cases.[6]

Changing Musculoskeletal Extremity Imaging Utilization from 1994 through 2013:



In the United States, radiography is the most commonly used MSK modality (63.4% in 2013), despite having shown only 43% growth from 1994 to 2013.[3]

[1] *The United Nations Department of Economic and Social Affairs (UN DESA) estimates the 2019 global population at 7.7 billion: https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf. Accessed 2021-07-16. In 2019, approximately 1.71 billion people had musculoskeletal conditions (Cieza et al., see below). This number divided by 7.7 billion (estimated global population) gives 22.22%.*
[2] *Cieza A, et al. (2020). Global estimates of the need for rehabilitation based on the Global Burden of Disease study 2019: a systematic analysis for the Global Burden of Disease Study 2019. https://doi.org/10.1016/S0140-6736(20)32340-0. Accessed 2021-07-16.*
[3] *UN DESA predicts that the population share aged 65+ will grow from 9.3% in 2020 to approx. 16% in 2050: https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/undesa_pd-2020_world_population_ageing_highlights.pdf. Accessed 2021-07-16.*
[4] *Hartvigsen J, et al. (2018). What low back pain is and why we need to pay attention. https://doi.org/10.1016/S0140-6736(18)30480-X. Accessed 2021-07-16.*
[5] *Woolf AD, et al. (2012). The need to address the burden of musculoskeletal conditions. https://doi.org/10.1016/j berh.2012.03.005. Accessed 2021-08-05.*
[6] *Gyftopoulos S, et al. (2017). Changing Musculoskeletal Extremity Imaging Utilization From 1994 Through 2013: A Medicare Beneficiary Perspective. American Journal of Roentgenology, 209(5).*

Expanding precision medicine with Multitom Rax

Using traditional X-ray, complex radiographic examinations are often challenging or cumbersome, especially in musculoskeletal or trauma cases. Whether due to time-consuming manual work, less experienced staff, limited precision in system positioning, or difficult-to-move patients – these exams may result in unsatisfactory diagnostic outcomes.

Multitom Rax is a high-performance system that excels in such examinations, helping you expand precision medicine and improve patient experience. Being a Twin Robotic X-ray system, it offers unparalleled positioning flexibility, unique automated workflows around the patient, and a multitude of diagnostic procedures. With True2scale Body Scan[1], panoramic images can be acquired rapidly, in supine or weight-bearing positions. This slot-scanning technology captures geometrically accurate images, which can improve assessment of skeletal malpositioning – at ALADA[2] dose.

And now, OrthoMatic Spine[3] lets you amplify productivity even more. The smart AI assistant automatically detects landmarks in the image, calculates the relevant spinal parameters, and produces a beautifully annotated image to share with referrers and patients. All in a matter of seconds.

Discover Multitom Rax

[1] Option
[2] ALADA = as low as diagnostically acceptable
[3] Option. OrthoMatic Spine is part of the medical device Syngo Carbon Clinicals and is not commercially available in all countries due to regulatory reasons. Its future availability cannot be guaranteed.

Multitom Rax at a glance

Multitom Rax supports your technologists and radiologists in daily clinical routine and beyond. It is particularly suited for difficult examinations such as trauma or orthopedic cases. Benefit from precise insights, efficient workflows, as well as comprehensive diagnosis on a single system – and set new standards in advanced musculoskeletal imaging.

Precise insights through unique automation

With Multitom Rax, you can combine high precision and wide coverage. Accuracy is at your fingertips. Projections from nearly any angle and automated workflows combine to meet referrers' demands, while dose is kept as low as possible.

Efficient workflows around your patients

Multitom Rax offers fast, robotic setup and barrier-free 360° patient access. This helps you relieve staff workload and improve patient experience. Automated alignment, trolley workflows, and projection flexibility reduce the need for patient repositioning. Furthermore, OrthoMatic Spine[2] offers automated landmarking and measurements to speed up your spinal workflows.

Comprehensive diagnosis with multiple procedures

Whether you need to perform functional diagnosis or administer injections into joint spaces, Multitom Rax enables a broad range of procedures: from Real3D[1] bone imaging to radiography, fluoroscopy[1], and minor interventions[1]. Switch modalities, not rooms!

[1] Option
[2] Option. OrthoMatic Spine is part of the medical device Syngo Carbon Clinicals and is not commercially available in all countries due to regulatory reasons. Its future availability cannot be guaranteed.
[3] In scanning direction
[4] ALADA = as low as diagnostically acceptable

Go even further with True2scale Body Scan[1]

Acquire up to two corresponding X-ray images in one scan run – with the patient supine, standing in natural weight-bearing position, or seated. The geometrically accurate[3] images can facilitate assessment of skeletal malpositioning – at ALADA[4] dose. Gain even more insights with OrthoMatic Spine[2], your interactive AI assistant for automated spinal measurements.

AI-Rad Companion[1]

AI-Rad Companion[1] is a family of vendor-neutral, multi-organ augmented reading solutions that automatically prepare clinical images to be interpreted by radiologists and/or clinicians.

Fleet Level Benefits

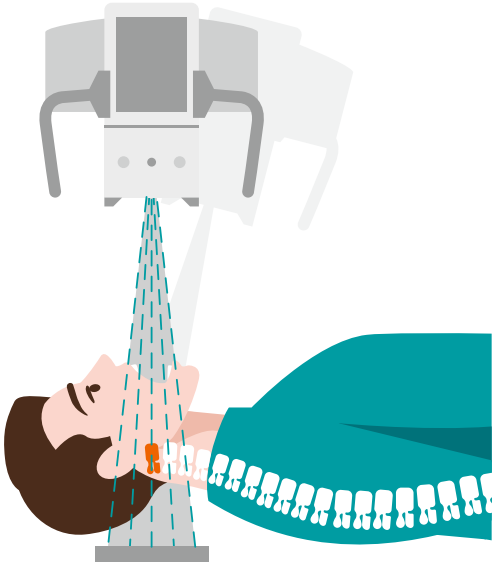
A systematic concept which helps you to reduce complexity. By standardizing you can achieve consistency for operational and clinical excellence. Supervision of your department's performance generates transparency for high availability and utilization. Securing your systems means having confidence in data and systems protection.

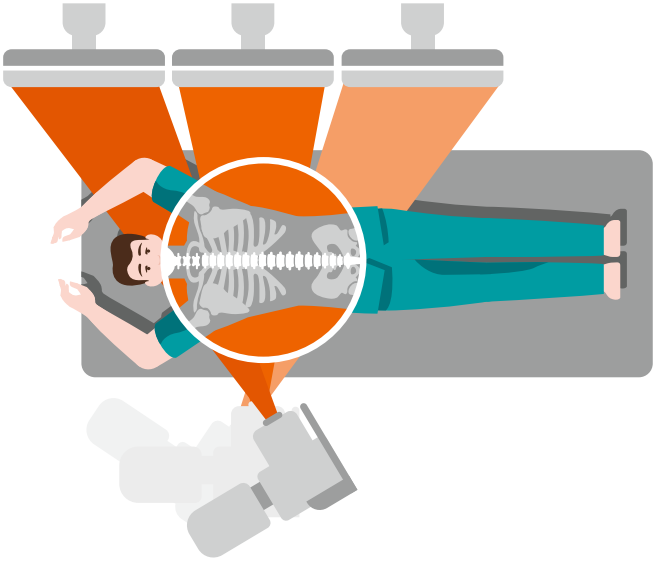
Precise insights through unique automation

To meet referrers' demands in advanced musculoskeletal (MSK) imaging, a high degree of precision, accurate positioning, and wide anatomical coverage are needed.

Multitom Rax offers unparalleled precision and flexibility in positioning, allowing projections from virtually all angles – plus unique automated workflows that let you integrate advanced MSK imaging in clinical routine.

And all that while saving dose.





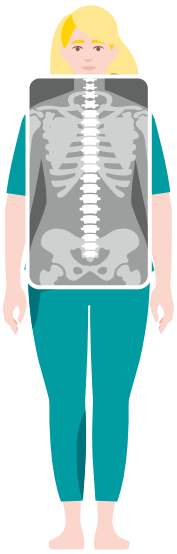
Accurate positioning
Obtain accurate MSK insights through precise system and patient positioning – easily. Twin Robotic arms give you more flexibility through projections from nearly all angles. RAXalign sets the correct SID and orthogonally aligns the tube and detector, while RAXconfirm offers fluoroscopic guided positioning.

Extended anatomical coverage
Benefit from unique automation with enhanced RAXortho[1] acquisition modes built on the well-known SmartOrtho tilting technique. Whether it's lateral imaging of the full spine, visualization of both shoulders or the pelvis in one view, Multitom Rax is designed to suit you and your patients.

[1] *Option*

"When we go into active planning, we must have accurate, high-precision images. Multitom Rax delivers the necessary high-quality imaging in order to realize successful treatment solutions especially for surgical procedures."

Prof. Alexander Carl Disch, MD
Head, University Comprehensive Spine Center
University Hospital Dresden, Germany



Right dose
Use the right dose for every patient: Choose proven technology with dedicated pediatric organ programs (OGPs) for different body parts to help reduce necessary radiation, limit unnecessary radiation with CAREPROFILE/CAREPOSITION, and minimize the risk of over-exposure and over-collimation with AEC and ACSS.

Ortho full spine

Study ID 5aac416

Female patient, 22 years old.
Courtesy: Clinical University Carl Gustav Carus

Efficient workflows around your patients

Advanced musculoskeletal imaging requires time-consuming patient and system positioning, complex manual workflow steps – and may be painful for patients or physically demanding for staff. As a result, it is cumbersome to perform in clinical routine.

Multitom Rax precisely positions and aligns itself, reducing the need for unnatural patient positioning – even in challenging situations like trauma cases. It supports staff and offers barrier-free 360° patient access, helping to optimize the diagnostic experience.

For fast, efficient, and productive workflows revolving around your patients.

Fast, robotic exam setup
Let standardized robotic movements speed up your daily routine. Reproducible, rapid examination setup is made possible by one-touch workflows and virtually unlimited, customizable organ programs that meet your specific requirements.

Automated detector/tube alignment
Reduce manual workflow steps and save valuable time. Thanks to RAXalign and RAXtrack, detector and tube align automatically and stay aligned when repositioning the system. The predictable and very compact virtual U-arm movement quickly shifts the system 90° around the patient – ideal for emergency departments.

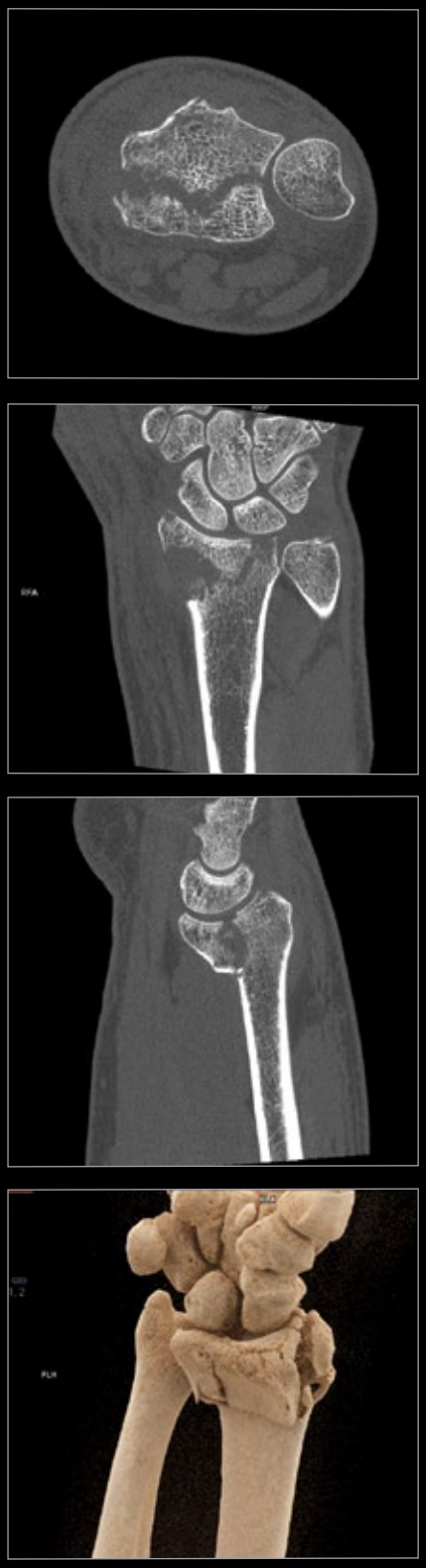
[1] *Option. OrthoMatic Spine is part of the medical device Syngo Carbon Clinicals and is not commercially available in all countries due to regulatory reasons.Its future availability cannot be guaranteed.*

"Multitom Rax has made our workflows noticeably smoother, faster, and more predictable. And our patients appreciate the extra comfort."

Frank Schellhammer, MD
Head physician of diagnostic and interventional radiology
Academic Hospital Augustinerinnen Cologne, Germany

Less patient repositioning
Let the robots move, not the patient. With Multitom Rax, exams are less cumbersome, less painful, and less risky for patients. The system moves around the patient, so repositioning them is no longer necessary. And flexible workflows for wheelchairs, trolleys, and stretchers mean that patients need not be transferred onto the system's table at all.

Wrist



Male patient, 55 years old. Real3D Hi-Res[1], wrist, distal radius fracture. mAs 0.6/pulse kV 14.1 DAP [µGy*m²] slice thickness 0.3mm.

Courtesy of Academic Hospital Augustinerinnen Cologne, Germany.

Comprehensive diagnosis with multiple procedures

Advanced musculoskeletal imaging calls for more than just radiography. A patient may also require 3D bone imaging, functional diagnosis, or contrast and drug injections into joint spaces.

Thanks to its modular design, Multitom Rax can be quickly configured to suit your and your patients' needs. Starting with precision radiography, it also offers Real3D[1] imaging for the lumbar spine and extremities, as well as fluoroscopic[1] and interventional[1] imaging.

This way, Multitom Rax enables comprehensive diagnosis and can provide the basis for treatment planning – all in a single room on a single system.

More informed diagnosis and treatment planning
Acquire 3D bone imaging with our optimized Real3D[1] feature, adding substantial value to the assessment of bone and joint trauma by detecting or ruling out extremity fractures and fracture-related findings more reliably than conventional radiography.[2] Real3D[1] Hi-Res allows to visualize the small bones and joints of hand and elbow and even the trabecular structure of the bones with an isotropic resolution of approx. 200 µm.

Enhanced comfort, flexibility, and independence
Depending on the individual patient's case, imaging can be done in supine, seated, or weight-bearing position. Multitom Rax can also help speed up diagnosis, since complementary imaging exams can be performed on a single system.

[1] Option
[2] Compared to previous version

"Multitom Rax holds the potential to be a 'one-stop shop' device for trauma-associated wrist imaging."

Jan-Peter Grunz, MD
University Hospital Wuerzburg, Germany

Expanded orthopedic capabilities
Perform fluoroscopy[1] and minor interventions[1] with 30 fps for needle guidance in musculoskeletal procedures such as functional diagnosis of joints, fracture and luxation repositioning, contrast and drug injections into joint spaces, as well as catheter or tube placements.

Real3D[1] weight-bearing

Enhanced diagnosis and surgical planning

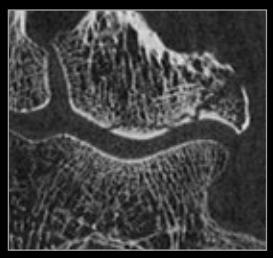
Study ID 5aab015

Real3D[1] Hi-Res upper extremities

High isotropic resolution without increase in dose

Study ID 5aaa190

3rd Gen. MDCT
UHR Mode (Ur77)



Study ID 5aaa186

Multitom Rax
Real3D Hi-Res

Fluoroscopy[1] and interventions[1] for orthopedic specialists

Study ID 5aaa957

Arthrography of a knee joint

Go even further with True2scale Body Scan[1,2]

Geometrical distortions and magnification effects in X-ray images make assessing musculoskeletal pathologies a challenge. What's more, treatment of deformities calls for frequent, recurring exams.

With True2scale Body Scan[1], Multitom Rax offers fully-integrated slot scanning: up to two panoramic images in one run, with the patient standing, seated, or even supine. The geometrically accurate[3] images can facilitate assessment of skeletal malpositioning.

All at ALADA[4] dose.

Even more anatomical coverage
Quickly acquire images of the region of interest. With a scan range of up to 190 cm lying and up to 170 cm standing, this novel acquisition technique enables advanced insights – in supine or natural weight-bearing positions. So you can address a large population of patients.

Even greater precision
Benefit from geometrically accurate, 1:1 images, thanks to the slot-scanning technique. No stitching or manual calibration is needed, which can improve identification of skeletal malpositioning. And for spinal cases, OrthoMatic Spine[5] automatically calculates the relevant parameters – and creates a beautifully annotated image.

[1] Option
[2] Compared to previous software version
[3] In scanning direction
[4] ALADA = as low as diagnostically acceptable
[5] Option. OrthoMatic Spine is part of the medical device Syngo Carbon Clinicals and is not commercially available in all countries due to regulatory reasons. Its future availability cannot be guaranteed.

Faster spinal workflows with OrthoMatic Spine[5]: your AI assistant for automated landmark detection, parameter measurements, and annotation.

"We definitely need less dose for comparable image quality. Our pediatric radiologists are very happy with True2scale, since they get optimum image quality at lower dose."

Sophia Blum, MD
Radiologist, University Hospital Dresden, Germany

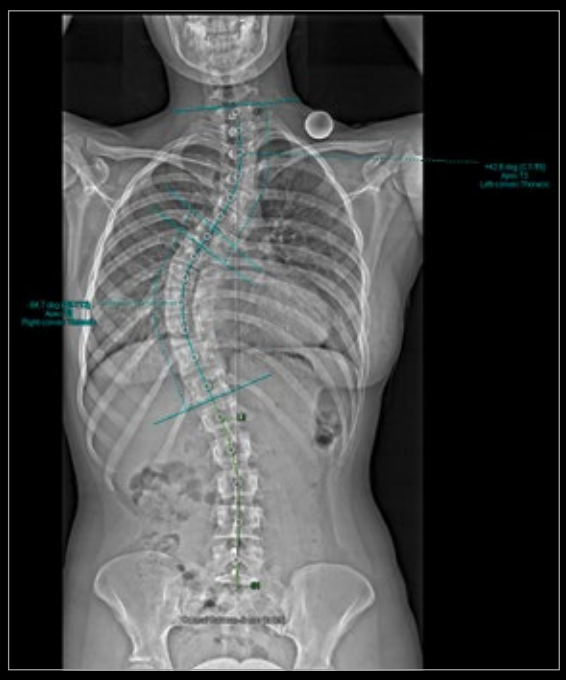
Even lower dose
See what you need, while applying ALADA[4] dose ("as low as diagnostically acceptable").
True2scale Body Scan[1] is powered by slot-scanning technology adapted to orthopedic cases. Low-dose imaging is particularly important for pediatric patients and anyone needing frequent follow-up exams.

True2scale Body Scan[1]

Female patient, 11 years old. True2scale Body Scan, full-body S AP supine/seated. mAs 0.49 kV 80.9 CU 0.3 DAP [µGy*m2] 4.2.

Courtesy of University Hospital Dresden, Germany.

OrthoMatic Spine[5]



Automated landmarking and measurements using OrthoMatic Spine[5]

Case Study

Patient fell while horse riding. She suffered a concussion and reported left ankle and back pain.

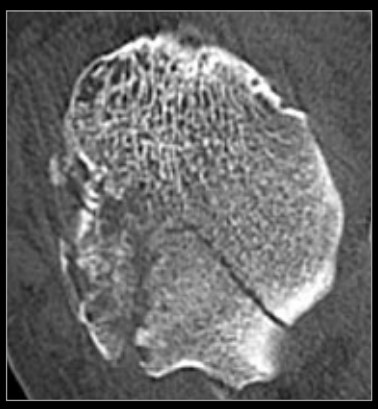
X-rays of the left ankle were inconclusive. Despite considerable pain and swelling, no clear fracture dislocation or luxation could be ascertained. A fracture of the medial talus bone was suspected; however, the fracture pattern could not be sufficiently judged with radiography.

Real3D[1] images in the lying position displayed a multi-fragment injury of the talus bone with articular involvement of the upper ankle joint and smaller dislocated fragments at the medial side.

Real3D[1]

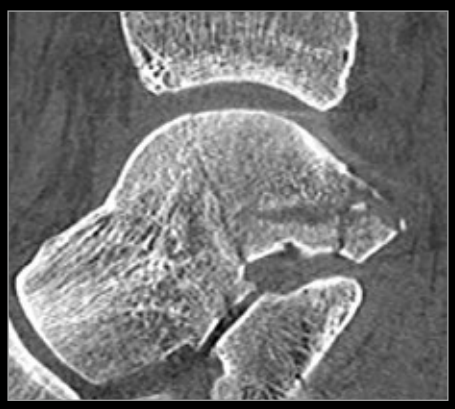
AP view
Conventional X-ray examination

Lateral view



Axial view

Coronal view



Sagittal view

Study ID: 5aab345

Female patient, 31 years old. Real3D[1], talus. mAs 430 kV 80.5 DAP [µGy*m²] 1071.

Courtesy of University Hospital Wuerzburg, Germany.

[1] *Option*

Real3D[1] weight-bearing

Study ID: 5aab005

Female patient, 55 years old. Real 3D7, ankle weight-bearing. mAs 0.5/pulse kV 116 DAP [µGy*m²] 75.

Courtesy of Academic Hospital Augustinerinnen Cologne, Germany.

True2scale Body Scan[1]

Study ID: 5aac707

Spine supine with T2S

Female patient, 17 years old. True2scale Body Scan, full-body M AP weight-bearing. mAs 1.58 kV 80.9 CU 0.3 DAP [µGy*m2] 48.58.

Courtesy of University Hospital Dresden, Germany.

Technical specifications

Arm board[1]

For Real3D images of hand and elbow

Arm support

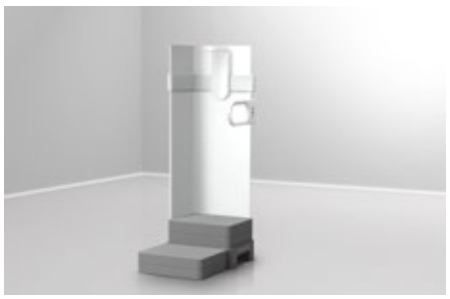
For lateral chest images

Tabletop extension[1]

For Real3D images of knee and foot

RAX stand with knee support[1]

For Real3D images of the knee under natural weightbearing condition



RAX stand with head support[1]

For Real3D images under natural weightbearing condition

Max detectors[1]

- MAX wi-D detector: 35 cm x 43 cm
  Weight capacity: max. 300 kg
- MAX mini detector: 24 cm x 30 cm

[1] *Option*

Large color touchscreen (10”)

- User-friendly interface
- Offers access to key image parameters with MAXtouch

Fast, robotic exam setup

- High-speed, safe positioning with robotic precision
- Tube and detector align themselves around the patient, on up to 10 axes simultaneously.
- Automated detector/tube alignment thanks to RAXalign, RAXtrack and virtual U-arm

RAX detector

- Ceiling-mounted built-in 43 cm x 43 cm detector
- For static, dynamic[1], and 3D[1] imaging

Multifunctional wireless footswitch[1]

For extended MSK imaging applications such as Fluoroscopy[1]

Table[1]

- Motorized height-adjustable table
- Adjustable height: from 50 cm to 92 cm
- Foot kick-switches for table height adjustment
- Weight capacity: 240 kg

Fleet Level Benefits

Unlock your potential – and increase the efficiency across your imaging fleet

As healthcare provider you are forced to do more with less, you have to run your radiology department more efficiently. A high level of complexity makes it challenging for you to reach the desired efficiency. Siemens Healthineers offers specific solutions across the entire X-ray portfolio that let you standardize, analyze, and secure your fleet. Experience consistency, transparency, and confidence as valuable Fleet Level Benefits and improve outcomes, increase efficiency – and achieve greater staff and patient satisfaction.

Standardize
for consistency

Analyze
for transparency

Secure
for confidence

Standardize
for consistency

- Systems with highly intuitive user interfaces and common workflows
- Staff with consistent knowledge level
- Unified image quality and same image impression

Analyze
for transparency

- Consolidated data in one place
- Analyzed and evaluated data turned into valuable information

Secure
for confidence

- Protect large IT network and imaging fleet with one cybersecurity philosophy
- Same maintenance cycles and update strategies for the whole fleet

[1] *Option*

Service and exchange

Increasing value by partnering throughout the entire equipment lifecycle.

Equipment Maintenance & Monitoring
Reliably servicing your Multitom Rax allows you to identify deviations from current norms to maximize equipment availability.

Education Management
Personalized education and training improve your staff's expertise as well as your equipment efficiency.

Fleet Management
A transparent overview of your fleet allows you to manage the performance and maintenance of your Siemens Healthineers equipment, 24/7.

Accessory Solutions
Products from our partner companies complement your use of our equipment in your daily workflow.

Performance Management
An intelligible overview of your radiography performance data helps you make prompt and well-informed decisions.

Asset Management & Planning
Access to innovative medical technology and equipment throughout the entire contract lifetime allows you to maximize focus on patient care.

Business Modelling & Financing
Customized business and financial models address your budgetary and enterprise needs enabling you to remain more competitive.

Departmental Layout Optimization
3D visualization and digital twin analysis create more efficient workflows and a more enjoyable working environment.

Continuously adding value and caring for your equipment, your workforce, and your entire institution.

Why Siemens Healthineers

At Siemens Healthineers, we pioneer breakthroughs in healthcare. For everyone. Everywhere.By constantly bringing breakthrough innovations to market, we enable healthcare professionals to deliver high-quality care, leading to the best possible outcome for patients. Our portfolio, spanning from in-vitro and in-vivo diagnostics to image-guided therapy and innovative cancer care, is crucial for clinical decision-making and treatment pathways.

Built on a history of innovation going back more than 125 years and with unique strengthsin patient twinning, precision therapy, as well as digital, data, and artificial intelligence (AI), we are well positioned to take on the biggest challenges in healthcare. We will continue to build on these strengths to help fight the world's most threatening diseases, improving the quality of outcomes, and enabling accessto care.

As a leader in the industry, we aspire to create better outcomes and experiences for patients no matter where they live or what health issues they are facing. We innovate sustainably to develop scalable solutions that can be tailored to the needsof healthcare providers, and the local health infrastructures.

Motivated by our purpose and guided by our values, we are building an inclusive culture, where we embrace diversity in all its forms. We are a team of 66,000 highly dedicated employees across more than 70 countries passionately pushing the boundaries of what's possible in healthcare to help improve people's lives around the world.

Multitom Rax and its features are not commercially available in all countries. Due to regulatory reasons its future availability cannot be guaranteed.

True2scale Body Scan, Real3D and OrthoMatic Spine are are options.

OrthoMatic Spine is part of the medical device Syngo Carbon Clinicals and is not commercially available in all countries due to regulatory reasons.
Its future availability cannot be guaranteed.

Results from case studies are not predictive of results in other cases. Results in other cases may vary.

The statements by customers of Siemens Healthineers described herein are based on results that were achieved in the customer's unique setting. Because there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT and/or automation adoption) there can be no guarantee that other customers will achieve the same results.

On account of certain regional limitations of sales rights and service availability, we cannot guarantee that all products/services/features included in this brochure are available through the Siemens Healthineers sales organization worldwide. Availability and packaging may vary by country and are subject to change without prior notice.

The information in this document contains general descriptions of the technical options available and may not always apply in individual cases.

Siemens Healthineers reserves the right to modify the design and specifications contained herein without prior notice. Please contact your local Siemens Healthineers sales representative for the most current information.

In the interest of complying with legal requirements concerning the environmental compatibility of our products (protection of natural resources and waste conservation), we may recycle certain components where legally permissible. For recycled components we use the same extensive quality assurance measures as for factory-new components.

Any technical data contained in this document may vary within defined tolerances. Original images always lose a certain amount of detail when reproduced.

Image on title page is courtesy of
University Hospital Wuerzburg, Germany.

Siemens Healthineers Headquarters
Siemens Healthineers AG
Siemensstr. 3
91301 Forchheim, Germany
Phone: +49 9191 18-0
siemens-healthineers.com

Published by Siemens Healthineers AG · QR700018561 · online · 16305 0225 ·