SIMULATION CAPABILITIES

The simulation capabilities define the core simulation functions available within the X-rau Suite. Use this overview to set clear expectations about what the simulation tools can and cannot do during your work

As of version v1.8.0

T PATIENT & ANATOMY		
Exam choice		Students can choose exams by anatomical region, and case type, e.g., 'Pelvic - Healthy' or 'Pelvic - distal femur fracture'
Multiple projections	\checkmark	Our simulations support over 60 standard projections across all available exams, and students can attempt additional projections thanks to the interactive nature of the simulation.
Patient positioning	\checkmark	Each simulation has specific preconfigured patient positions, such as erect, supine, prone, or seated, with options to adjust rotation from AP to lateral based on the procedure
In-Plane Patient Adjustment	\checkmark	Patient positioning includes the ability to move forward and backward within the plane, allowing for more accurate alignment based on procedural needs
Joint mobility	\checkmark	Each simulation includes a specific set of moveable joints, allowing students to adjust and position the patient as needed
Anatomy and bones		Each patient features either high-quality bones with trabecular structures and landmarks or simplified bones with clear landmarks - both support radiography positioning training
Bone pathology and cases		All simulations include a healthy patient case. Some simulations also feature trauma or pathological conditions to support adjustments in the exam approach when relevant

り》 X-RAY SUITE

X-RAY TUBE				
Full tube movement	\checkmark	The tube can move in any X, Y, and Z plane, as well as tilt and rotate in single-degree intervals		
Tube detent		The tube can detent into position at the wall bucky or radiographic table along vertical and horizontal axes for accurate imaging alignment		
Collimation	\checkmark	Collimation is adjustable, with collimation size estimates shown on the tube display (based on tube-to-detector distance and beam angle)		
Source-image distance (SID)	\checkmark	The tube automatically measures and displays the source-image distance on the tubes digital display		
RADIOGRAPHIC TABLE AND WALL BUCKY				
Partial table control		The radiographic table comes equipped with vertical movement controls for select cases where it supports positioning.		

Full table control		The simulated X-ray suite comes equipped with a height adjustable floating tabletop			
Interactive table bucky		The simulated X-ray suite comes equipped with a sliding table bucky			
Interactive wall bucky		The simulated X-ray suite comes equipped with a height adjustable wall bucky			
Grid		Both the wall and table bucky feature an integrated adjustable grid for improved image quality.			
IMAGING RECEPTOR					
Generic detector plate		The simulated X-ray suite features a 17 \times 17 in (43 \times 43 cm) detector plate that generically represents imaging receptors, without specifying CR or DR technology			
Receptor sizes		The system supports various imaging receptor sizes and technologies: CR (8 \times 10 in, 10 \times 12 in, 14 \times 17 in, 14 \times 17 in, 17 \times 17 in) for diverse imaging needs.			
Left and right markers		Interactive L and R markers available to be placed on receptor plate or wall bucky			
		SANITATION STATION			
Sanitation station		The simulated X-ray suite has a handwashing station where students can practice washing their hands and putting on gloves			
RONTROL ROOM					
Adjust technical factors		The control room lets students adjust kVp and mAs to observe how changes affect exposure outcomes			
Bone visualization		The control room features a button that removes the skin overlay from the patient, allowing students to focus on positioning the bones directly			
Simple image post processing		The control room allows simple post-processing of images, including 90 degree clockwise or counter clockwise rotation			
Basic image post processing		The control room allows basic post-processing of images, including adjustments to brightness, contrast, cropping, and rotation			
闷 EXPOSURE RESPONSE					
Film-like image response		The image shows a film-like response with quality changes based on kVp and mAs, helping students understand how technical factors affect image quality.			
Digital image response		Using CR or DR receptors, the image will display a digital response with enhanced quality, including DI and EI values, allowing students to critique based on index values.			
Realistic bone details		Depending on the selected exam, the exposure response will reflect realistic bony details such as anatomical landmarks as well as trabecular, marrow and cortical bone structure			

Central ray alignment		The exposure realistically reflects central ray alignment, meaning that both large and small errors in tube angulation, tube positioning or patient positioning is shown in the image.
Responds correctly to kVp		The exposure provides a realistic response to changes in kVp, allowing for both optimal but also over- or under exposed images. Image response depends on method (film or digital)
Responds correctly to mAs	\checkmark	The exposure provides a realistic response to changes in mAs, allowing for both optimal but also low- or high beam density images. Image response depends on method (film or digital)
Are we missing simulation capabilities? Report it on the roadmap here.		Planned for development

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