Hands-On Teaching Tools, LLC

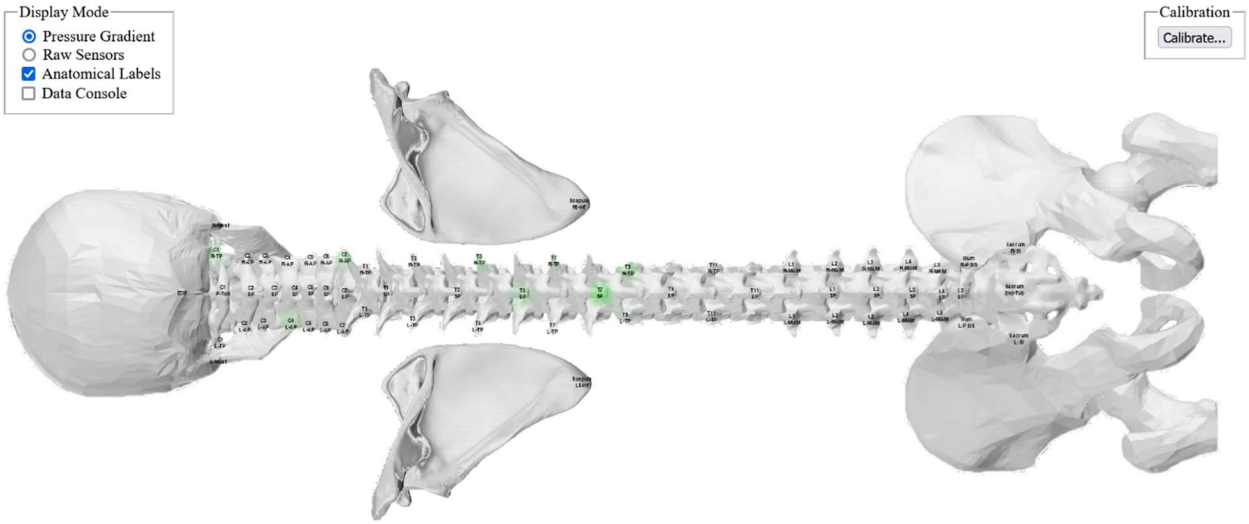
PAT – the Palpation and Adjustment Trainer

PAT is the first training simulator with backbone. It's useful for training in early spinal manipulation and provides a safer experience for novices, as opposed to learning on humans.

The "skin" is durable silicone 4mm (1/4 ") thick and the solid body is filled with a soft gel-like silicone to simulate soft tissue. The skeleton consists of anatomically correct 3D-printed vertebrae, a ribcage, skull and molded pelvis. There are no arms, but the model Includes moveable hip joints with legs to the knee.

The total mass is 34 kg (75 lbs), realistically simulating human mass. The joints are all freely movable with life-like kinematic motions.

This mannequin is ideal for training in skeletal landmark location using palpation. A network of 64 pressure sensors is attached to skeletal landmarks to provide location and intensity of palpation. Sensors are attached to the skull (EOP & mastoid processes), each vertebra (spinous and transverse/mammillary processes), Sacrum (S2 process, SI joints), Scapulae, and pelvis (PSIS). Feedback is provided through a video monitor attached to the preprogrammed processor. Gradations of color from green to red are shown on the structure indicating light to heavy pressure. Structure labels can be shown or hidden on the feedback screen.



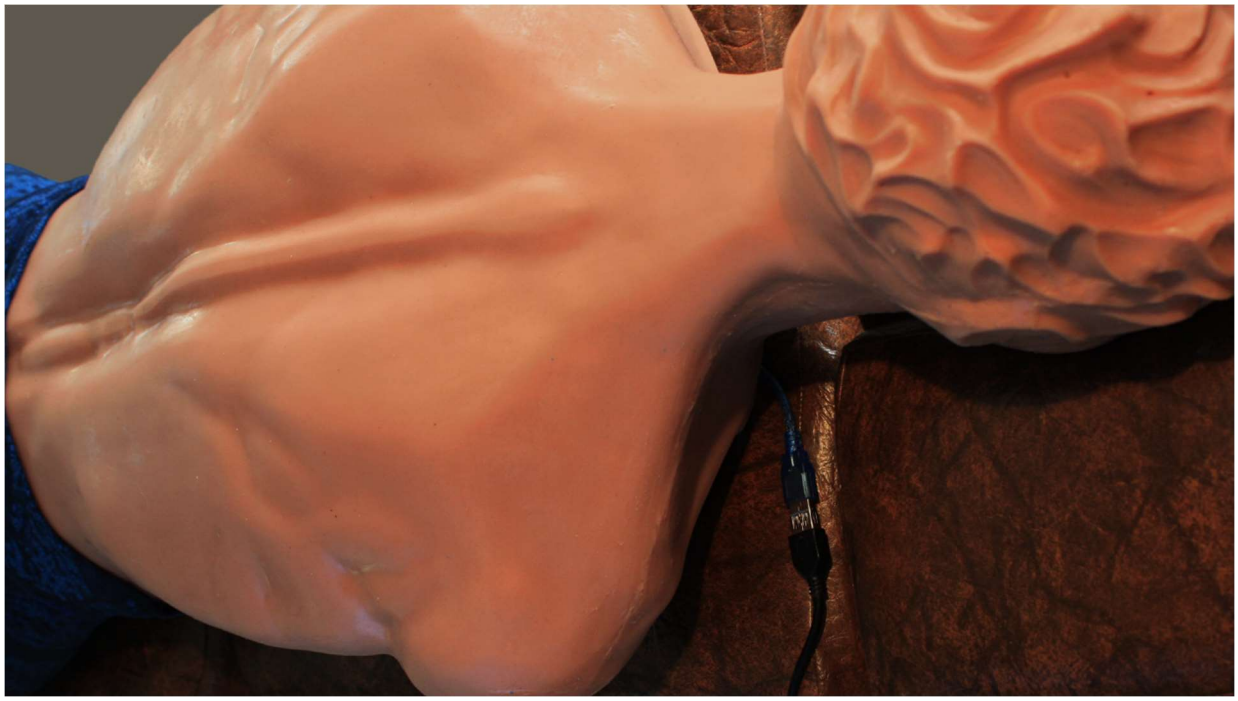
Internal levers allow control of compression in lumbar joints: L1 to L3 on left & right, L3 to Sacrum on left & right and can produce various scoliotic curves and increased stiffness of lumbar spine.

The mannequin is durable enough to withstand manipulative forces on the order of 1000 Newtons (225 lbs-force, 100 kg-force).

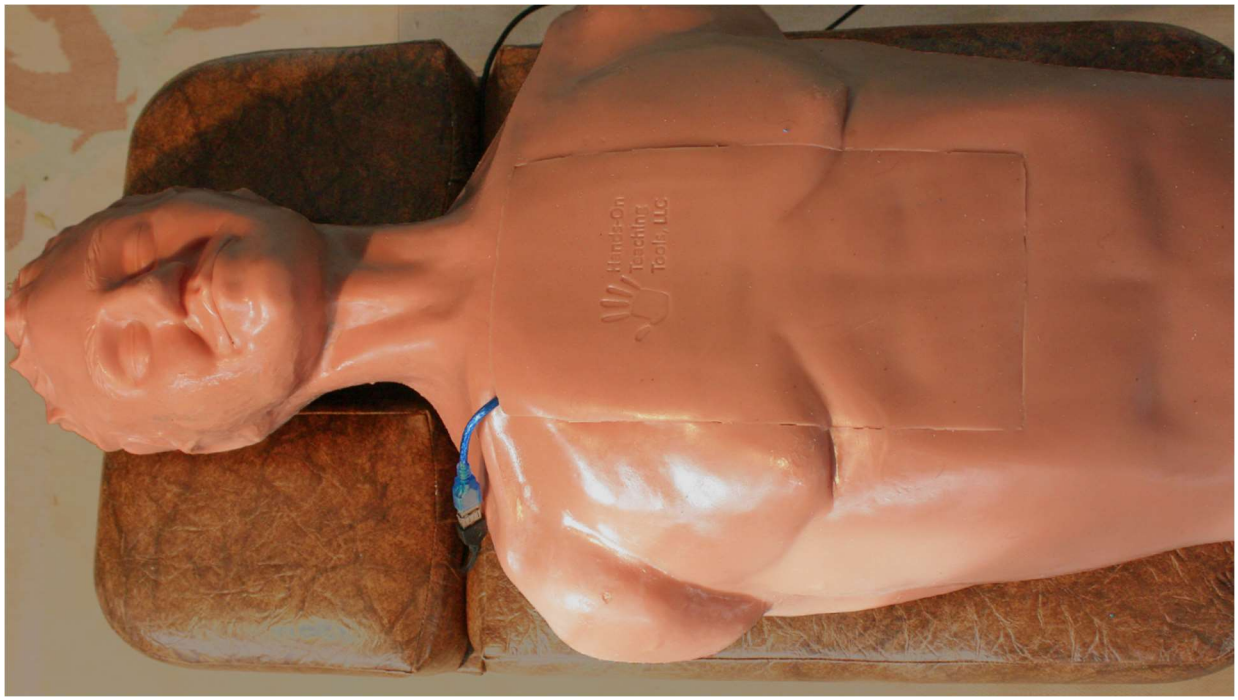
Stages of training

1. Learn to palpate skeletal structures through simulated skin and soft tissue.
2. Learn to apply forces to sense vertebral motion and stiffness.
3. Learn to apply fast manipulative maneuvers.

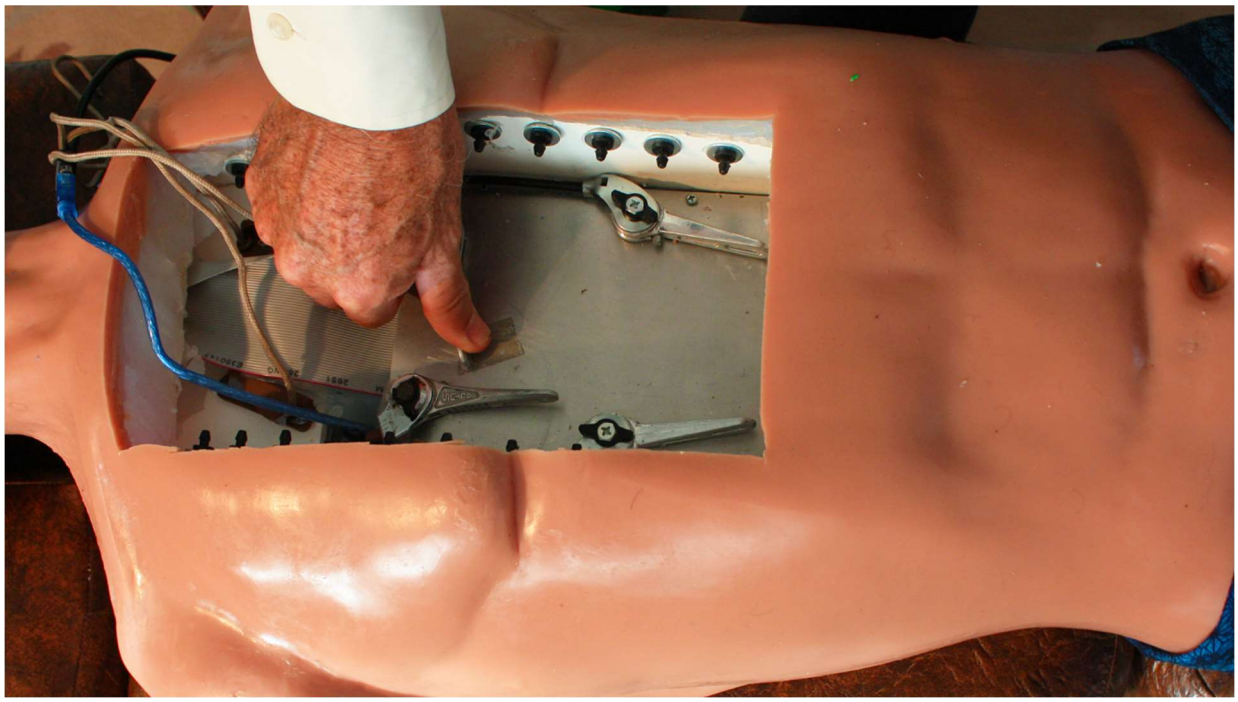
Closeup of upper back



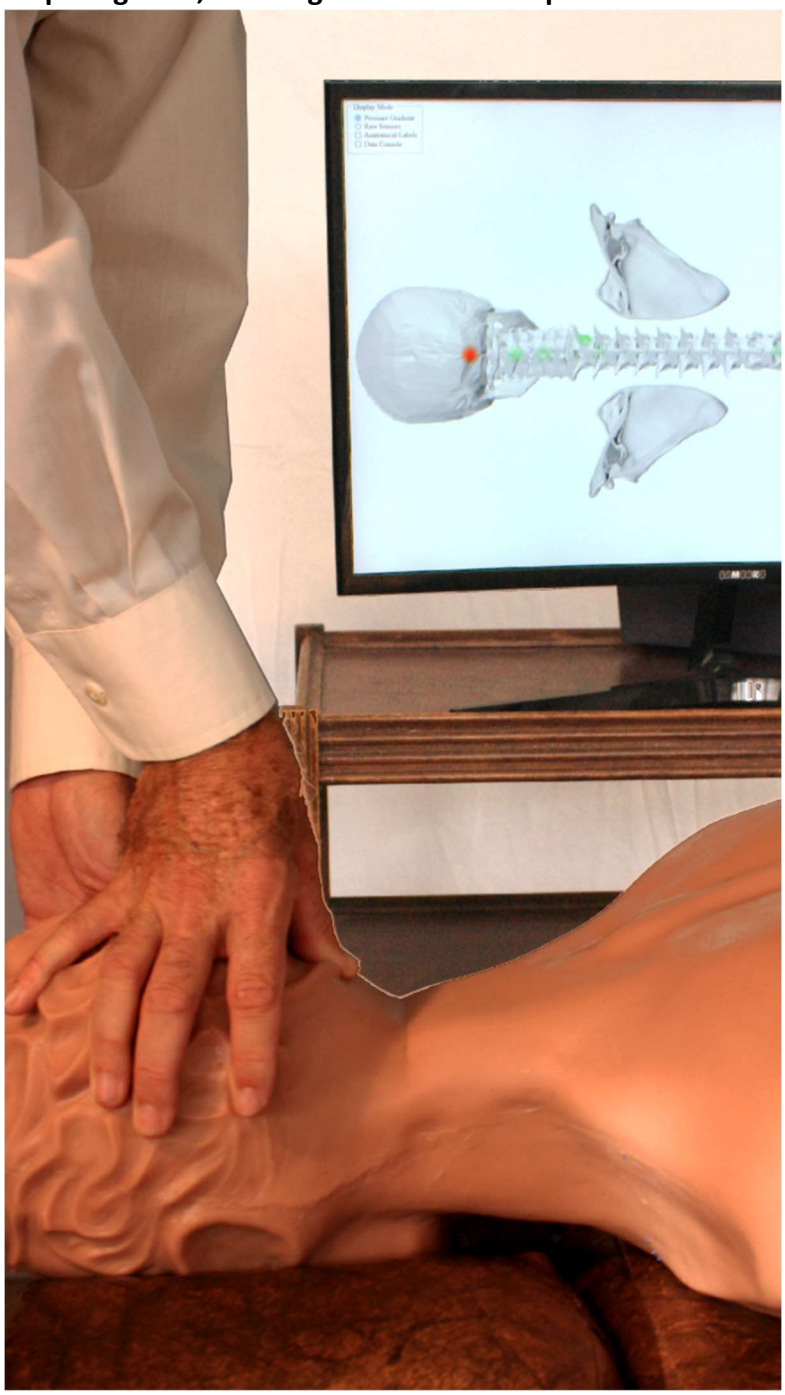
View of chest from anterior



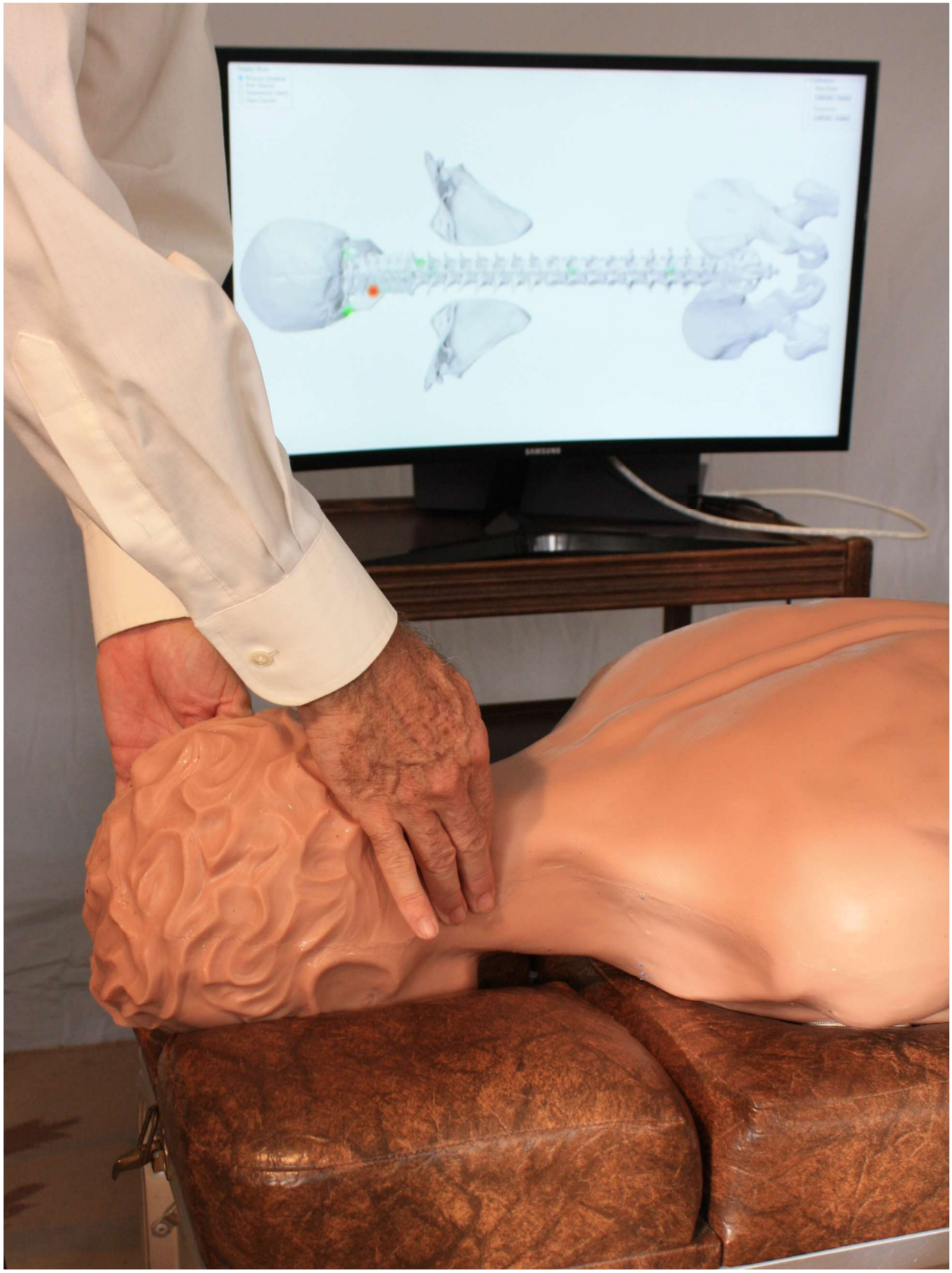
View of inner workings of anterior chest showing levers to control lumbar spine stiffness



Palpating skull, showing force feedback spot at EOP



Setup for prone cervical palpation or manipulation showing contact on mid cervical spine.

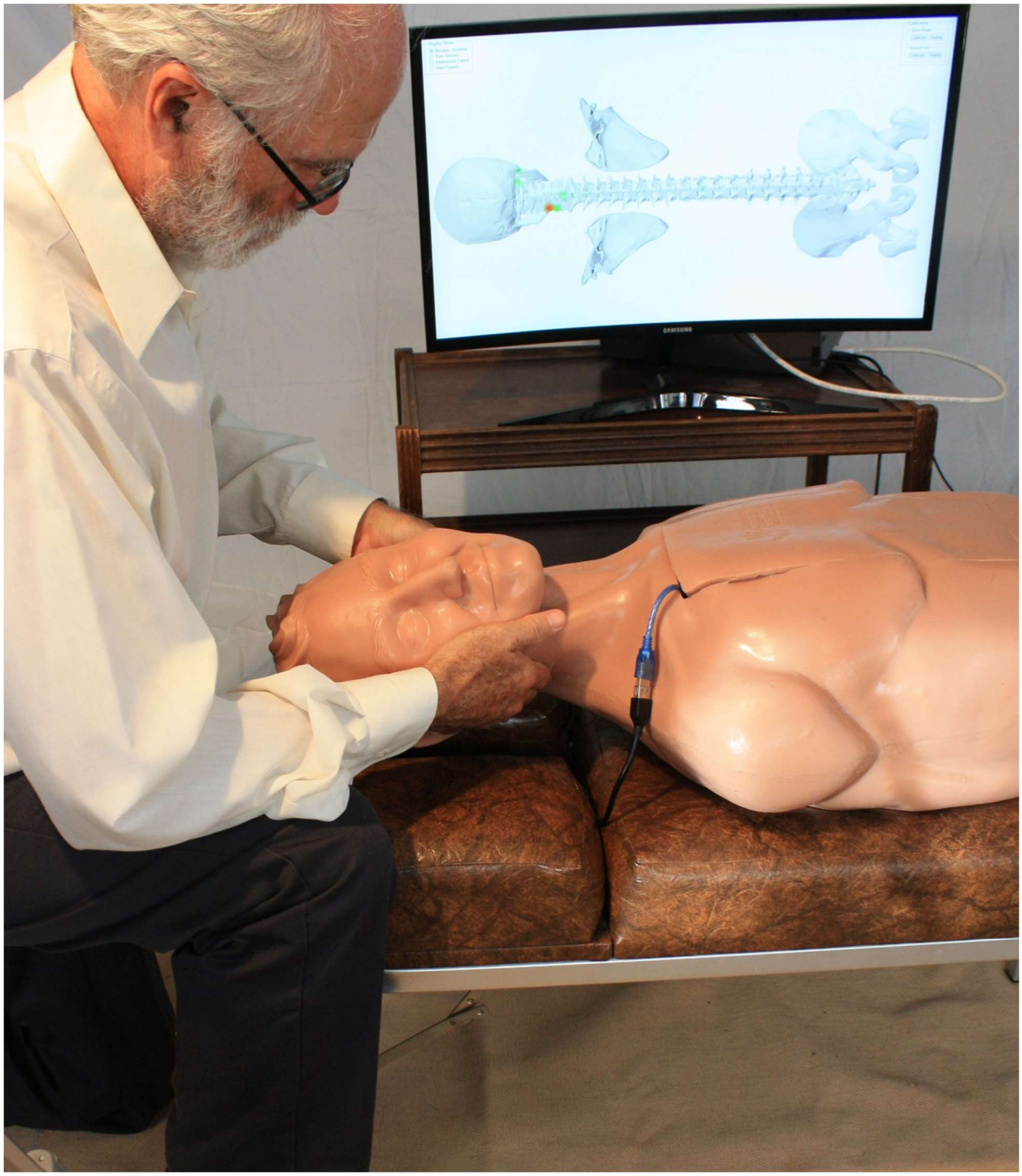


Setup for lumbar spine manipulation showing contact on L3

Setup for pelvic manipulation showing contact on PSIS

Setup for lumbar manipulation showing contact on L3

Setup for supine cervical manipulation showing contact on mid-cervical spine.



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Visit the website for details on history and publications:

https://handsonteachingtools.com/pat