Diagnostic and Procedural Imaging in Physical Therapist Education

Expected Student Outcomes and Resources

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Segment Objectives

- Discern expected student outcomes for imaging content
- Identify imaging content resources for faculty and students
- Develop/assess curricular content for imaging education in first professional (entry-level) physical therapist educational programs

APTA
American Physical Therapy Association

MINIMUM REQUIRED SKILLS OF PHYSICAL THERAPIST GRADUATES AT ENTRY-LEVEL (BOD G11-05-20-49)

Examination/ Reexamination

1. Review pertinent medical records and conduct an interview which collects the following data:
   - M. Lab values
   - N. Imaging
   - O. Consultations

http://www.apta.org/uploadedFiles/APTAorg/About_Us/Policies/Education/MinimumRequiredSkillsPTGrads.pdf

DIAGNOSIS BY PHYSICAL THERAPISTS
(HOD P06-12-10-09 - Position)

When indicated, physical therapists order appropriate tests, including but not limited to imaging and other studies, that are performed and interpreted by other health professionals. Physical therapists may also perform or interpret selected imaging or other studies.

http://www.apta.org/uploadedFiles/APTAorg/About_Us/Policies/Practice/Diagnosis.pdf
accessed 9/23/13

Analysis of Practice for the Physical Therapy Profession: Entry-Level Physical Therapists
FSBPT – 2011

Appendix G - Final List of Critical Knowledge to be Included on the NPTE Foundations for Evaluation, Differential Diagnosis and Prognosis (e.g., diagnostic imaging, lab values, other medical tests, surgical procedures)

Knowledge of non-pharmacological medical management of the following systems:
- Cardiovascular/pulmonary
- Lymphatic
- Musculoskeletal
- Neuromuscular/nervous
- Integumentary
- Metabolic and endocrine
- Gastrointestinal
- Genitourinary
- Multiple systems

Knowledge of physical therapy ultrasound imaging of the musculoskeletal system

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- Introductory lecture in a first year course (Neuro PT I)
  - 3rd semester (after anatomy, neuroscience, kinesiology)
  - Concomitant with Ortho PT I
- Detailed instruction (3 weeks) in a third year course (Diagnosis)
- Casual information related to specific content areas throughout the curriculum

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Imaging content within diagnosis course

- **Goals - The learner will . . .**
  - gain basic knowledge and practical experience in the multiple facets of diagnostic imaging.
  - gain basic knowledge of the physics, technology and techniques for acquiring, viewing and interpreting imaging studies.
  - know the advantages and shortcomings of commonly used imaging technologies.
  - use radiology consultation and imaging data to understand the nature of pathology and to develop appropriate intervention plans.
  - use imaging information to recognize pathology that requires referral to another health care professional.
  - relate imaging data to pathology and clinical findings commonly encountered in physical therapy practice.

UofS Imaging Objectives

The learner will . . .

- correctly identify the following types of imaging studies: plain film radiography, computed tomography (CT), magnetic resonance imaging (MRI), ultrasonography (US), radionuclide scintigraphy (bone scan).
- know the projections and positions commonly used for plain-film radiography.
- distinguish between air, fat, water, bone, contrast media and heavy metals on imaging studies.
- orient imaging studies correctly on the viewer.
- use the A-B-C-s system (Alignment – Bone Density – Cartilage Space – Soft Tissues) to systematically evaluate plain film radiographs of musculoskeletal structures.
- use systematic scanning methods for the following regional imaging studies: spine, brain, chest, abdomen.
- identify normal and abnormal anatomic structures for persons of different ages using imaging studies.
- demonstrate an understanding of the radiologist's report.

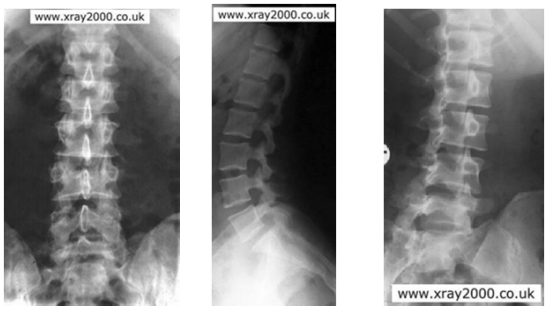
UofS Instruction Example

Systematic Scanning LS Spine

- AP look for:
  - Count vertebrae (sacralization or lumbarization?)
  - Transverse processes and pedicles (fracture or erosion)
  - Spina Bifida
  - Sacroiliac joints (fused?)
- Lateral look for:
  - Fracture, subluxation, disk spaces
- Oblique look for:
  - Spondylolisthesis

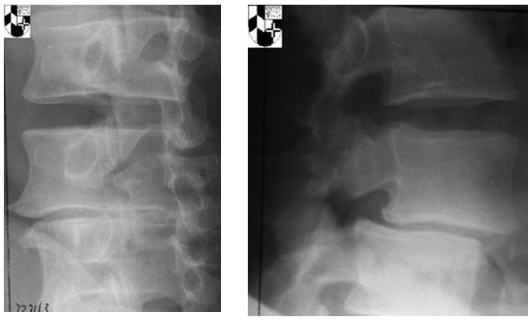
UofS Instruction Example

LS Spine Normal AP, Lateral, Oblique



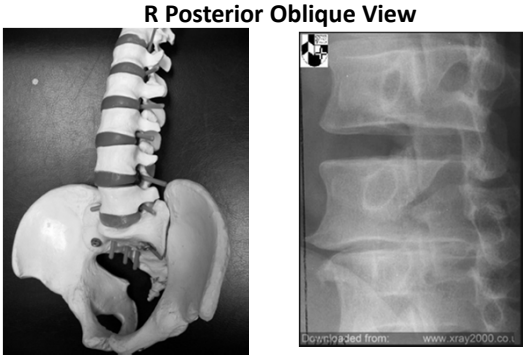
UofS Instruction Example

Spondylolisthesis



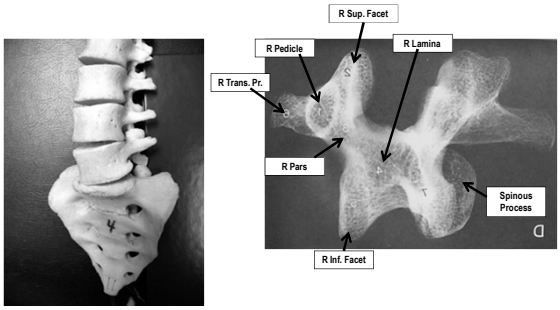
UofS Instruction Example

R Posterior Oblique View

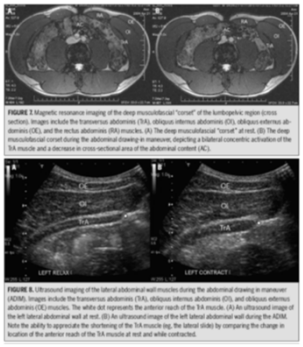


UofS Instruction Example

R Posterior Oblique



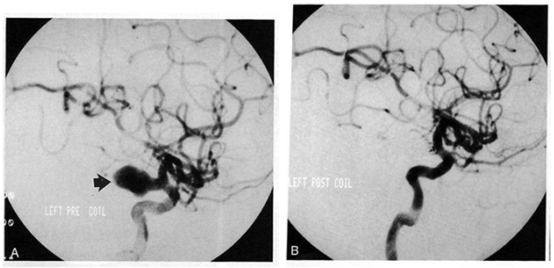
UofS Instruction Example



Teyhen et al., JOSPT, 37:8, August 2007.

UofS Instruction Example

Aneurism



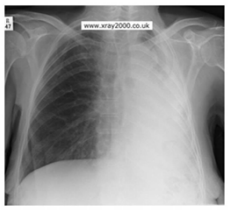
UofS Instruction Examples

- Chest
  - Pneumothorax
  - Atelectasis
  - Metastases
- Cardiac
  - Cardiomegaly
  - Perfusion
- Abdominal
  - Aneurysm
  - Colon
  - Genito-urinary
- Bone Density

UofS Test Question Examples

There is pathology in which lung?

A. right
B. left
C. both
D. neither



Which DXA (Dual Energy Xray Absorptiometry) T score suggests osteoporosis?

A. +1
B. 0
C. -1
D. -2.7

Sample Resources

- Xray 2000 http://www.xray2000.co.uk/
- Learning Radiology http://www.learningradiology.com/index.htm
- American College of Radiology Appropriateness Criteria http://www.acr.org/Quality-Safety/Appropriateness-Criteria
- University of Virginia https://www.med-ed.virginia.edu/courses/rad/
- Radiology Education http://www.radiologyeducation.com/

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