

# OUTLINE OF ULTRASOUND

## ORTHOPEDIC SCAN

&

# SPINE SCAN COURSE FOR

## CLASSROOM TEACHING Tech

Trn pg W8

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**.For Science Articles 1982 forward for each aspect of review (See Diagnostic Implications Tissue by Tissue and Sign by Sign Review text book --rear half--over 100 articles cited:..PLUS 2002 addendum citations at end of text:**

**This OUTLIN replaces page W8 of your book: Technician's Training Manual with the rest of these replacement pages following in order(W9,W10, etc. to W16)**

## **Outline Ultrasound Course**

(overview)

**Section I Introduction To Human Ultrasound Scanning Science**

**Section II....Introduction & History .Spinal Scanning.....**

**Section III....Basic Physics of Sound Waves / Physiology & Safety.**

**Section IV....Proper Palpation & Mental Imaging (Standards of Care)**

Lab session:Wooden machine models employed:

**Section V Book of Kings &Pathological Kings Patterns (The vertebral ideal image is an outline of the periosteum for anatomic orientation, this resembles a King's Piece in the game of chess - technical operators must know what is a good image anatomically:)**

**Section VI Special Scanning:** ( use of jelly lenses, deep Gel techniques, clean wipes, FDA approved types, -do not try to make your own:)

**Lab session:** Actual scanning demonstrated for major spine regions, followed by brief lab and practical session for special scanning and contact problems:

**Section VII Lower body Extremities Scanning:** (Hips {special techniques, general lower extremities:}See CD Rom available too

**Section VIII Interpreting The Scans and Radiologists Review image indexes...**Image examples: ...For Science Articles 1982 forward for each aspect of review (See Diagnostic Implications Tissue by Tissue and Sign by Sign Review text book --rear half--over 100 articles cited:...).....

Course detailed outline, each "teach through" is a section combining the textbooks and personal teaching, these "teach throughs" are available for detailed review if desired, but the reviewer must understand that in actual class - work insignificant aspects of grammar and phraseology must be given some lee-way:

## **\*I. Introduction & History of the Ultrasound Scanning Science**

\*\*\*\*Read \_\_ TECHNICIAN'S MANUAL pages W1\_ to \_W3\_ & W27-W30

first then TEACH THROUGH -----> [wci](#) Tech Trn.... pgW9

## **\*II. Introduction & History of the Orthopedic/Spine Ultrasound Scanning Science**

\*\*\*\*Read \_\_ Tissue by Tissue and Sign by Sign Review text book FIRST PAGE first then

TEACH THROUGH -----> [wcii](#)

## **\*III. Basic Physics of Sound Waves / Physiology & Safety.**

**\*A. SAFETY OF MACHINES FOR SPINE**

**1. PHYSICS**

**a. Energy**

\*\*\*\*Review \_\_ Tech Manual W21 - W26 then go to "b." next

b. Interfaces & echogenicity verses absorption TEACH THROUGH \*\*\*) wciii

## 2. PHYSIOLOGY

a. Absorption by the periosteum . . . . .

\*\*\*\*Read Tech Training Manual \_\_\_\_page W24 first then

TEACH THROUGH ----- --> zciia2a

b. The correct techniques for exposure

\*\*\*\*Read \_Tech Manual\_page W28 then

TEACH THROUGH -----> zciia2b

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## 3. MACHINE SETTINGS:

a. Basic controls for any/all machines: (Medison, SIUI, Fukuda Densi, Pie Medical, General Electric, Shimadzu similarities and differences reviewed, hospital verses small portables reviewed:) (underlined are presently available for demonstration purposes but all manufacturers will be invited to donate demonstration machines, sales people will not be invited per se, but contact information will be distributed for a minimum of three manufacturers, as well as any manufacturer who lends a demo system)

b. Gamma settings, c. Gain (Slice verses regional), d. Power (Usually a hospital system factor:),

\*\*\*\*Refer to Tech Training Manual page 29 keep open & then

TEACH THROUGH -----> wciia3a

e. \*\*\*Transducer types and uses

TEACH review -> transducer types, ---> transdcr Tech Trn.... pgW10

f. The good the bad and the ugly:

TEACH THROUGH -----> zpiia3f

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g. Algorithm related to focal points:

\*\*\*07/14/01 addended TEACH THROUGH .....[wpiiiA3g](#)\_\_\_\_\_

### Part III cont.'d

## B. SPECIAL CRITICAL SAFETY NOTES

### 1. POWER SUPPLY POLARITY,

\*\*\*\*consolidated to page/section [wpiiib1](#) below

### 2. STATIC DISCHARGE DANGERS,.

\*\*\*\*\*consolidated to page/section [wpiiib1](#) below

### 3. HIGH RISE BUILDINGS & ODDITIES) ..... .....

TEACH THROUGH \_\_\_\_\_[wp IIB1](#)\_\_\_\_\_

## IV. Proper Palpation & Mental Imaging

A. LANDMARKS : \*\*\*\*See below (summation composite SECTION [wpiva0](#))-----  
----- .

### Specific Critical Disciplines and Standards of Care:

#### THE CORRECT LEVEL IS AS IMPORTANT AS GOOD PICTURES

### 1. CERVICAL C1/C7 BASE OF NECK (MOVABLE VERTEBRA)

\*\*\*\*See below (summation composite page [wpiva0](#))-----

### 2. THORACIC

#### T1 BASE OF NECK AT TRAPS (STAT VERTEBRA)

\*\*\*\*See below -----(summation composite page [wpiva0](#))-----

### 3. LUMBAR

#### L4 CREST OF HIPS TO CENTER THUMB TECHNIQUES Tech Trn... [pgW11](#)

\*\*\*\*See below -----(summation composite page [wpiva0](#))-----

\*\*\*\*Open the Ultrasound Tech Manual to page W61 please then

**TEACH THROUGH -----> [wpiva0](#)**

#### **4. TECHNICAL DISCIPLINES & SOPHISTICATION TRAPEZIUS**

**\*\*\*\*\*Please see below: (summation composite wpiva4 below )**

#### **5. SACROILIAC**

**\*\*\*\*\*Please see below: (summation composite wpiva4 below)\***

#### **6. GLUTEALS AND SCIATIC NOTCH**

**\*\*\*\*\*Please see below:\*\*\*(summation composite wpiva4 below)\*\***

#### **7. HIPS**

**\*\*\*\*\*Please see below: (summation composite wpiva4 below)\*\*\***

#### **8. GENERAL TECHNICAL DISCIPLINES, PLUS SOPHISTICATION FOR EXTREMITIES**

**TEACH THROUGH ----- [wpiva4](#)**

### **Part IV cont.'d**

## **B. MENTALLY IMAGING THE DEEP SPINAL ANATOMY**

#### **1. LUMBAR IDEAL:**

**\*\*\*\*\*TEACH THROUGH (\*\*\*\*\*))[wpivb1](#)**

#### **2. THORACIC IDEAL: The King's Landscapes .....**

**TEACH THROUGH -----[wpivb2](#)**

#### **3. CERVICAL THREE IDEALS: The Princes:**

**TEACH THROUGH ----- [wpivb3](#)**

#### **4. ANGLES OF INCIDENCE AND ANATOMY INTERACTION**

**TEACH THROUGH ----- [wpivb4](#)**

#### **5. FREQUENCIES AND APPARENT SIZE OF PARTS**

**\*\*\*TEACH THROUGH ----- [wp IVB5](#)**

**6. FREQUENCIES AND PATHOLOGY      TechTrn.... pgW12**

**\*\*\*\*TEACH THROUGH ----- [wp IVB6](#)**

**7. EXAMPLES of Technique and pathology alterations and artifacts:**

- a. Traumatic force related to screen appearances, Gain/Gamma, spasms shift,
- b. Technicians potential errors, post traumatic myositis angular shift

**\*\*\*\*Edit'd & placed! 07/22/01 CONSOLIDATED SECTION**

**TEACH THROUGH ----- [.....wp ivb7a](#)**

**Part IV cont.'d OR [click here to return to top/start of index](#)**

**C. NEAT MEMORY HELPERS**

**1. THE KING**

**TEACH THROUGH ----- [wpivc1](#)**

**2. THE KNIGHT**

**TEACH THROUGH ----- [wpivc2](#)**

**3. THE BISHOP**

**"The bishop" wpivc3 consolidated into wpivc4 \_\_ BELOW\_\_**

**4. CASTLE**

**TEACH THROUGH ----- [wpivc4](#)**

**5. ANGEL WINGS SIGN**

**TEACH THROUGH ----- [wpivc5](#) .....**

**V. Indepth Book of Kings & Pathological Kings**

**\*\*\*\* crucial information section finished 07/14/01**

**TEACH THROUGH ----- [wpV](#)**

**VI & VII TEACH THROUGH The Book of Normal & Pathological Lower**

## Extremities

Review Dr. Fornage' work with International Expert AuthorsTech Trn.... pgW13

Review CD Rom Availability & how to employ:

Review Mental process of converting Gray's anatomy into "Slice" anatomy:

\*3.5 / 5.0 MegaHertz basic surveys

# VIII. Actually Doing & Interpreting The Spine Scans

[Review Radiologists Section VIII A "Pathological inflammation/edema/spasm fields"](#)

[Review Radiologists Section VIII F "Limits of the technology"](#)

[Review Radiologists Section VIII G "Lego-Medical Tales from field"](#)

[Review Radiologists Section VIII J "Interpret. & Added value Ethical Reports Writing" "Basic Standards of Care and the structured three part report style:"](#)

[Review Radiologists Section VIII K "Video Images Index"](#)

**A. EXPECTATIONS, DIAGNOSTIC IMPLICATIONS, YOUR MIND SET**

\* [The meaning of "pathologic field effects"](#) TEACH THROUGH wpVWa1)

**B. PROTOCOLS & STANDARDS**

**1. TRANSVERSE TECHNIQUES sophisticated ceph/caud universal Landmarks**

TEACH THROUGH ..... [wp VWb1](#)

**2. LONGITUDINAL TECHNIQUES deep understanding of bilat sequencing for quality assurance:**

[Not as easy as you thought?TEACH THROUGH...wp VWb2](#)

**3. DYNAMIC TECHNIQUES sophisticated enhancements of a scan recommended/ degrees range stepping dynamic scanning techniques:**

TEACH THROUGH..... [wp VWb3](#)

**4. BILATERAL VIEWS , genetic variations, and the Standards of Care:**

TEACH THROUGH... .. [wp VWb4](#)

**Part VIII cont.'d** .....Tech Trn.... pgW14

**C. PATIENT EDUCATION (per discretion-per availability screens)**

**1. PATIENT PREPARATION**

a. Mental b. Physical TEACH THROUGH [wp VWC1](#)

**Part VIII cont.'d**

**D. ETHICAL BOUNDARIES**

**1. DOCTOR'S ORDERS            2. TECHNICIAN'S RESPONSIBILITY**

TEACH THROUGH..... .. [wp VWD1](#)

**3. ROBINING/ DISROBINING/ ETHICAL "TIPS OF THE TRADE"**

Low Social Stress hip joints and sacro-iliac protocols

TEACH THROUGH.....[wp VWD3](#)

**Part VIII cont.'d**

**E. Patient Technician Environment Interactive,SIGN OF A POTENTIAL PROBLEM AND SOLUTIONS,TECHNICIAN SAFETY PARAMETERS, PATIENT DISTRESSED, MACHINE MALFUNCTIONS? FIRST CRITICAL MOVE IS?**

\*\*\*.. ..TEACH THROUGH [wp VWE2](#)

**Part VIII cont.'d**

**F. ANATOMICAL LIMITATIONS OF ULTRASOUND SCANNING SCIENCE (Managing Adipose, Frequency Verses Gain, Interposed oddities, Interposed spasms, Solutions to problems)**

\*\*\*.TEACH THROUGH.. .. [\(click to \\*\\*\\*\)wp VWF](#)

.....

**Part VIII cont.'d**



## **G. PROFESSIONAL SOPHISTICATIONS IN MANUAL METHODS THEORY AND PRACTICE: With special "Tales From the Field":**

**1. "Tales From the Field": (Some of the more unusual circumstances I and others I've known have encountered over the years, what we did, outcomes, lego medical hints. Cervical, Thoracic, Lumbo-sacral/sacro-iliac**

**TEACH THROUGH.....[wp VWG1](#) Tech Trn.... pgW15**

**2. DOING SHIFTS AND COMPOUND IMAGES**

**TEACH THROUGH-----wp VWG2\_\_\_\_\_**

**3. PICTURE TAKING System coordination printer-screen - other media**

**TEACH THROUGH-----wp VWG3\_\_\_\_\_....pg TTrn W15**

## **Part VIII cont.'d**

### **H. MACHINE SYSTEMS CARE AND COMPONENTS**

**1. APPEARANCE -HANDLING-STORAGE-**

**\*\*\*\* -TEACH THROUGH----- --- - wp VWH1\_\_\_\_\_**

**2. TEMPERATURE CHANGE environments & acclimation**

**\*\*\*\* ---TEACH THROUGH----- ---wp VWH2\_\_\_\_\_**

**3. THERMAL PAPER CARE**

**\*\*\*\* ---TEACH THROUGH----- --wp VWH3\_\_\_\_\_**

**4. Bubbles, deadheads, cracked lines, poor connections,and other willy dillers**

**\*\*\*\*---TEACH THROUGH-----wp VWH4\_\_\_\_\_**

**5. "Killer Dillers" which could cost YOU thousands (Could a massage/natural health person (using aromatic oils on their skin) as a patient accidently kill your machine system? What to watch for to avoid this and other disasters! Little known dangers which could cost you thousands of dollars in repair or replacement costs which building insurance does not cover (usually)!**

**[\\*\\*\\*\\* TEACH THROUGH--Killer Dillers----- -wp VWH5](#)**

**(due to computer labeling conflicts no letter "I" in this series)**

**Examination given for quality assurance:**

**Examination results reviewed for quality assurance and weak areas reviewed:**

Each student can turn in regional images (Lumbo-sacral/sacro-iliac, thorax/costo-vertebral, cervical/trapezius) in final lab for review and personal corrections as needed: (voluntary & may require special extra lab sessions)

**Part VIII cont.'d .....Tech Trn pg. W16**

**J. PRINCIPLES, PHILOSOPHY, AND INTERPRETATION  
BASICS Now with Knowledge of the HOW TO, Let's dive into  
GOALS EXTENSION & REVIEW (Differentiating Spine,  
Viscera, Extremities:**

**a. For primary inflammation detection Spine use ( simplex echogenic character  
macro differentials mixed environment) .**

**\*\*\*\* -----TEACH THROUGH-----wp VWJa**

**b. TEACH THROUGH** For Visceral use anatomic relationships (complex subtle differentials of soft homog. environment )

**\*\*\*\*----- TEACH THROUGH-----wp VWJb**

**c. For Orthopedic extremity use/ (either / or environmental approach)**

**\*\*\*\*-----TEACH THROUGH-----wp VWJc**

**Part VIII cont.'d [click here to return to top/start of index](#)**

**K. Video Images index [videx1.htm](#)**

*Note pages W17-W19 of this index as printed for your Training Manual have been updated as of cpyrt 09/19/01 JDReid thus only pages as shown W7-W16 apply:..... JD Reid copyright 2001 All rights reserved unless released via written contract: Verbal releases and claims for verbal releases are specifically denied as not valid:*