

# painmanagement

## SPECIAL INTEREST GROUP

### HOW DO WE THINK?

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In the excerpted article of “How Doctors Think” by Jerome Groopman, a sobering aspect of how Radiologists think was presented in a recent issue of the New York Academy of Sciences.<sup>1</sup> The estimated workload for a Radiologist in a large city private practice ranges from 16,000 to 24,000 cases a year. Some of these cases have only 2 views of the chest to evaluate while others have hundreds of images generated by a CT scan or MRI. In our Radiology classes we, as physical therapists, are trained to do the A, B, C, S check of all Radiographs (A= alignment, B= bones, C= cartilage, and S= soft tissue).

Groopman went on to site a study where 100 certified radiologists were asked to view a series of 60 chest x-rays including some repeat x-rays. There was a 20% inter-observer variability and 5% to 10% intra-observer variability when asked the question, “is this film normal?” On one of the x-rays, a patient was missing his left clavicle and 60% of the Radiologists failed to identify that abnormality. When the Radiologists were informed that the x-rays were taken as part of an “annual physical examination,” 58% of the Radiologists still missed the missing clavicle. Conversely, when the Radiologists were told that the x-ray was “taken to find a cancer,” then 83% of the Radiologists found the abnormality.

Overall total accuracy rate varied for 73% to 97% for mammography and tuberculosis screening showing a 33% inter-observer, 20% intra-observer variability.

If the Radiologist looked at the x-ray too long there was increased risk of hurting the patient. Many Radiologists identified either false positive or false negative results if they looked at the x-ray for longer than 38 seconds. According to Elsan Samei of Duke University Medical Center, “Currently the average diagnostic error in interpreting medical images is in the 20 to 30% range.”

What does this have to do with the practicing Physical Therapist? Look at your patient’s radiological studies with an open mind, systematically review each structure on the image, and don’t be afraid to question the Radiologist’s interpretation. For example, last week a patient came to my office for a physical therapy evaluation. She was a 21-year-old female who was involved in a head on motor vehicle accident in November 2006. The patient was a passenger and was wearing her seatbelt. She sustained many internal injuries that were surgically corrected as well as a spinal injury which caused her 6/10 pain rated on the visual analog scale. She brought her X-rays and CT scan which I reviewed and found a compression fracture of L4 without significant neurological compromise. The Radiologist’s report focused on a “Burst fracture of the L1 transverse process caused either by trauma or was an anomalous finding” with no mention of the L4 compression. I reviewed her CT scan again and still could not identify the L1 abnormality. Her PT evaluation was

consistent with a right L4 nerve irritability with weakness of the right quadriceps, decrease of right quadriceps reflex and a slight decrease of touch and pain sensation at the anterior right thigh as compared to the left. I called her neurosurgeon to discuss the case to help sort out the discrepancy of the Radiologist’s findings with my own. The neurosurgeon concurred that the patient had an L4 compression fracture and that L1 was perfectly normal which brought back the saying that pilots use regularly “in God we trust, all else we check.”

If there is ever a book written about how Physical Therapists think, I hope that it will emphasize the qualities that we spend longer than a few minutes before formulating a physical therapy diagnosis and treatment plan that has a better than 73% chance of being correct.

Hope everyone had a safe and enjoyable summer.

### REFERENCE

Groopman J. *The Eye of the Beholder: How Radiologists Think*. Excerpted from *How Doctors Think*. NYAS. May/June 2007:14-17.