

*Haneline M, Cooperstein R, Young M, Ross J. Determining spinal level using the inferior angle of the scapula as a reference landmark: a retrospective analysis of 50 radiographs. JCCA 2008; 52 (1):24–29.*

*To the Editor:*

I would like to congratulate the authors on an excellent study on determining spinal levels using the scapula as a reference landmark, as it contains good scientific information that can be applied on a clinical level. Anatomy is often taught and learned in a standard way, and we quickly learn in practice that there are variations that have to be taken into account. As there are so few studies on these variations from the norm, this study, as well as the authors previous study in the Journal of Chiropractic Medicine is very helpful.

The authors quote other studies that reveal poor reliability from other professions, in palpating spinal levels, so there is room for improvement in this type of examination. The authors give a very good suggestion to the readers on how they can use accuracy in their spinal examination and apply the results of this study. They suggest, in those patients where the inferior angle of the scapula is visible on the radiograph, to take a horizontal measurement to determine the spinous level that corresponds to the inferior scapula. This would give an accurate level to count from. As this study focused mainly on the spinal level measured from the inferior scapular angle, I would further suggest to practitioners to measure other bony landmarks, on the radiograph such as the spine of the scapula for the approximate level of T3, the iliac crest levels for approximately L4. As there are variations on what level the vertebra prominens can be, the lateral cervical radiograph can reveal whether the prominent vertebra is C7 or T1, thus, using palpation of the spinouses, an accurate count for other spinal levels can be done from this information.

I would like to share a simple method of spinal level measuring that I use in practice. A lead x-ray marker dot is taped on to the patient, at the level of an easily identified anatomical area, eg. vertebra prominens, and the level is identified from the developed radiograph. This level is recorded in the patient's file, and can easily be used to have an accurate starting point in palpating the other levels of the spine. Other reference points, eg. a scar, a mole,

can also be used, and would be recorded specifically for that patient.

Finally, from a historical point of view, D.D. Palmer commented on the difficulty of accurately palpating the spinal levels, as he wrote, “ The counting of vertebrae is uncertain, especially in fleshy persons. Knowing the locality, the vertebra – not vertebrae- is easily located by the Chiropractor who has learned it as a science, and the adjusting is easily accomplished by the one who has acquired it as an art. Counting vertebrae is unreliable and a waste of time.”<sup>1</sup>

I hope to read more future research of this type from the authors.

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1 Palmer DD. The chiropractor's adjuster: the science, art and philosophy of chiropractic. Portland, Or Portland Printing House, 1910 p. 37.

*To the Editor in reply:*

We appreciate Dr. Bovine's comments on our study, as well as his suggestions for a practical clinical solution to the problem of identifying spinal levels in the face of unreliable anatomical landmarks. We actually have considered assessing which spinal level corresponds to the root of the spine of the scapula on a radiograph and are exploring the feasibility of such a study. The approximate spinal level intersected by a line drawn between the iliac crests, which is often said to be the L4 spinous process, has recently been estimated by McGaugh et al.<sup>1</sup> using a method that was fairly similar to ours. These researchers retrospectively analyzed 100 computerized tomographic images, drawing horizontal lines along the superior-most aspect of the iliac crest on each image. This line corresponded to the L4 spinous process in only 59% of the subjects (46% of females and 72% of males). Other researchers have investigated this relationship producing similar findings, so we will probably not pursue this issue any further.

We believe Dr. Bovine's method of taping a lead x-ray marker dot to the patient, at the level of an easily identified anatomical marker, is a good idea and should help

identify spinal levels seen on an x-ray, so long as the palpation procedure is performed in the same position as that in which the film was acquired. If the purpose is to help locate a spinal level in the prone position, it remains to be seen whether the relationship of the lead marker to anatomical structures seen in an upright x-ray is the same as what is obtained in the prone position.

Michael Haneline, DC, MPH  
Robert Cooperstein, MA, DC

McGaugh, JM, et al. Comparing the anatomical consistency of the posterior superior iliac spine to the iliac crest as reference landmarks for the lumbopelvic spine: a retrospective radiological study. *Clin Anat*, 2007; 20(7):819–25.

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