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The Differences Between BM3D And NLM Denoising Techniques to Improving Thoracic Image Information in Low Field MRI

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Introduction: The modality can be used for thoracal MRI examination is low field MRI machine. Its weakness is that it produces low signal & noise. If the signal and noise is high, the SNR value is low. Denoising technique is the right solution to remove noise. BM3D & NLM denoising techniques are able to increase SNR. BM3D technique has better capability than NLM technique. The research objective is to analyze the difference in image quality and anatomical information on Thoracal MRI images with low field MRI Machine before and after the application of BM3D and NLM denoising techniques. **Methods:** Quasi-experimental research on thoracal MRI images before and after the application of BM3D and NLM denoising techniques. BM3D and NLM denoising techniques totaling 15 samples. BM3D and NLM denoising and assessment of Thoracal MRI images, including SNR, CNR, MSE, PSNR. **Results:** There is a difference in image quality, MSE, PSNR values, and anatomical information of thoracal MRI image before and after denoising technique, with p-value <0,001. **Conclusions:** The BM3D denoising technique is more optimal in improving image quality and anatomical information on thoracal MRI image; a study on low field MRI.

Keywords: low field MRI, BM3D, NLM, denoising, thoracal