

# New algorithm significantly improves imaging for full-body MRIs

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A new study reveals an improved algorithm that can dramatically improve how radiologists capture and interpret full-body MRIs, particularly in the abdominal region.

Motion artifacts in MRIs, such as patient movement, often appear as ghosting artifacts which may obscure clinical information says Dr. Candice Bookwalter, presenting author for the study. "Almost every acquisition during an MR abdominal exam requires a breath hold to limit motion. For example, a routine liver exam includes at least nine breath holds. Even with fast imaging techniques, these breath holds are often long and difficult for patients, and failed breath holds are almost always identified only after [image acquisition](#). This is particularly problematic in timed post-contrast imaging," she says.

She and her team developed the Motion Artifact Removal by Retrospective Resolution Reduction (MARRs) [algorithm](#) to identify the transition between a breath hold and free breathing to allow for better retrospective reviews of the image and to reduce the need for additional imaging. Dr. Bookwalter says, "MARRs detected and removed motion corrupted data automatically in our asymptomatic volunteers and patients, which improved the overall [image quality](#)."

In the study performed at the University Hospital at Case Medical Center, [Case Western Reserve University](#), Dr. Bookwalter and her colleagues successfully showed how the MARRs technique allows radiologists and technicians to create clinically useful images, even in the

presence of motion. She is confident that this algorithm will be useful tool for image interpretation. She says, "The MARs algorithm requires very little alteration of the clinical MR protocol. We envision the final application of this technique to be completely automatic and likely applied by the clinical technologist prior to presentation to the [radiologist](#)."

Dr. Bookwalter will deliver a presentation on this study on Thursday, May 5, 2011 at the 2011 ARRS Annual Meeting at the Hyatt Regency Chicago.

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