# Simplifying the Workflow of Long Bone Imaging for Short Bore Systems

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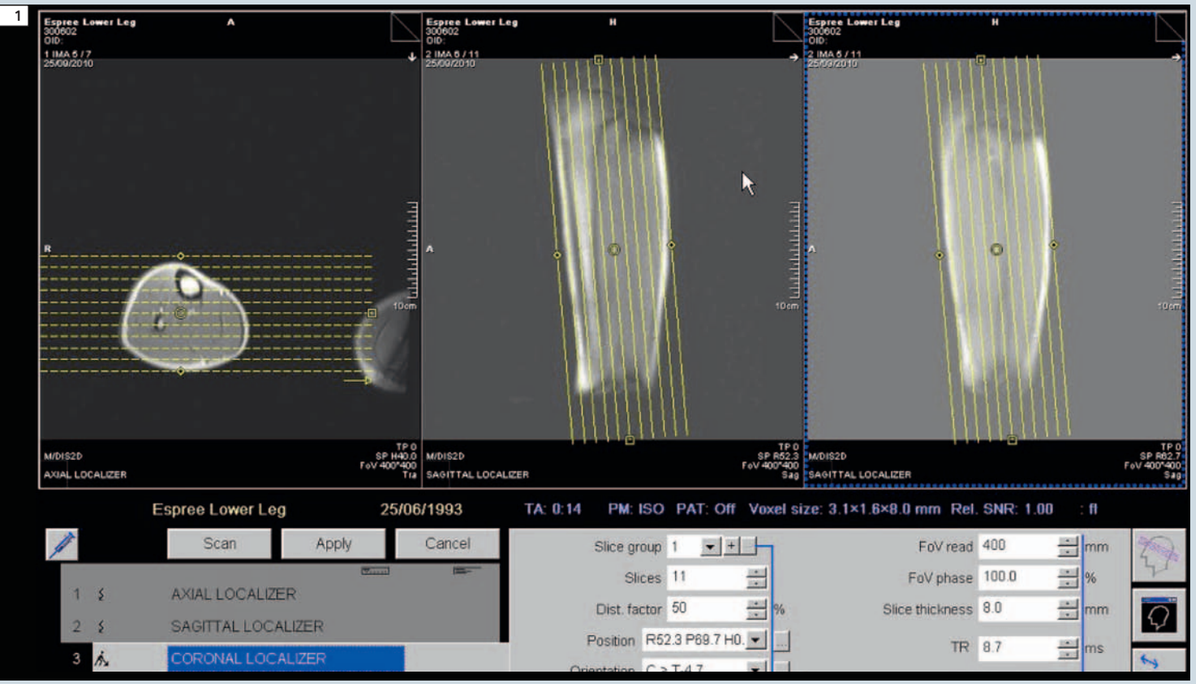
## Introduction

Imaging of long bones on the 1.5T MAGNETOM Espree and MAGNETOM ESSENZA systems can be challenging at times for technologists. This article will provide tips that will make long bone imaging easier to acquire.

## Workflow for sagittal and coronal imaging

First we will go through the workflow of scanning a lower leg on the MAGNETOM Espree. This exam can be done by placing the Body Matrix Coil lengthwise covering the lower leg. Position the patient so that the landmark is in the center of the middle of the lower leg and acquire a separate axial, sagittal, and coronal localizer to visualize the lower leg, as seen in figure 1.

1

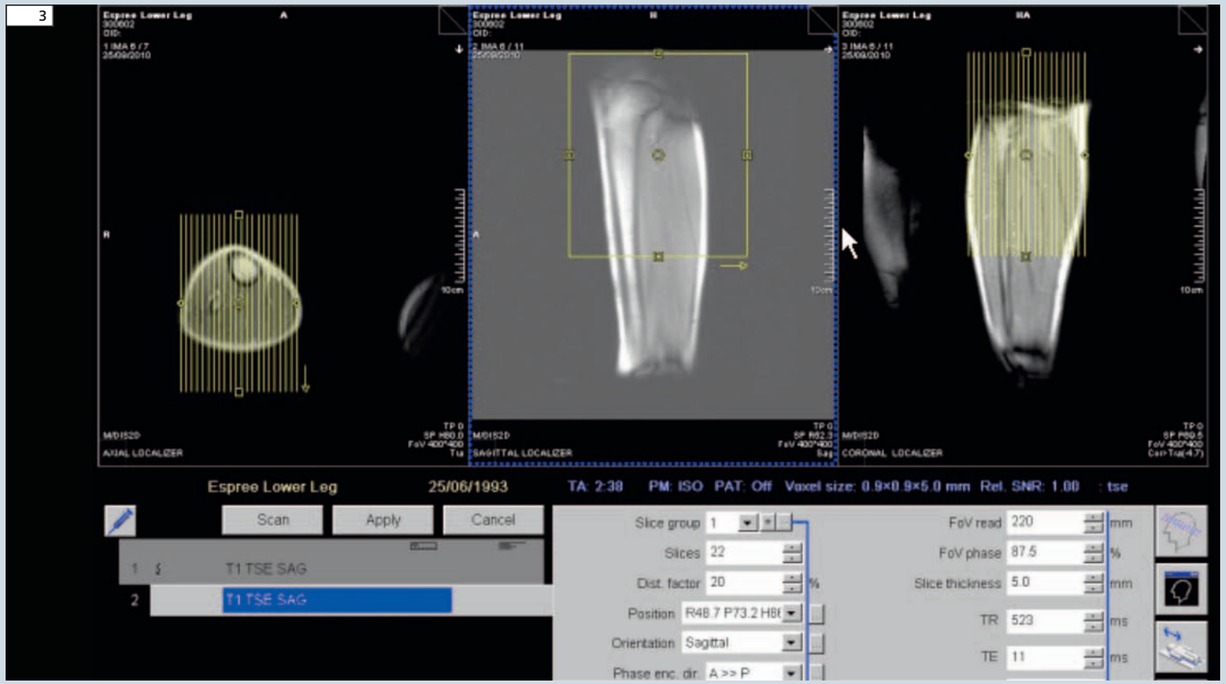



- Once the localizers are complete, the overlap for sagittal and coronal composed images needs to be determined. To view the overlap value, press Ctrl + S on the keyboard, which will open the overlap window. In Figure 2 we can see an overlap of 50 mm. This value can be adjusted, but it is not recommended to go below 50 mm.

2


- Next, we will bring over a T1-weighted sagittal sequence with a field-of-view (FOV) of 220 mm. This is positioned on the upper half of the lower leg.
- After the slices are positioned appropriately, select the Scan button which will apply and run the T1-weighted sagittal sequence and also appends the same T1w sagittal in the open status, as seen in figure 3.

3

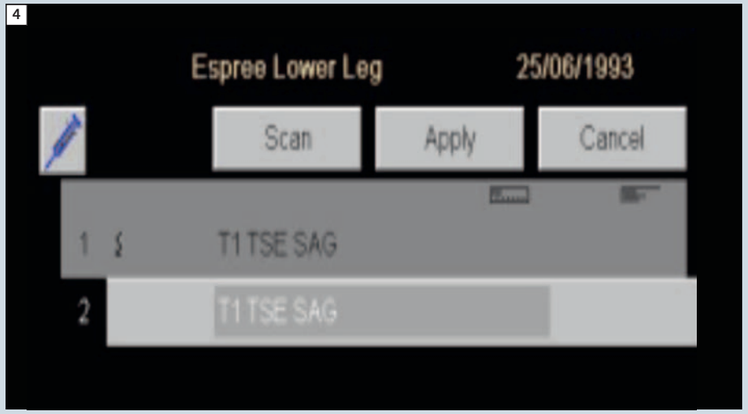


How-I-do-it

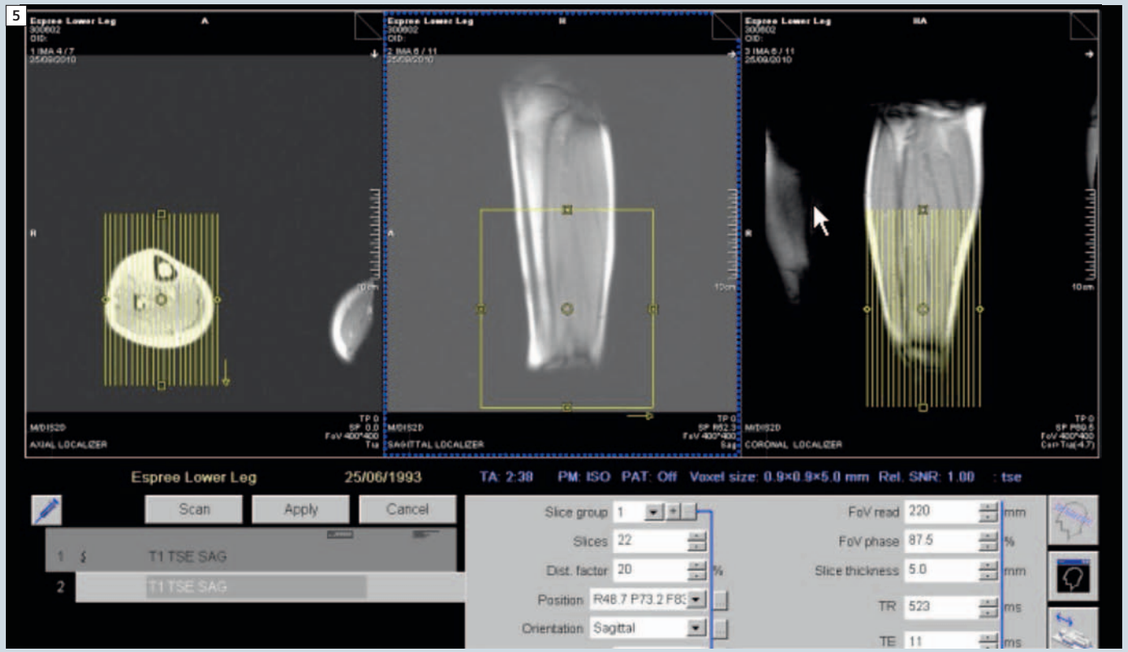
- Press Ctrl + 7 to shift the FOV and slice group to cover the lower half of the lower leg and then select **Apply**.

- Finally, we will use Composing to combine both of the T1w sagittal series into a single dataset in the Patient Browser. Once both of the T1 sagittals are finished reconstructing, select both series in the Patient Browser and select **Applications > Composing** from the main menu. Choose the MR Adaptive Composer option and then select **Patient > Save All As** to save all of the images to the Patient Browser.

4



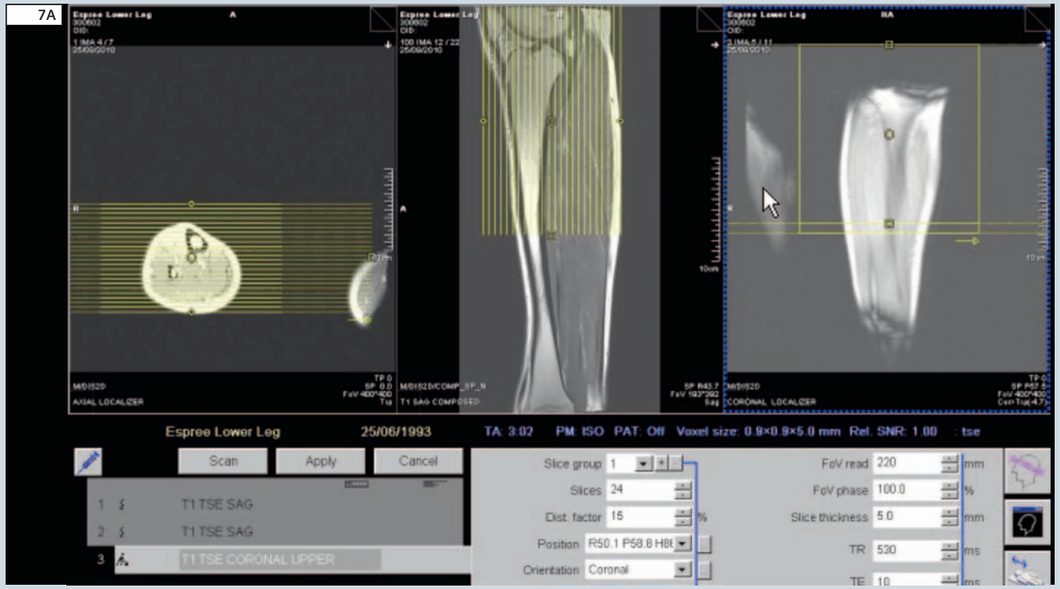

5



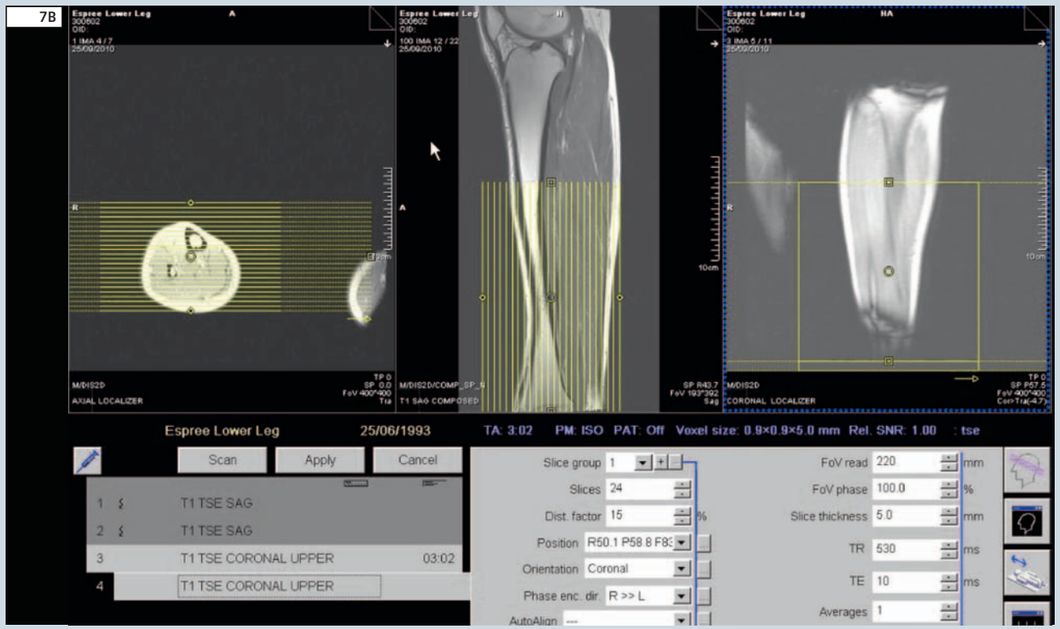

- The composed T1w sagittal series can now be used as a localizer for the rest of the study. Drag and drop the composed T1w sagittal series from the Patient Browser into one of the three positioning segments (GSP) in the Exam Task Card to use for further positioning. Repeat the steps above to acquire additional sagittal or coronal series, as demonstrated in figure 7.

6

7A



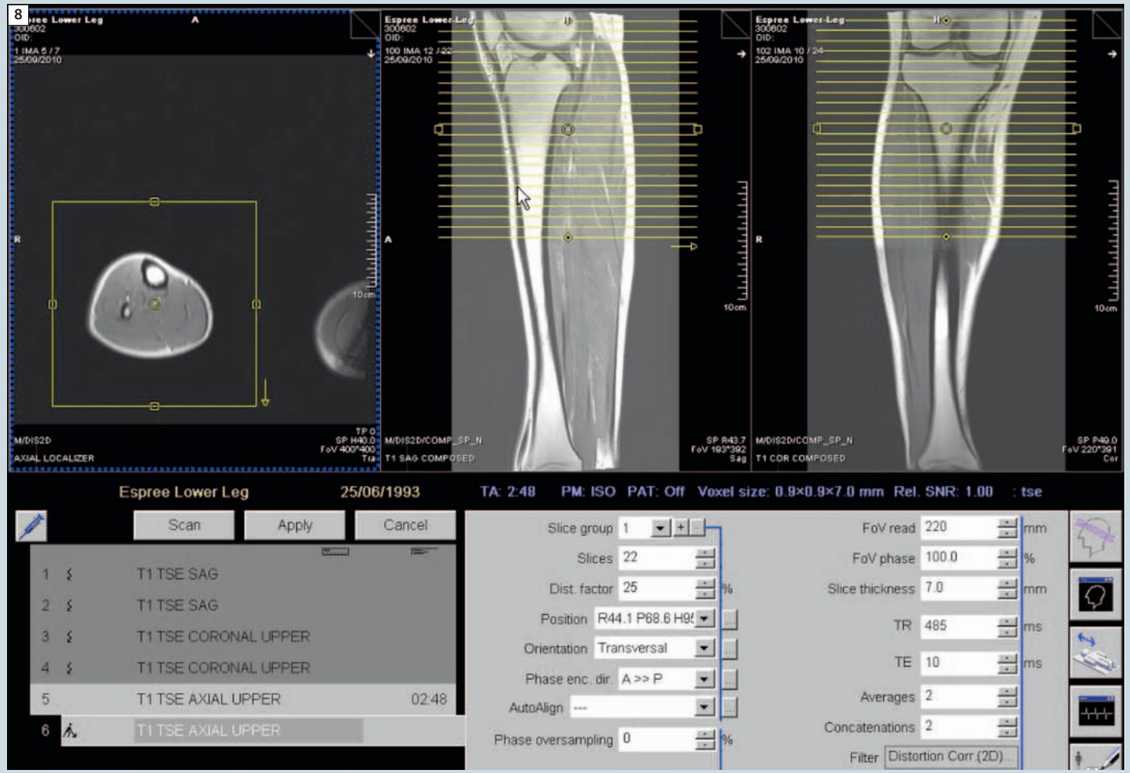

7B



## Workflow for axial imaging

- Load the composed coronal and sagittal composed images and the axial images from the localizer into the three graphical segments in the Exam Task Card. Position the axial slices on the upper portion on the lower leg, then select the **Scan** button which will apply the T1w axial sequence and also appends the same T1w axial in the open status, as seen in figure 8.

8

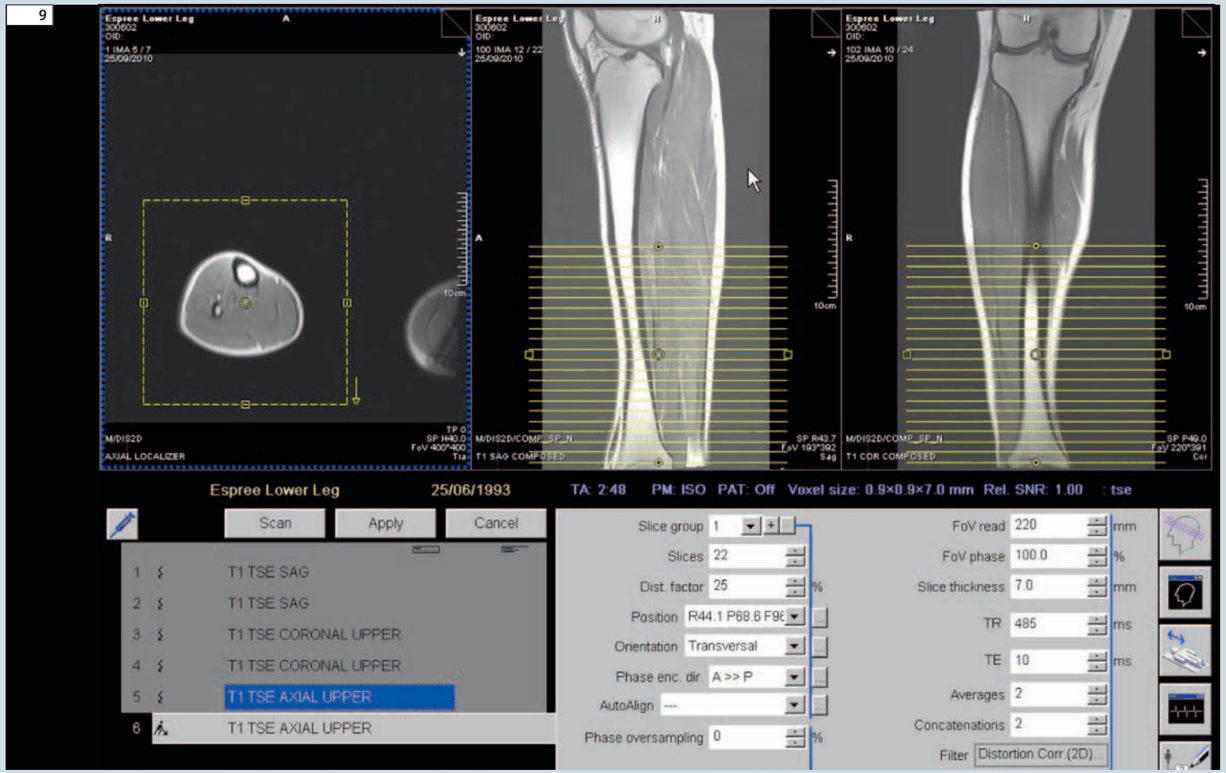



- Press Ctrl + 3 to shift the axial slice group inferiorly to cover the lower half of the lower leg and then select **Apply**.

## Conclusion

The workflow for long bone imaging can be simplified and easily reproduced by using short-cut tools available on syngo based MAGNETOM systems: The Scan button in the exam queue along with the keyboard shortcuts Ctrl + 7 (FOV-) and Ctrl + 3 (Stack-) and the Composing software make long bone imaging a routine exam on short bore systems.

9




## Keyboard shortcuts

| | |
|---|---|
| Stack – | **Ctrl + 3** |
| Stack + | **Ctrl + 4** |
| Gap Filling – | **Ctrl + 5** |
| Gap Filling + | **Ctrl + 6** |
| FoV – | **Ctrl + 7** |
| FoV + | **Ctrl + 8** |
| Overlap ... | **Ctrl + 9** |

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