VISOR 2 QUICK START

Figure 1. Visor2 neuronavigation computer,Polaris Vicra optical tracking system and power switch to the monitors. Extension cord power switch, computer power and optimal camera to reference tool distance illustrated.

Contents

Starting Measurements

- **Turn on the power from the extension cord and start the stimulation computer (figure 1).**
- **Turn on the monitors from the control switch on the wall (figure 1).**
- **Start the Visor 2 program.**

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Setup Patient

- **Select existing patient or create new.** If using existing patient you may use existing MRI. Otherwise Import and prepare patient MRI (figure 2).

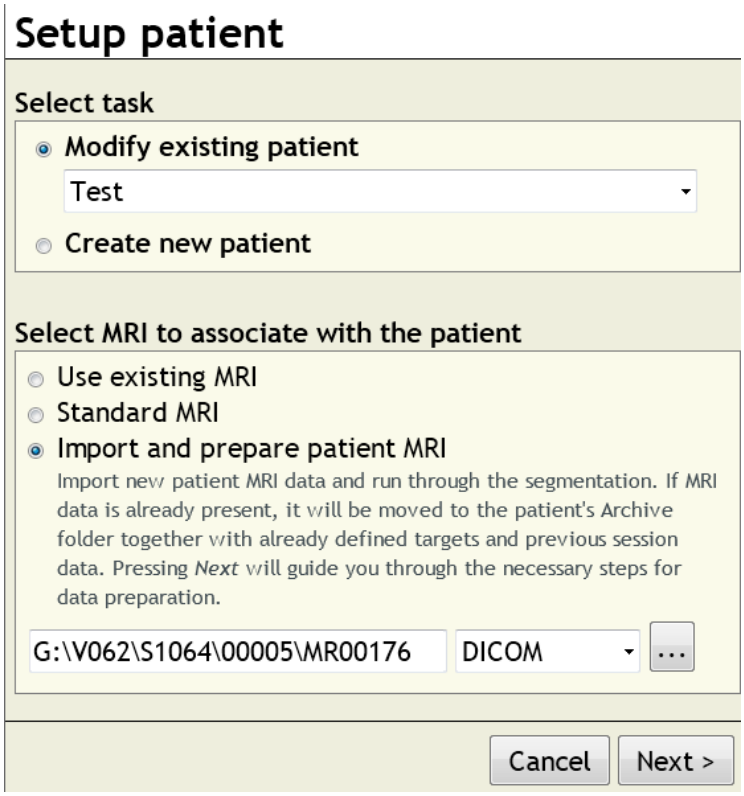

Figure 2. Setup patient.

- Select image path,**press refresh (figure 3)**, select images and press OK. When ready press next.

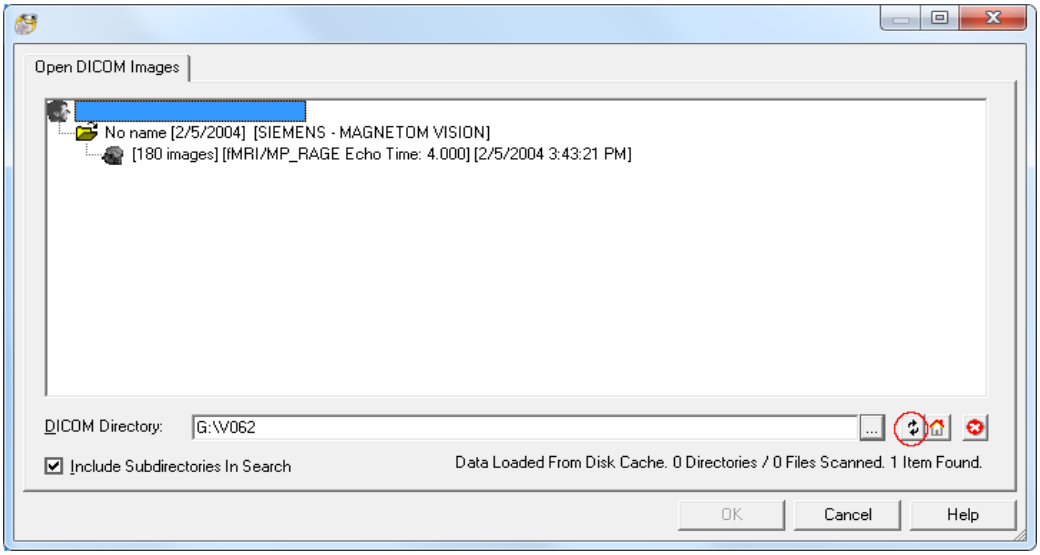

Figure 3. Open MRI images.

- **Specify ficiduals from MRI images**. Recommended sites are left ear, right ear and nasion. Increase lower scalp threshold until background artefacts (noise etc.) are excluded from the mask (figure 4). You can use the sliders to browse through slices.

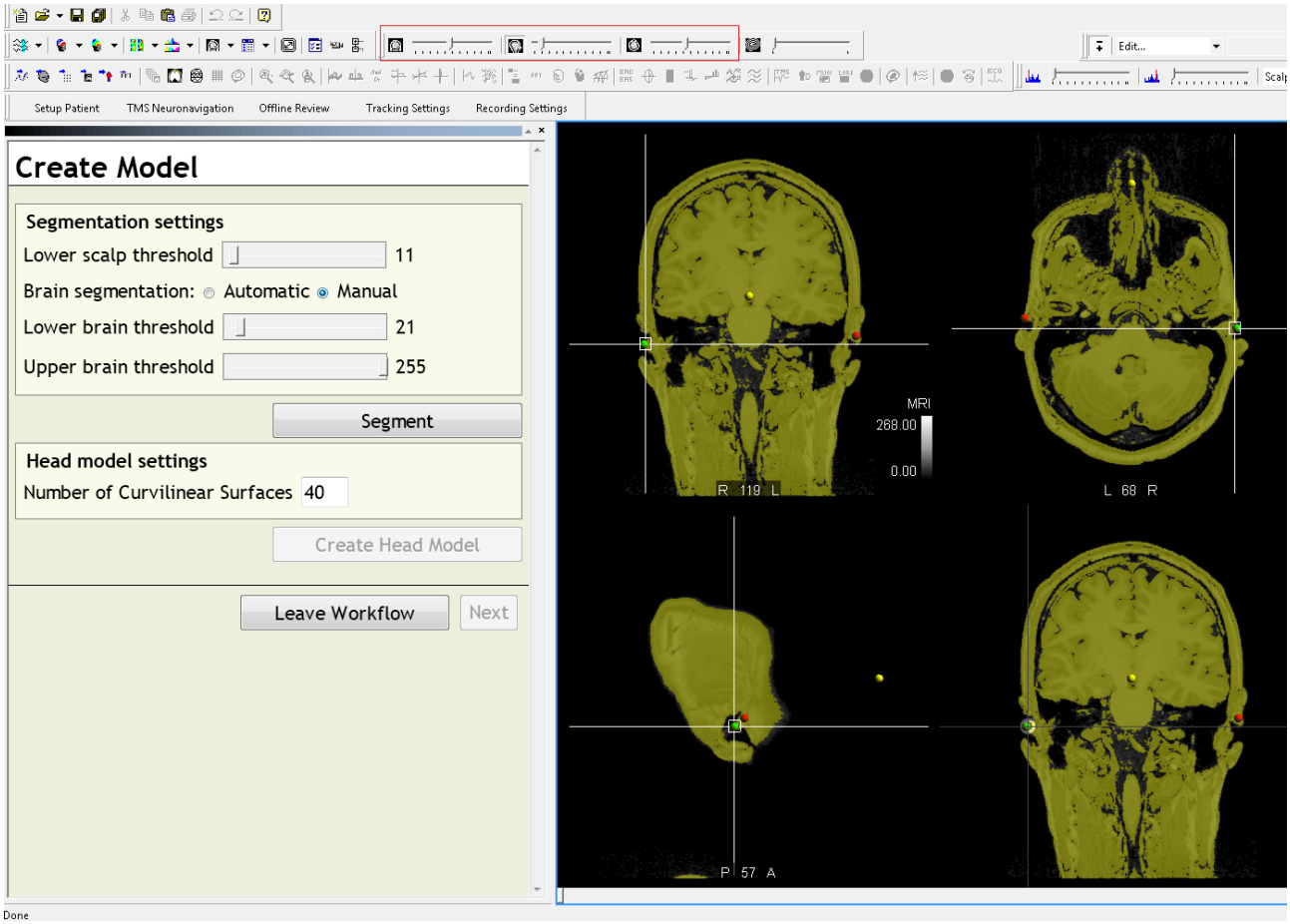

Figure 4. Adjusting lower scalp threshold.

- **Adjust lower brain threshold so that the red mask covers the whole brain and the brain is not connected to scalp (figure 5).** Press segment. **NB! The cursor must be located in the segmentation area (red)**. When using NifTI images adjust the lower brain threshold normally and after you find the ”correct” threshold multiply it with 2. Notice that the preview is thus incorrect.

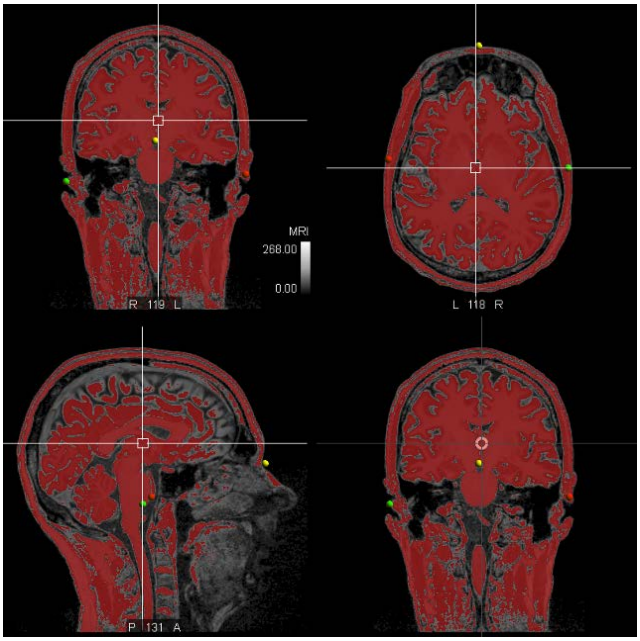

Figure 5. Adjusting lower brain threshold.

- **View the segmentation and adjust parameters if needed.** You can use dilate/erode to increase/decrease segmentation area.
- **Select number of curvilinear surfaces and create head model.** Number of curvilinear surfaces indicate how deep in the brain from the cortex surface you are able to navigate. Every surface is a 2 mm slice, so 10 surfaces gives you the ability to see as deep as 2 cm from the cortex surface. You can browse through head surfaces with a slider (figure 6). **When ready press next.**

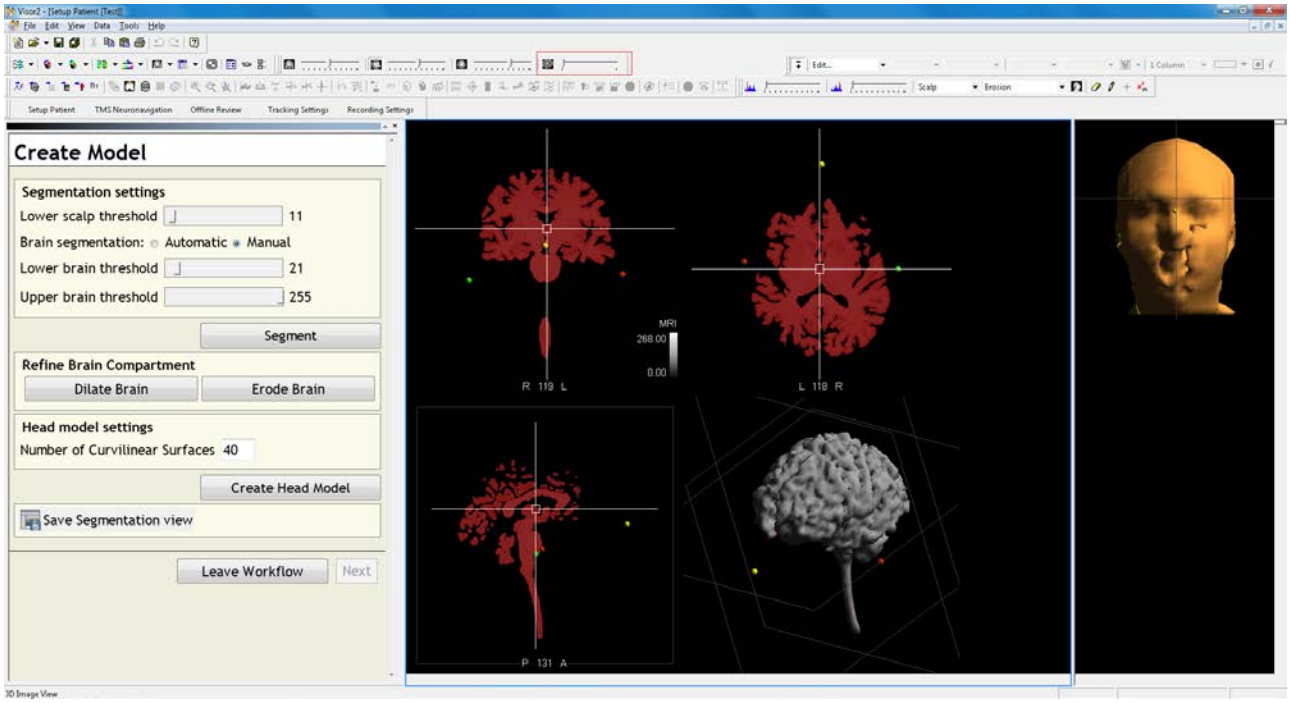

Figure 6. Create head model.

- **Define stimulation targets or proceed to neuronavigation.** Use targets to preterminate stimulation area for example the motor cortex. Place the mouse pointer to appropriate area and press “Add marker”.

TMS Neuronavigation

- **Select Coil and press “Next”**. The coil number is written on the coil cable.
- **Specify head coordinate system. Adjust the Polaris camera according to figure 1.** Place refecence tool on subjects head and use pen tool to point ficiduals. Use remote control to acquire ficiduals (figure 7). **Use the same locations as marked in setup patient. Press “Next” when done.**

Figure 7. Reference tool, pen tool and remote control.

- **Create head shape points.** It is recommended to do the ”head shape points generation” because it makes the co-registration of navigation and MRI files more accurate. Select points from all various locations: the scalp, forehead, cheeks and occiput. Remember to pause the head point collection if you need to lift the pen from patients head. You can reset the head points when collection is paused. Selecting ”display results” shows statistics of the co-registration (figure 8). It's recommended to collect 100-200 points. **Press “Proceed” when done.**

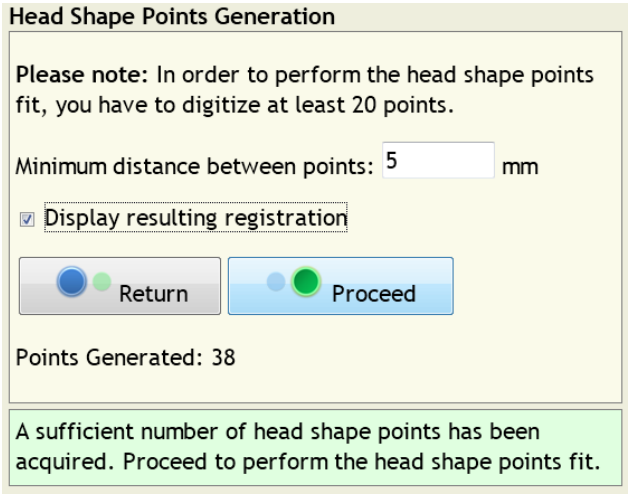

Figure 8. Head Shape Points Generation

- Validate coil (optional). Use pointer tool to point the center of X marked on the coil (figure 9). Be sure that the camera can see both the coil and pointer tool. If validation doesn't succeed do the calibration. Please refer to Visor2 User Manual or contact laboratory's laboratory engineer.

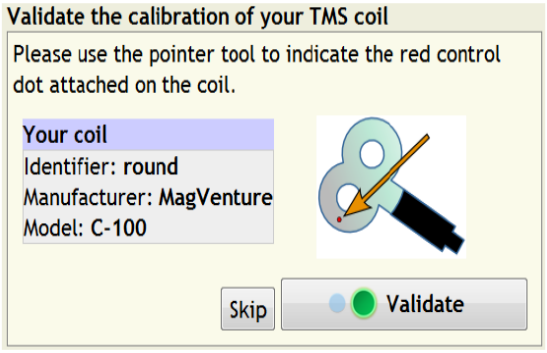

Figure 9. Validating the coil.

- **Start the neuronavigated TMS session.** Select patient. Select target-file and previous session markers if required. Proceed pressing “Next”.
- **Neuro navigation (figure 10).** The correctly view calculted values (e.g. E-field) the ”TMS Intensity” slider must be the same as in the Magstim system. Selecting ”Use rTMS filter” gives only one trigger mark per train.
- “Stimulate at targets” gives the possibility to stimulate predefined targets (look setup patient).

- "Reproduce stimuli" gives you possibility to stimulate previous stimulation site either from this session or a previous one. Select events events you want to see from the list (figure 10). You can disable viewing or delete events from right mouse click menu.

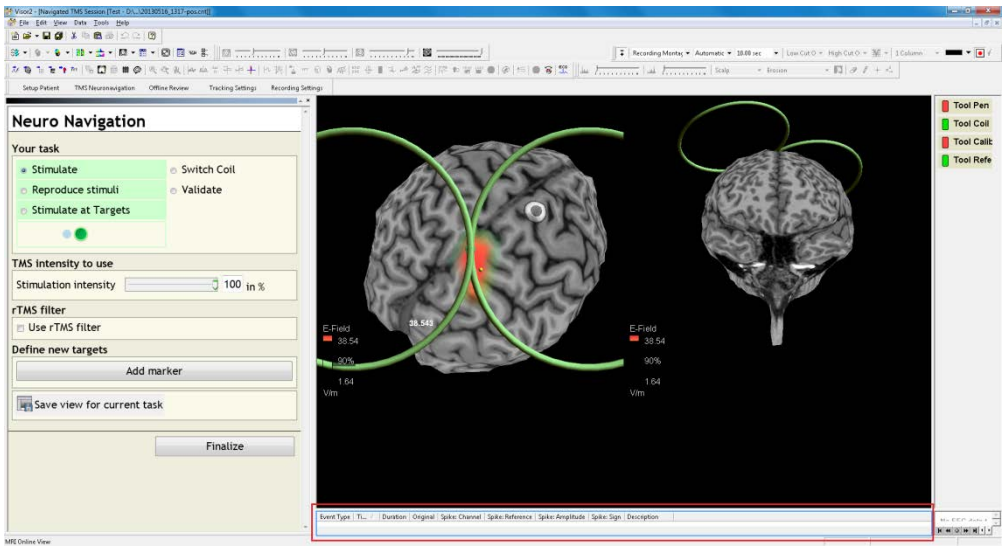

Figure 10. Neuronavigation. Events list indicated.

- By clicking right mouse button in the navigation area you can select different layout or edit "3D Image View Properties" (figure 11). **To see E-field mapping select layout "Navigation with E-field".**

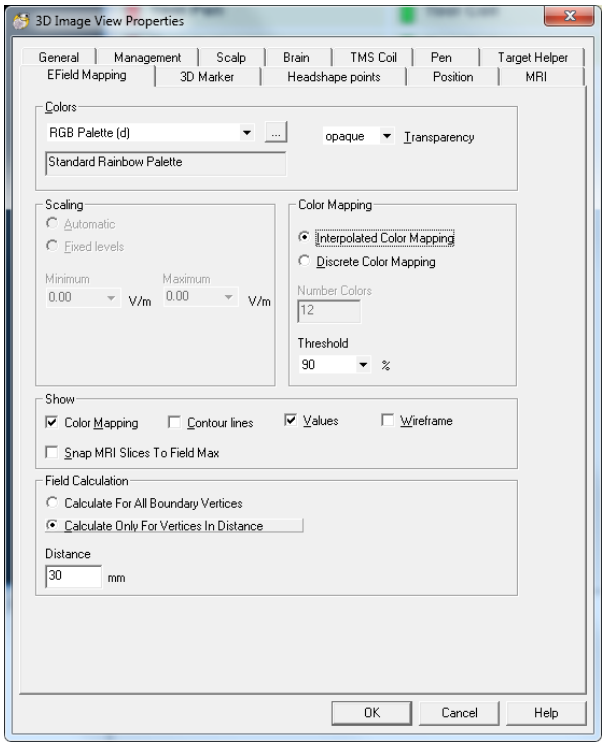

Figure 11. 3D Image View Properties.

- **When you done with stimulations press "Finalize".**
- **Complete neuronavigation**. Validating the nasion is recommended to make sure the headband (reference tool) hasn't moved during the session.
- **Proceed either with "complete" or "proceed to review"**.

Offline review

- By selecting "Offline Review" from the workflow menu you are able to review TMS sessions (figure 12).

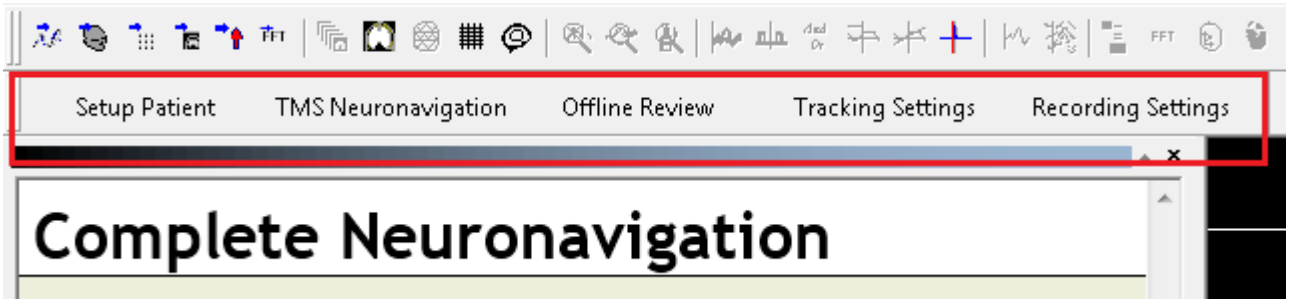

Figure 12. Workflow menu.

After Measurements

- **Shut down Visor2 program and turn off computer.**
- **Cut the power off the extension cord (figure 1).**