**Example Denoising Procedure**

1. **Train raters**
   A set of independent raters becomes knowledgeable about independent components analysis applied to fMRI, possible sources of noise in fMRI data, and the signature features of noise in fMRI data.

2. **Raters rate a “training” data set**
   Raters independently rate a data set that is not the data set of interest. Evaluate how similar their ratings are, discuss disagreements, and quantify their initial agreement in ratings with a Kappa inter-rater reliability score. Generally >.70 is good but >.80 is great before rating the data set of interest. If need be, re-rate another practice data set until good Kappa achieved.

3. **Two independent raters rate a data set of interest**
   Raters that had good Kappa now rate the data set of interest. They do not talk during ratings (about the denoising). After all ratings done, Kappa is evaluated.

4. **An independent moderator identifies disagreements between the two independent coders.**
   For disagreements, the moderator should make a final decision based on 4 scored criteria:

   **I: Spatial.**
   - 0 pt if clearly noise: ring of fire, globbing, non-anatomical shape, ventricles, etc.
   - 1 pt if the spatial image appears to contain a significant amount of signal.

   **II. Temporal Timecourse.**
   - 0 if sawtooth, drift, correlations with motion or extreme high or low frequency.
   - 1 if some section of timecourse appears to have "slow", rolling pattern.

   **III. Power Frequency Spectrum.**
   - 0 if greater than 50% is above 0.1 (look at percentage values on right side).
   - 1 if less than 50% is above 0.1.

   **IV. % Gray matter.**
   - 0 if less than 50% is in grey matter.
   - 1 if more than 50% is in grey matter.

   If a component receives a score of 2 pts or greater, retain the component as signal. Only discard a component under question if at least 3 criteria are not satisfied.

5. **Moderator finalizes what components are rated as noise and fsl_regfilt is run to filter out the noise components.**

6. **Compare analysis of interest with and without denoised data set for quality assurance of denoising**