



Overview of conducting fMRI research

from study design to data acquisition to data analysis and beyond...

created by the Princeton "Pygers" neuroimaging support group

Getting started

1

STUDY DESIGN

What in the world am I doing?!!

[DESIGN
YOUR
EXPERIMENT](#)

[BEST PRACTICES FAQ](#)

[GLOSSARY](#)

2

SETUP SEQUENCES

How do I get the scanner to work?...

[ACQUISITION](#)

[PROGRAM CARD SETUP
USING REPROIN](#)

3

CHECKLISTS + FORMS

What else do I need before I can scan?

[PRE-SCAN
CHECKLIST](#)

[MRI BUDDY
SIGN-UP](#)

[SCANNING
CHECKLIST](#)

4

AFTER YOU COLLECT YOUR FIRST SUBJECT'S DATASET

Am I doing this right?!?!?

[BEST PRACTICES FAQ](#)

[FIND YOUR DATA](#)

Post-Acquisition Processing

5

CONVERT DICOMS TO BIDS-FORMATTED NIFTI FILES

Now what do I do with my data? What are all the things I need to do before I preprocess my data?

[WHY USE
BIDS?](#)

[WHY USE
DATA Lad?](#)

[USE HEUDICONV
\(STEP1_PREPROC.SH\)](#)

[PREPARE DATA FOR BIDS
\(STEP2_PREPROC.SH\)](#)

[BIDS
VALIDATOR](#)

[DEFACE T1W
IMAGES](#)

6

QUALITY ASSURANCE

Does this look OK?

[RUN MRIQC
\(RUN_MRIQC.SH\)](#)

7

PREPROCESSING

Let's preprocess this baby!

[RUN FM RIPREP
\(RUN_FMRIPREP.SH\)](#)

STOP!

*What are all of
these files?!!*

[KNOW YOUR
OUTPUTS](#)

fMRIPrep & FreeSurfer Reconstruction

ANATOMICAL DATA

Oh, the many ways to view your data!

[ATLASES](#)

[MASKS](#)

[SURFACES](#)

FUNCTIONAL DATA

What was happening during the task?

[REGISTRATION](#)

UNIVARIATE ANALYSIS

aka Regression!

[CONFOUNDS](#)

[TEMPORAL FILTERING](#)

[GLM](#)

FURTHER DENOISING

Let's clean up the data...

[TEMPORAL FILTERING](#)

[Z-SCORING](#)

FUNCTIONAL ROIs

*Another way to mask
your data...*

[MASKS](#)

BETA ESTIMATES

*An output that might
be of interest...*

MULTIVARIATE ANALYSIS

*Another type of analysis
you can do...*

[BRAINI AK
\(EXTERNAL LINK\)](#)

GROUP-LEVEL ANALYSIS

To group, or not to group.

[STANDARD SPACE](#)

[STATISTICAL INFERENCE](#)