Instruction on how to design a study, scan and process the fMRI data

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1 Objective

This document briefly describes how to design an fMRI study, how to run the experiment, transfer the data and do the minimal processing.

2 Study design

Define the objective of the study and decide about of the scan types. Scans that we offer here are:

- Structural scan (T1, T2)
- functional Scan
- ASL
- DTI

2.1 Make a decision about each scan's parameter

2.2 Resting state or task-based?

For the functional scans we need to decide whether it makes sense to do the resting state or task-based scan. Thinks to consider for a task based scan:

- length of the scan

- event-related or block design
- number of on/offs

Thinks to consider for a resting state scan:

- length of the scan
- Eye status

3 Setup the protocol and collect pilot data

4 Scanning

We strongly recommend that you make a check list for your study and follow the steps on the scanning that. This will minimize the operator errors/mistakes on the scanning day. **Samplechecklist** is an example of a checklist used for an EEG/fMRI study.

5 Data transfer and storage

Run **cfmricp** after the end of the session to transfer your data.

6 Convert to BIDS

7 Minimal processing

Things to think about for the fmRI processing:

- AFNIs way of doing topup
- Keeping the motion files after topup as default
- Time shift correction.. for MB and other special case. Also after topup and volreg
- Censoring
- Polort order
- Is it better to regress out motion per run , if there are multiple scans concatenated?