* Will do T1, T2, and 3D FLAIR

ePrime Protocol

* Beast software is pre-loaded and running
* 4 scan definitions
  1. Pain only
  2. Light only
  3. Light + pain
  4. Fixation only

Behavior for each session

* initiate session ; however you do that in ePrime
* start session, ‘s’ ; keypress ‘s’, show black screen with white cross
* wait for keypress to start individual scan ; “1” through “4”, with optional parameters
* “A” abort a scan, return to session ; that is, returns to black background/grey +, waits
* “Q” quit the scan and end the session ; end of session closes the log

Scan 1 (Pain only))

**EPrime Software:**

Create “Rest Block” which includes:

* Present “Rest Screen” (**Black** background/**Gray** ‘+’) Need timestamp
* Wait 30 s

Create “Pain Stimuli Block” which includes:

* Present “Warning Screen” (**Black** background/**Red** ‘+’) Need timestamp
* Wait 2 s
* Send Trigger Pulse to Beast Software Need timestamp
* Wait 30 s

**Scan 1 protocol (approx. 10 min):**

1. Wait for Trigger Pulse from fMRI scanner (via “button box,” traditionally use pulse #5)
2. Present “Rest Block”
3. Present “Stimuli Block”
4. Do rest/stimuli sequence 10 times (for total of 10 blocks of Rest and 10 blocks of Stimuli) Need timestamp each presentation
5. Return. B**lack** background/**white** +, wait for keypress to start next scan

**Beast Software: for Scan 1**

1. Wait for Trigger Pulse
2. Apply pressure to Device 1 (intensity= Pain40, rate = 4, time = 3 s)
3. Wait for timer to Reach 10 seconds

Pain Block

1. Apply pressure to Device 1 (intensity= Pain40, rate = 4, time = 3 s)
2. Wait for timer to Reach 20 seconds
3. Apply pressure to Device 1 (intensity= Pain40, rate = 4, time = 3 s)
4. Reset Timer
5. Wait for Trigger Pulse
6. Apply pressure to Device 1 (intensity= 1, rate = 4, time = 3 s)
7. Wait for timer to Reach 10 seconds

Light touch Block

1. Apply pressure to Device 1 (intensity= 1, rate = 4, time = 3 s)
2. Wait for timer to Reach 20 seconds
3. Apply pressure to Device 1 (intensity= 1, rate = 4, time = 3 s)
4. Reset Timer
5. Repeat steps 1-14 (total of 5 blocks of touch, 5 blocks of pain)

Scan 2 (Light only)

**EPrime Software:**

Create “Rest Block” which includes:

* Present “Rest Screen” (**Black** background/**Gray** ‘+’)
* Wait 30 s

Create “Light Stimuli Block” which includes:

* Present “Warning Screen” (**Black** background/**Red** ‘+’)
* Wait 2 s
* Present “Light” Screen (**Light** background/**Gray** ‘+’. (Will need to work this out – once we have it, will be same for everyone unless calibration drifts. Can be set in EPrime script? Or parameter when startup the program?)
* Wait 30 s

**Scan 2 protocol (approx.. 10 min)**

1. Wait for Trigger Pulse from fMRI scanner
2. Present “Rest Block” Need timestamp
3. Present “Stimuli Block” Need timestamp
4. Do rest/stimuli block sequence 10 times (total of 10 blocks of Rest and 10 blocks of Stimuli) Need timestamp each presentation
5. Return. B**lack** background/white +, wait for keypress to start next scan

**No Beast software for Scan 2.**

Scan 3 (Light+Pain)

**EPrime Software:**

Create “Rest Block” which includes:

* Present “Rest Screen” (**Light** background/**Gray** ‘+’. **Light** will be adjusted after calibration)
* Wait 30 s

Create “Light + Pain Stimuli Block” which includes:

* Present “Warning Screen” (**Light** background/**Red** ‘+’. **Light** may be adjusted after calibration)
* Wait 2 s
* Send Trigger Pulse to Beast Software
* Wait 30 s

**Scan 3 protocol: (approx.. 10 min)**

1. Wait for Trigger Pulse from fMRI scanner
2. Present “Rest Block” Need timestamp
3. Present “Stimuli Block” Need timestamp
4. Do rest/stimuli sequence 10 times (total of 10 blocks rest and 10 blocks of Stimuli) Need timestamp for each presentation
5. Return. **Black** background/**white** +, wait for keypress to start next scan

**Beast Software for Scan 3:**

1. Wait for Trigger Pulse
2. Apply pressure to Device 1 (intensity= Pain40, rate = 4, time = 3 s)
3. Wait for timer to Reach 10 seconds

Pain Block

1. Apply pressure to Device 1 (intensity= Pain40, rate = 4, time = 3 s)
2. Wait for timer to Reach 20 seconds
3. Apply pressure to Device 1 (intensity= Pain40, rate = 4, time = 3 s)
4. Reset Timer
5. Wait for Trigger Pulse
6. Apply pressure to Device 1 (intensity= 1, rate = 4, time = 3 s)
7. Wait for timer to Reach 10 seconds

Light touch Block

1. Apply pressure to Device 1 (intensity= 1, rate = 4, time = 3 s)
2. Wait for timer to Reach 20 seconds
3. Apply pressure to Device 1 (intensity= 1, rate = 4, time = 3 s)
4. Reset Timer
5. Repeat steps 1-14 (total of 5 blocks of touch, 5 blocks of pain)

Note: Beast sequence is same for Scans 1 and 3 is the same. Only difference is that Rest Screen will have **Light** background

Scan 4 (Fixation)

**EPrime Software:**

Create “Rest Block” which includes:

* Present “Rest Screen” (**Black** background/**Gray** ‘+’)

**Scan 4 protocol (approx.. 6 min)**

1. Wait for Trigger Pulse from fMRI scanner
2. Present “Rest Block” for 6 min
3. Return. B**lack** background/**white** +, wait for keypress to start next scan (or exit??

**No Beast for Scan 4.**

* **Parameters: Just which “light” level screen to use because we don’t have the exact lux level finalized (although that will be standardized across all subjects eventually).**

**For logging, exactly which events to you want logged?**

* **Basically every presentation of a screen (Rest/Warning/Light) and ever trigger pulse sent to the Beast software**

**Do we know how ePrime is saving the logs? Presumably we don’t want to wait until the session is aborted or ended to write the log file?**

* **We should run it a few times while aborting and see what happens.**