



Mapping recovery: Longitudinal MRI study of brain and heart recovery in methamphetamine abstinence

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Problems

Methamphetamine addiction costs New Zealand up to **1.5 billion NZD** annually.

High rate of relapse:

- 30-day: 40 – 60 %
- 12-month: ≈ 85 %



Scientific Gap

Damage and Recovery :

- Lack of longitudinal, comprehensive MRI tracking data of meth users.
- No individual mapping of damage versus repair exists.

Treatment :

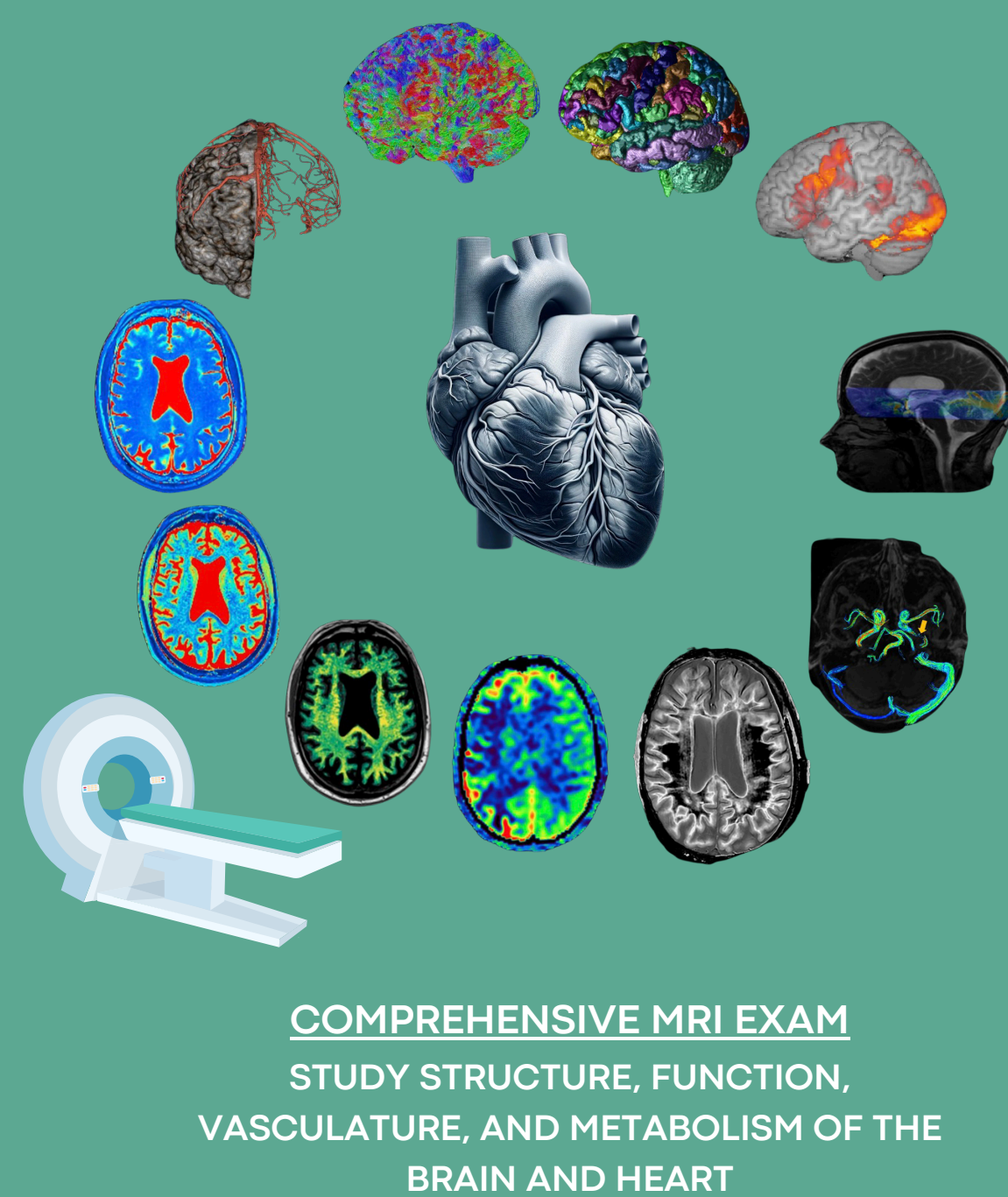
- No approved, biomarker-guided therapy exists.
- Current care is siloed, short-term, and rarely integrates cultural / trauma-informed methods.

OUR INTEGRATED METHODS

Treatment Arm

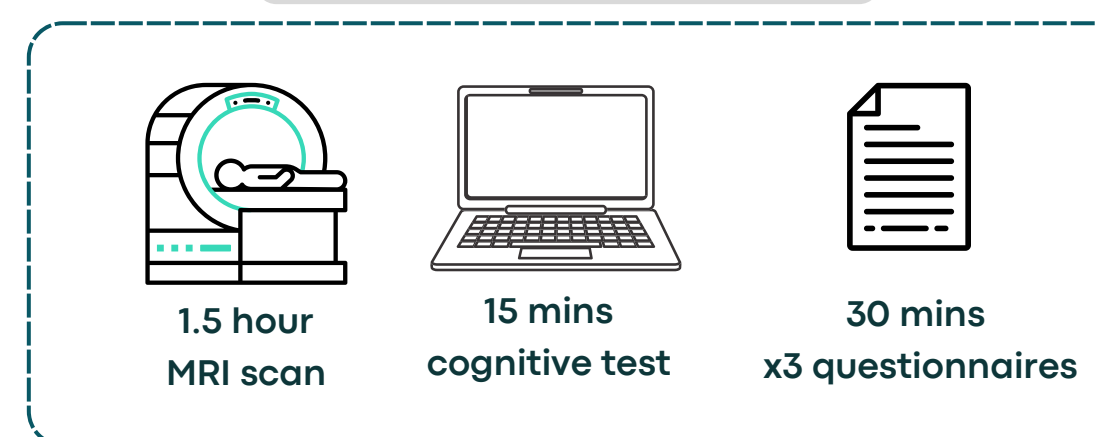


Imaging Arm



STUDY DESIGN

COLLECTED DATA



TREATMENT



Visit 1
Month 0

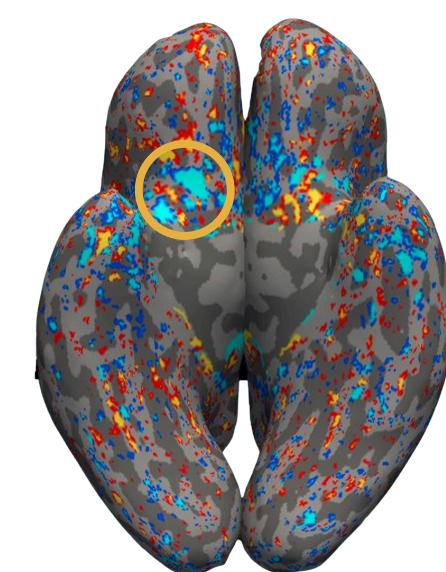
Visit 2
Month 2

Visit 3
Month 6

Visit 4
Month 12

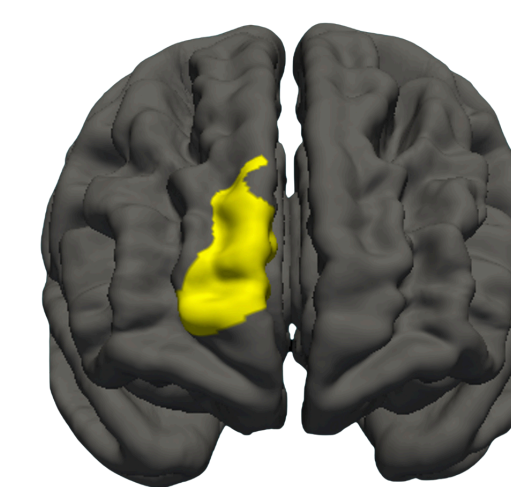
PILOT STUDY RESULTS

BRAIN RECOVERY



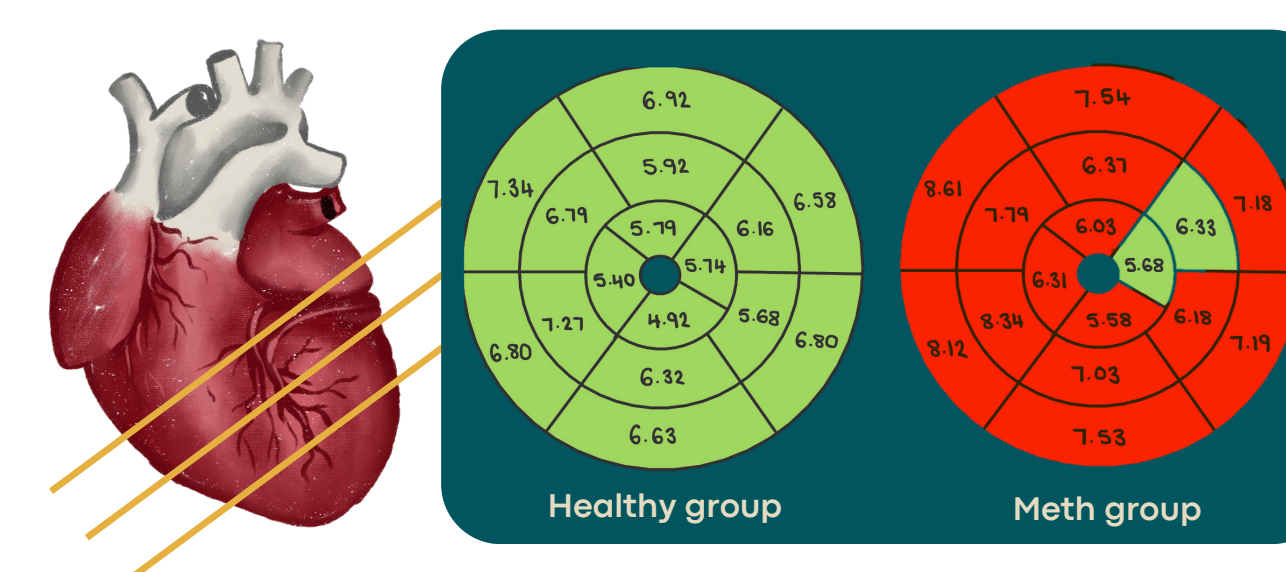
R. Prefrontal cortex
(Decision-making & emotional regulations)

BRAIN DAMAGE



R. Superior frontal cortex
(Decision-making & self-control)

HEART DAMAGE



Segment-by-segment myocardial wall-thickness measurements reveal thicker heart muscle in meth users.

ABSTINENCE RATE



All 12 participants in the treatment pilot study achieved 100% abstinence

PROJECT GOALS

- Boost sustained abstinence (≥ 12 m)
- Establish a framework that other groups can use
- Using MRI data from brain & heart to guide PERSONALISED THERAPY
- Distinguish recovery versus relapse trajectories and predict long-term abstinence

We are conducting the first global study coupling multiparametric brain-and-heart MRI with tikanga-informed care. Creating a recovery model to personalise and prolong meth abstinence.

