

Remote Ischaemic Conditioning for Fatigue after Stroke (RICFAST) – a pilot, single - blind, randomised, placebo controlled trial.



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Overview.....

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 - Post-stroke fatigue
 - What is remote ischaemic conditioning?
- Our study
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Post-stroke fatigue

- Post-stroke fatigue (PSF) affects up to **85%** of stroke survivors.¹
- Subjective feeling of mental or physical exhaustion, lack of perceived energy and weariness, distinct from sadness or weakness.²
- Key **barrier to rehabilitation** and associated with **poorer health outcomes** (depression, poorer health-related QOL, pain, mortality).³⁻⁴
- Postulated mechanisms: **physical deconditioning, inflammation.**⁵⁻⁶
- Currently **no well-evidenced treatment.**

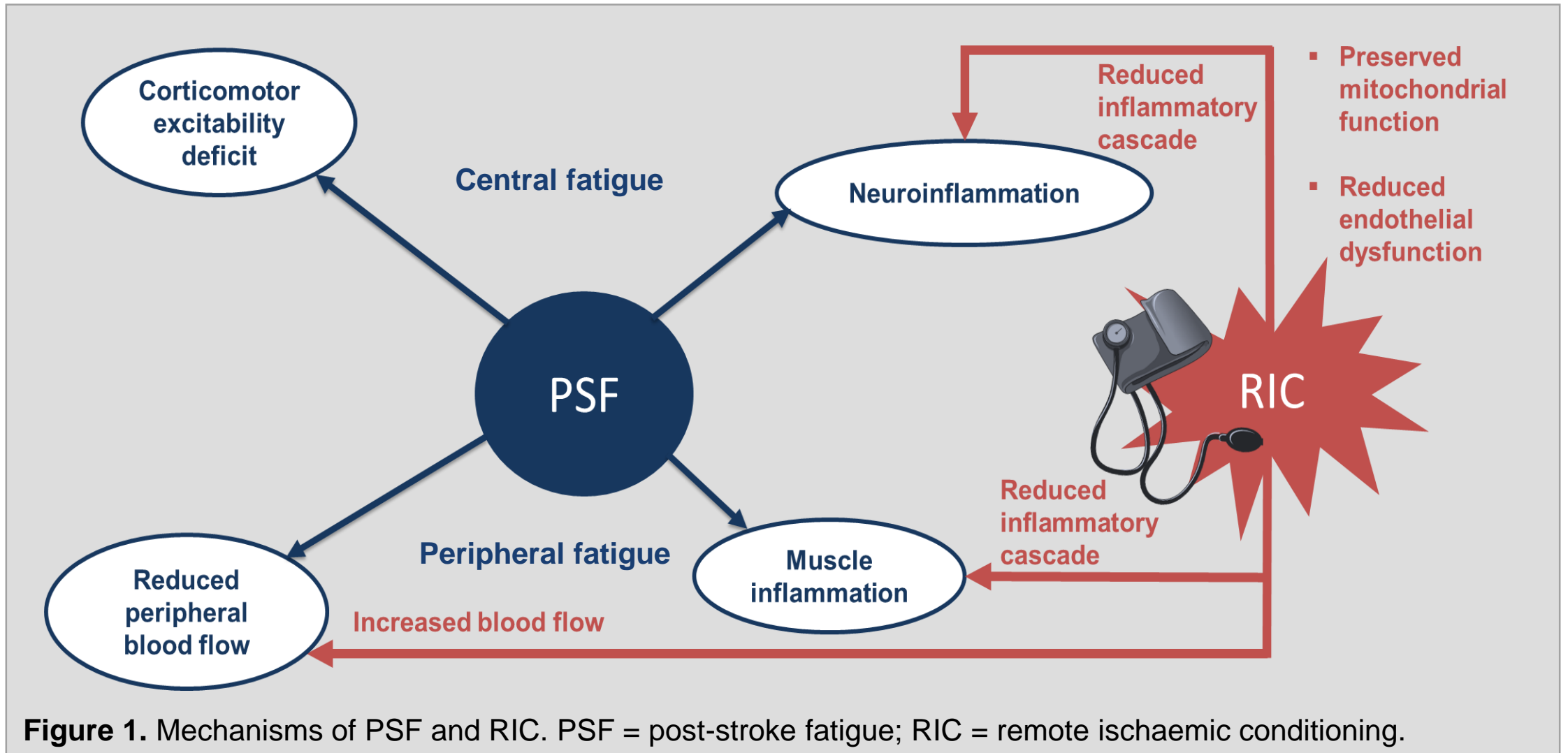


Remote ischaemic conditioning

- Remote ischaemic conditioning (RIC) is a strategy whereby **brief, reversible episodes of ischaemia and reperfusion** are applied to a limb by inflating blood pressure cuffs to above systolic pressures (mmHg).
- Performed for periods that avoid physical injury to the limb but induce neurohormonal, systemic or vascular changes in the body.
- Initially developed to protect organs (e.g. heart or brain) from subsequent ischaemia-reperfusion injury, however may also enhance muscle strength and exercise performance.⁷
- Postulated mechanisms: **improved organ perfusion, reduced inflammation, improved cellular metabolism.**⁸⁻⁹



Mechanisms of PSF and RIC



Aims and hypotheses

Aims:

1. To assess if stroke patients find it acceptable to undertake chronic remote ischaemic conditioning (CRIC) for a period of 6 weeks.
2. To establish if it is feasible to undertake a randomised control trial of CRIC to reduce fatigue and enhance the physical performance of stroke patients.
3. To evaluate if CRIC appears to result in improvements to perceived fatigue and maximal oxygen consumption ($VO_2\text{max}$) after 6-weeks of treatment.

Hypotheses:

1. CRIC is feasible and acceptable.
2. CRIC reduces perceived fatigue.
3. CRIC improves $VO_2\text{max}$.



Methodology

Design: Pilot, single-blind, randomised, placebo-controlled trial.

Sample: 34 stroke patients with debilitating fatigue (Fatigue Severity Scale ≥ 28).

Recruitment: patients identified in stroke follow up clinics at the Royal Hallamshire Hospital and the Assessment and Rehabilitation Centre (ARC), Nether Edge Hospital.

RIC/sham protocol: 4 x 5 min cycles of upper limb cuff inflation to 200mmHg (RIC) or 20mmHg (sham), three times weekly for 6-weeks.



Methodology

Primary outcomes

Feasibility

- Ability to recruit to target (4 patients within the first 2 months), and completion of $\geq 80\%$ of baseline and follow up assessments.

Safety

- No serious adverse event (SAE) directly related to CRIC.
- Less than 10 participants experience any adverse events (AE).

Acceptability

- Less than 1/3 of patients report moderate or greater discomfort associated with CRIC, as well as overall positive responses from qualitative interviews.

Compliance

- Achievement of 80% of intended CRIC cycles.

Methodology

Secondary outcomes

- Fatigue Severity Scale 7 (FSS-7)
- Maximum oxygen consumption (VO_2 max)
- Patient Health Questionnaire-9 (PHQ-9)
- Modified Rankin Scale (MRS)
- Barthel Index (BI)
- EuroQol-5D (EQ-5D)

- Serum biomarkers (inflammatory markers, gene expression)
- Activity monitors
- 6-minute walk test (6MWT)
- Generalised anxiety disorder 7 (GAD-7)
- Montreal Cognitive Assessment (MOCA)
- Qualitative Interviews



So far...

- 5 stroke patients have successfully completed 6-weeks of CRIC or sham.
- 3 stroke patients are currently completing the trial.
- No adverse events have been reported.
- Responses from qualitative interviews have so far have been very positive.

Summary

- This study will be the first to evaluate the effects of RIC on fatigue in stroke.
- The pilot data generated will hopefully inform the development of a definitive trial involving a larger number of participants to evaluate the effect of RIC on fatigue as well as improving physical activity after stroke.

Supervisors

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Sponsors

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Collaborators

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- INSIGNEO – Dr Claudio Mazza, Dr Lorenza Angelini
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