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ABSTRACT SUBMISSION FORM

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TITLE Addressing physical inactivity in diabetes-related foot ulcers: a pilot RCT of aerobic and resistance training for people with diabetes and an active foot ulcer.

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ABSTRACT (maximum 450 words. Please use the following or similar headings: Background/Methods/Results/Conclusions)

Background: People with diabetes-related foot ulcers (DFUs) are at increased risk of cardiovascular disease (CVD). However, they are often excluded from exercise interventions due to wound care needs, mobility impairments, and perceived clinical risks. Cardiorespiratory fitness is a key predictor of CVD risk and a modifiable target for risk reduction. Exercise training is known to improve cardiorespiratory fitness and may improve cardiovascular health in this high-risk population.

Aim: This study sought to determine the effect of exercise training on cardiorespiratory fitness and muscular strength in people with diabetes and a current DFU. Secondary outcomes were safety, wound healing and perceptions around exercise.

Methods: Participants with a DFU (all neuropathic in type, without severe PAD) were randomised to a supervised exercise program (Exercise) or usual care (Control) for 12-weeks. The intervention involved 3 times weekly aerobic and progressive resistance training while ensuring adherence to offloading and wound care requirements. VO2Peak was determined by a graded exercise test on an upper limb arm ergometer. Muscle strength was measured by 1-repetition maximal strength testing and wound size was measured by acetate tracing by a podiatrist blinded to the participants allocation.

Results: Potential participants (n=74) were screened for eligibility and adults (n=17) were recruited. Mean age was 59.4±12 years; BMI, 30.0±4.6 kg/m²; systolic BP, 124±13 mmHg; diastolic, BP 75±5.8 mmHg, and baseline VO2peak was 11.3±1.9 mL/kg/min. Compared with Control (-0.6mL/kg/min), Exercise significantly increased cardiorespiratory fitness (+2.3mL/kg/min) ($p<0.05$). Muscular strength in leg extension and seated row also increased with Exercise. There were no adverse events related to Exercise and no difference in wound healing was observed between groups.

Conclusion: This study demonstrates that exercise training can safely improve VO2peak and muscular strength while accommodating offloading and wound care requirements. These findings support its inclusion as a CVD risk reduction strategy in DFU care.