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Title: The health and fitness of paramedics in regional New South Wales: a need for intervention?

Background & aim: Paramedics are among the most frequently injured health professionals in Australia. Lower fitness levels have been shown to increase firefighters’ risk of injury, however, unlike many fire departments, paramedics often have no on-station exercise equipment. Specifically, regional paramedics identify inadequate access to exercise facilities as a barrier to exercise participation. The health and fitness of paramedics in regional New South Wales (NSW) was assessed to ascertain whether an exercise intervention to improve paramedics’ health and reduce the risk of injury was indicated, and whether components of an intervention should be gender-specific.

Methods: One hundred and thirty-nine self-selected paramedics (76 male; aged 37.4±10.1 years; age range 24-66 years; body mass index 28.5±5.5 kg/m$^2$) underwent a health and fitness assessment. Resting blood pressure (BP; Omron HEM-7322, Japan); body fat percentage (bioelectrical impedance; InnerScanV, Tanita, Japan); upper-body strength (maximum push-ups; modified for females); lower-body strength (single-leg (SL) wall squat; seconds); core muscular strength (prone plank hold; seconds); and lower-body flexibility (sit and reach; cm) were each assessed. Outcomes were compared to American College of Sports Medicine normative data and between genders using one-way ANOVA tests with $p<0.05$ considered statistically significant.

Results: Resting BP was higher in males than females (mean±SD: 138±13/87±9mmHg vs. 122±13/80±8mmHg; $p<0.001$), with both groups classified as pre-hypertensive. Males had less lower-body flexibility than females (20.2±9.9cm vs. 26.0±10.1cm; $p<0.01$), with both groups only rated ‘fair’ compared to normative data. The groups did not differ in upper-body strength (males rated as very good: 22±14 push-ups vs. females rated as good: 19±14 push-ups); lower-body strength (males 40.9±30.3sec vs. females 41.6±37.0sec; both below average); or core strength (males 86.4±44.1sec vs. females 72.6±38.0sec; both below average). Males had less relative body fat than females (24.4±6.8% vs. 35.0±9.1%; $p<0.001$), with males rated as ‘poor’ and females ‘very poor’ regarding body fat percentage.

Implications: This relatively young population of paramedics in regional NSW may be at an increased risk of work-related musculoskeletal injuries due to a lack of core strength and lower-body strength and flexibility. Furthermore, cardio-metabolic disease risk may be elevated in these paramedics due to the high body fat and pre-hypertensive blood pressure levels
observed. We propose the implementation and evaluation of an on-station aerobic and resistance exercise intervention to reduce these risks for both male and female paramedics.

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