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EDITORIAL

# Paradise Lost? New National Heart Foundation of Australia Guidelines on Heart Failure Fail to Recognise the Intensity of Exercise Evidence

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Thirteen (13) years after they were last revised, management guidelines, including exercise training recommendations, for heart failure patients have been updated by the National Heart Foundation [1]. One might ask if an opportunity to interpret and incorporate some of the latest evidence has been missed? Now, as before, the Foundation's experts propose exercise of ''up to moderate intensity" for heart patients. Unequivocal evidence exists that limiting intensity to moderate, deprives some patients of the optimum exercise regime as vigorous and high intensity delivers greater gains in fitness, one of the strongest indicators of future heart failure health [2,3], in those patients who are stable enough to tolerate it. Obviously, the most challenging patients are the frailest and not everyone will be able to perform exercise above moderate intensity, so it's not a question of one size fits all, but current guidelines will certainly limit the health benefits obtained from exercise in some heart failure patients. Perhaps the writing group could have considered some of the other available exercise epidemiology evidence with respect to heart failure patients, as outlined below.

Asking heart patients to undertake vigorous or high-intensity exercise is considered by some to be counterintuitive, however, the largest exercise training trial to date, A Controlled Trial Investigating Outcomes of Exercise Training (HF-ACTION) [4], which contributes data on 2,300 patients and constitutes about 40% of all existing trial data, actually utilised exercise at vigorous intensity, as defined by Australian guidelines [5]. So we actually have more information (>50% of existing patient data, when other vigorous studies are also considered) on vigorous intensity exercise than moderate intensity. It therefore appears counterintuitive to continue to adopt moderate intensity as the standard when there exists a greater volume of scientific evidence relating to exercise data at vigorous intensity in people with heart failure.

There is Level 1, Class A evidence in favour of raising intensity for greatest improvements in aerobic fitness [6], the strongest predictor of patient survival [2,3]. However, the National Heart Foundation of Australia guidelines cite one review article supporting the recommendation that high intensity is not superior to moderate intensity exercise [7]. In contrast, both individual trials [8,9], and meta-analyses, suggest the opposite [6,10] (Figure 1). This argument is balanced by the fact that one notable 2017 study, Study of Myocardial Recovery After Exercise Training in Heart Failure (SMARTEX), concluded that high intensity was not superior to moderate intensity exercise training. However, only 50% of the high intensity patients reached their training targets, while 80% of the moderate intensity group did adhere, but this lower high intensity adherence trend is atypical, when all other studies are considered [6].

There is overwhelming evidence of the effectiveness of frequent vigorous-intensity exercise in protecting against heart attacks in cardiac patients. Data from the landmark

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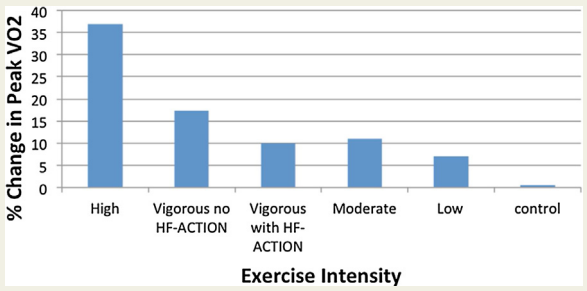


**Figure 1** Fitness (Peak VO2) gains at various exercise intensities in heart failure from a meta-analysis of all trials of heart failure patients [6] (adapted from Ismail 2013).

study by Mittleman et al. study clearly shows someone who exercises at vigorous-intensity levels five or more times a week has approximately 50 times less risk of a heart attack than someone physically inactive [11], although a significant proportion of people with heart failure have no coronary heart disease, so arrhythmia, syncope and implantable defibrillator discharge are more likely to be of concern in these patients.

The benefits of regular vigorous exercise appear to transfer to heart failure patients, without accompanying evidence of higher risk at vigorous intensity [6]. A 2012 analysis (admittedly this data is imperfect, but it is arguably the best currently available) of moderate versus high intensity exercise training from cardiac rehabilitation programs revealed two key things [12]. First, the risk of serious medical events during exercise in cardiac patients is so low they are negligible. Second, just a cursory examination of the number of events reveals the number to be so low that it is impossible to decide which exercise intensity is safer. One has to realise that exercise at ANY intensity substantially increases the risk of serious medical events, but over time, if cardiac patients adapt and achieve expected fitness improvements, their chances of experiencing a second medical event almost certainly diminish. However, in order to access ALL of these health benefits, it is clear that, for stable patients, able to tolerate it, exercise at an intensity above 'moderate' is required [6]. Asking a heart failure patient to exercise, even at low or moderate intensity (as per the Heart Foundation recommendation), puts that person at increased risk of a serious event, but is not likely to give that person access to the full range of health benefits. One could argue that this is sub-optimal practice as it continues to expose patients to the unavoidable initial risks without perhaps offering the chance for longer-term risk reduction as suitable patients adapt.

What is probably now required is a paradigm shift in exercise management that is comparable with other medical treatments such as prescribing medications. For example, we know that most medications carry a small risk of side-effects, but unless patients were unstable or obviously unable to tolerate a higher dose, doctors would not hesitate about prescribing higher doses of, say, blood pressure medications to patients, if therapy targets are not reached. If a doctor uses a low dose of medicine, this does two things. First, it inevitably exposes patients to a small risk of side-effects. Second, if the medication dose is too low it will fail to offer the chance of achieving all of the possible health benefits. Many of us would probably to choose to be treated by a doctor who would prescribe a dose high enough to offer the desired therapeutic effects.

So, why are we so reluctant to administer the optimal exercise dose, which for some is vigorous or high intensity, to cardiac failure patients when the benefits are apparent? There is little to no evidence to show the risks to be greater in exercise above moderate intensity, and some evidence to the contrary. Whether it is tradition or emotional intuition that has led to the 'moderate intensity' limit, the time has come to consider all of the available exercise epidemiology evidence when the next opportunity arrives.

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