



## EDITORIAL COMMENT

# To be or not to be referred for cardiac rehabilitation after acute coronary syndrome<sup>☆</sup>



## Referenciar ou não referenciar para reabilitação cardíaca após síndrome coronária aguda

Jorge Ferreira

Serviço de Cardiologia, Hospital de Santa Cruz – CHLO, Carnaxide, Portugal

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Acute coronary syndrome (ACS) is associated with significant mortality in the acute stage, but this has steadily fallen in recent years.<sup>1,2</sup> This increased survival has led to growing concerns about the high recurrence rates of fatal and non-fatal vascular events, with a negative impact on prognosis and quality of life in the medium and long term.<sup>2,3</sup> Against this background, secondary prevention, with optimal medical therapy and lifestyle modification, is essential to reduce recurrence of vascular events, and should be implemented in a well-structured cardiac rehabilitation (CR) program.<sup>3</sup>

CR consists of a wide-ranging set of health-promoting interventions that include exercise training, dietary counseling, risk factor control, smoking cessation, adherence to therapy and psychosocial support, usually on an outpatient basis.<sup>4</sup> Its benefits in coronary artery disease are well established. In a meta-analysis of 14 486 participants in 63 studies with a median follow-up of 12 months, CR led to reductions of 26% in cardiovascular mortality and 18% in the risk of hospital admissions.<sup>5</sup> This impact on the natural history of coronary atherothrombosis is due to the protective effects of exercise on lipid profile, blood pressure, inflammation and thrombogenic potential.<sup>6</sup>

Despite their demonstrated and extensive benefits,<sup>5,7</sup> exercise-based CR programs are clearly underused, due

to patient-related, physician-related and health system-related factors.<sup>8</sup>

In their study published in this issue of the *Journal*, Aguiar Rosa et al. assessed the predictors of improved functional capacity in 129 patients who participated in a CR program following ACS and who underwent cardiopulmonary exercise testing (CPET) at baseline and after 36 exercise training sessions.<sup>9</sup>

Among CPET parameters, peak oxygen uptake ( $pV_{O_2}$ )  $<20$  ml/kg/min compared to  $pV_{O_2} \geq 20$  ml/kg/min was associated with a significantly greater range of improvement in  $pV_{O_2}$  (+4.4 vs. +1.6;  $p=0.018$ ), in percentage of predicted  $pV_{O_2}$  (+17.9% vs. +4.0%;  $p=0.009$ ) and in  $pV_{O_2}$  times systolic pressure at peak exercise (+883.3 vs. 238.5 mmHg.ml/kg/min;  $p=0.015$ ) between baseline and after CR. Depressed or moderately impaired left ventricular ejection fraction was not associated with greater benefit from CR as assessed by improvement in functional capacity.

The rate of recurrence of major vascular events was low in a mean follow-up of five years, with annual mortality of 0.9% and annual ACS incidence of 1.2%. This may be explained by the good adherence to medical therapy, control of risk factors and adoption of healthier lifestyles in the study population.

The authors conclude that patients with poor functional capacity identified by CPET, which in their study represented 25% of a heterogeneous group of patients with ACS, will obtain the greatest benefit from CR. A referral strategy based on this parameter could help optimize use of CR facilities, which are in relatively short supply in Portugal.

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E-mail address: [jorge\\_ferreira@netcabo.pt](mailto:jorge_ferreira@netcabo.pt)

## Conflicts of interest

The author has no conflicts of interest to declare.

## References

1. Ferreira J, Monteiro P, Mimoso J. National Registry of Acute Coronary Syndromes: results of the hospital phase in 2002. *Rev Port Cardiol.* 2004;23:1251–72.
2. Santos JF, Aguiar C, Gavina C, et al. Portuguese Registry of Acute Coronary Syndromes: seven years of activity. *Rev Port Cardiol.* 2009;28:1465–500.
3. Roffi M, Patrono C, Collet JP, et al. 2015 ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation: Task Force for the Management of Acute Coronary Syndromes in Patients Presenting without Persistent ST-Segment Elevation of the European Society of Cardiology (ESC). *Eur Heart J.* 2016;37:267–315.
4. Piepoli MF, Hoes AW, Agewall S, et al. 2016 European Guidelines on cardiovascular disease prevention in clinical practice: The Sixth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of 10 societies and by invited experts): Developed with the special contribution of the European Association for Cardiovascular Prevention & Rehabilitation (EACPR). *Eur Heart J.* 2016, <http://dx.doi.org/10.1093/eurheartj/ehw106>.
5. Anderson L, Oldridge N, Thompson DR, et al. Exercise-Based Cardiac Rehabilitation for Coronary Heart Disease: Cochrane Systematic Review and Meta-Analysis. *J Am Coll Cardiol.* 2016;67:1–12.
6. Ferreira J. Reduction of thrombogenic potential by physical exercise in the elderly. *Rev Port Cardiol.* 2001;20:641–4.
7. Mendes M. Is there a role for cardiac rehabilitation after coronary artery bypass grafting? There is no role for cardiac rehabilitation after coronary artery bypass grafting. *Circulation.* 2016;133:2538–43.
8. Mendes M. Barriers to participation in cardiac rehabilitation programs. *Rev Port Cardiol.* 2011;30:509–14.
9. Rosa SA, Abreu A, Soares RM, et al. Cardiac rehabilitation after acute coronary syndrome – do all patients derive the same benefit? *Rev Port Cardiol.* 2017;36:169–76.