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Telephone support oriented by accelerometric measures enhances adherence to physical activity recommendations in non-compliant patients after cardiac rehabilitation program

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Keywords: Adherence; Non-compliance; Accelerometers; Phone calls; Physical activity; Cardiac rehabilitation

Objectives.– To assess the efficacy of a strategy on the adherence to physical activity (PA) recommendations in cardiac patients not achieving PA recommendations.

Methods.– Twenty-nine non-compliant cardiac patients (weekly moderate-intensity PA < 150 min) who benefited from a cardiac rehabilitation program (CRP) were randomized in intervention group (IG, $n = 19$) or in control group (CG, $n = 10$). The IG wore an accelerometer during 8 weeks to assess the active energy expenditure (EE, in Kcal) and the time spent in light, moderate or intense levels (min/week). Every 15 days, feedback and support were provided by telephone. The CG wore the accelerometer only during 8th week of the intervention.

Results.– In the IG, weekly time spent at moderate-intensity PA increased from 95.6 ± 80.7 to 137.2 ± 87.5 min between the 1st and 8th week ($P = 0.002$), with 53.6% of the sample achieving the targeted amount of moderate-intensity PA. During the 8th week, the EE averaged 543.7 ± 144.1 Kcal and 266.7 ± 107.4 Kcal in the IG and CG, respectively ($P = 0.004$).

Conclusions.– Telephone support based on accelerometric recordings appeared to be an effective strategy to improve the adherence to PA in non-compliant patients. This intervention could be implemented after CRP because it represents an inexpensive, modern and easy-to-use strategy.

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May perceived exertion be used to personalize eccentric training?

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Keywords: Eccentric; Training; Cardiac rehabilitation

Purpose.– Despite its superior effects for increasing muscle strength, with lower cardiorespiratory demand with regard to the concentric (CON) training [1,2], the eccentric (ECC) training is not currently used during the cardiac rehabilitation. A possible reason is the difficulty of perception of the fatigue. Our aim was to compare, in healthy subjects, the perceived exertion during

CON and ECC exercises, with development of an identical strength, corresponding at a level 12 (ventilatory threshold) of the Borg scale [3], determined during a preliminary CON test.

Methods.– Three successive bouts of pedalling tests:

– progressive CON test, until reaching the level 12 of the Borg scale, to determine the comfortable pedalling power (CPP);

– steady CON exercise at CPP level, with measure of the plantar force (PF) and of the VO_2 ;

– steady ECC exercise at the same PF level, with VO_2 assessment.

Results.– Eighteen healthy subjects (15 males, 3 females, BMI 22.7 ± 1.8). Borg scale of 7–8 and of 12, for ECC exercise vs CON. PF of 118 ± 59.7 and 90.4 ± 65.8 N, for ECC exercise vs CON ($P > 0.05$). The end effort stabilized VO_2 was of 7.6 ± 2.37 (resting VO_2 : 4.27 ± 0.65) and of 22.1 ± 4.65 ml/min/kg (resting VO_2 : 4.3 ± 0.8) for ECC effort vs CON.

Conclusion.– Because in particular of lower energy expenditure at level of comparable developed strength, the perceived exertion can not be used to adapt an ECC exercise, unlike a CON effort. Other means of ECC training personalization must be looked for.

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Assessment by accelerometer of sedentarity and of adherence to physical activity recommendations after cardiac rehabilitation program

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Keywords: Adherence; Assessment; Physical activity; Cardiac rehabilitation
Purpose.– To objectively assess, in stable cardiac patients, the adherence to physical activity (PA) recommendations using an accelerometer at two or 12 months after the discharge of cardiac rehabilitation program (CRP).

Methods.– Eighty cardiac patients wore an accelerometer at 2 months (group 1, short-term adherence, $n = 41$) or one-year (group 2, long-term adherence, $n = 39$) after a CRP including therapeutic education about regular PA. PA was classified as “light” (1.8–2.9 METs), “moderate” (3–5.9 METs), or “intense” (> 6 METs). Energy expenditure (EE, in Kcal) and time (min) spent in these three different levels were measured during a one-week period with the MyWellness Key actimeter. Motivational readiness for change was also assessed at the end of CRP. Patients were considered as physically active when a minimum of 150 min of moderate PA during the one-week period was achieved.

Results.– Both groups were comparable, except for exercise capacity at the end of the CRP which was slightly higher in group 1 (167.5 ± 42.3 Vs 140.7 ± 46.1 watts, $P < 0.01$). The total weekly active EE averaged 676.7 ± 353.2 Kcal and 609.5 ± 433.5 Kcal in group 1 and 2, respectively. The time spent within the light-intensity range PA was 319.4 ± 170.9 and 310.9 ± 160.6 min, and the time spent within the moderate-intensity range

averaged 157.4 ± 115.4 and 165 ± 77.2 min per week for group 1 and 2, respectively. Fifty-three percent and 41% of patients remained active in both groups respectively.

Conclusion.— About half of the patients are non-adherent to PA after CRP and do not reach target levels recommended by physicians. The first 2 months following the discharge of CRP seem to be of outmost importance for lifestyle modifications maintenance, and further study monitoring more closely PA decrease could help to clarify the optimal follow-up options.

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The effects of cardiovascular rehabilitation after coronary stenting

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Keywords: Cardiac rehabilitation; Coronary stenting; Peak VO₂; Cardiovascular risk factors; Quality of life

Purpose.— To determinate the effects of a cardiac rehabilitation program on risk factors, functional capacity, psychological well-being and quality of life in patients post coronary stenting (CS) realised after myocardial infraction (MI).

Methods.— It was a prospective study including 68 patients with MI who underwent CS.

Patients were randomized to control (CG: $n = 38$) or training group (TG: $n = 30$).

An evaluation with a maximal exercise testing (MET), a 6-minute walking distance (6-MWD), a measure of serum cholesterol levels, an impedancemetry, a SF36 scale and a HAD questionnaire was conducted at the beginning, after 8 weeks and after 2 years.

Results.— After 2 months of cardiac rehabilitation, the TG has improved his cardiorespiratory parameters especially peak VO₂ (18%, $P < 0.001$), this gain was maintained after 2 years. An amelioration of cardiovascular risk factors was found only in the TG with an increase of the HDL cholesterol ($P = 0.04$). Evaluation after 2 years showed that 88% of smokers gave up smoking in the TG ($P < 0.001$) whereas it was only 24% in the CG (NS). Improved quality of life was observed only in the TG ($P < 0.001$). Both of the groups had a significant improvement in psychological status (more important for the TG). During the follow-up, the TG had significantly fewer hospitalisations for cardiovascular complaints than the CG (20% versus 44%, $P < 0.001$).

Discussion.— Coronary stenting should not delay cardiac rehabilitation that does not increase the risk of stent restenosis.

The cardiac rehabilitation program after stenting is essential in the management of acute coronary syndromes (Class I Grade A).

It has a beneficial effect on functional capacity, cardiovascular risk factors and quality of life.

Further reading

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