PLACE

PLATFORM OF LABORATORIES FOR ADVANCES IN CARDIAC EXPERIENCE

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2022

I PERCORSI DELLA SALUTE:
PRESCRIVERE L'ESERCIZIO FISICO

PRESCRIZIONE DELL'ESERCIZIO FISICO NEL CARDIOPATICO: KEY POINTS

Ferdinando Iellamo

Advances in Heart Failure

Exercise Training as Therapy for Heart Failure

Current Status and Future Directions

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Results from a National Heart, Lung, and Blood Institute Working Group

EXERCISE TRAINING IS RECOMMENDED TO CARDIAC PATIENTS

AT A CLASS 1 EVIDENCE LEVEL.

Circ Heart Fail 2015

EXERCISE TRAINING IN HEART DISEASES: KEY PONTS

The optimal "dose" of exercise, defined in terms of volume and intensity of exercise, required to achieve improvement in functional and prognostic parameters

Defining the optimal dose of exercise to maximize health outcomes is now considered a priority

EXERCISE TRAINING IN HEART DISEASES: KEY POINTS

- ***DIFFERENCES IN INDIVIDUAL INTERNAL TRAINING LOAD***
- ***CONTRIBUTIONS DOCUMENTED AT THE LEVEL OF A PATIENT'S GROUP MAY NOT FULLY APPLY TO EACH MEMBER OF THAT GROUP***
- ***A GROUP OF CHF PATIENTS EXERCISING AT 40–70% HRR MAY BE WORKING AT INDIVIDUALLY DIFFERENT RELATIVE INTENSITIES.***

EXERCISE TRAINING IN HEART DISEASES

There is a general consensus that exercise training should be individually tailored to the patient's clinical and functional status

Physical Activity Guidelines Advisory Committee.
Physical Activity Guidelines Advisory Committee Report, 2008.
Washington, DC: U.S. Department of Health and Human Services, 2008.

LONG-TERM EXERCISE TRAINING IN HEART DISEASES

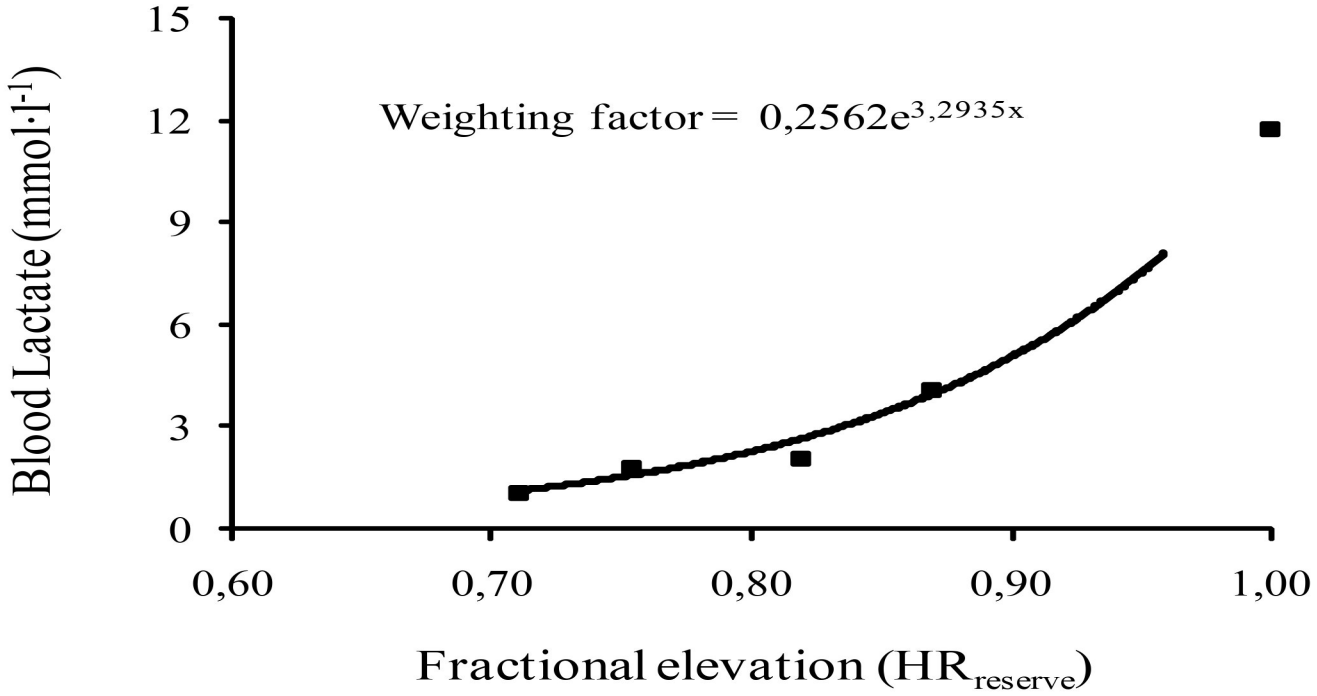
HOW TO PRESCRIBE LONG-TERM EXERCISE TRAINING OUTSIDE MEDICALLY-SUPERVISED SETTINGS CONSIDERING CHANGES IN INDIVIDUAL PHYSICAL CAPACITY OVER TIME IS UNKNOWN.

RPE SESSION

BY THIS METHOD, INTERNAL TRAINING LOAD IS QUANTIFIED BY MULTIPLYING THE RPE OF THE WHOLE TRAINING SESSION, USING THE BORG 10-POINTS CATEGORY SCALE, BY ITS DURATION.

INDIVIDUALIZED TRIMP ($TRIMP_i$)

TIME (min) x Δ HR (HRexe-HRrest/HRmax-HRrest) x Y_0

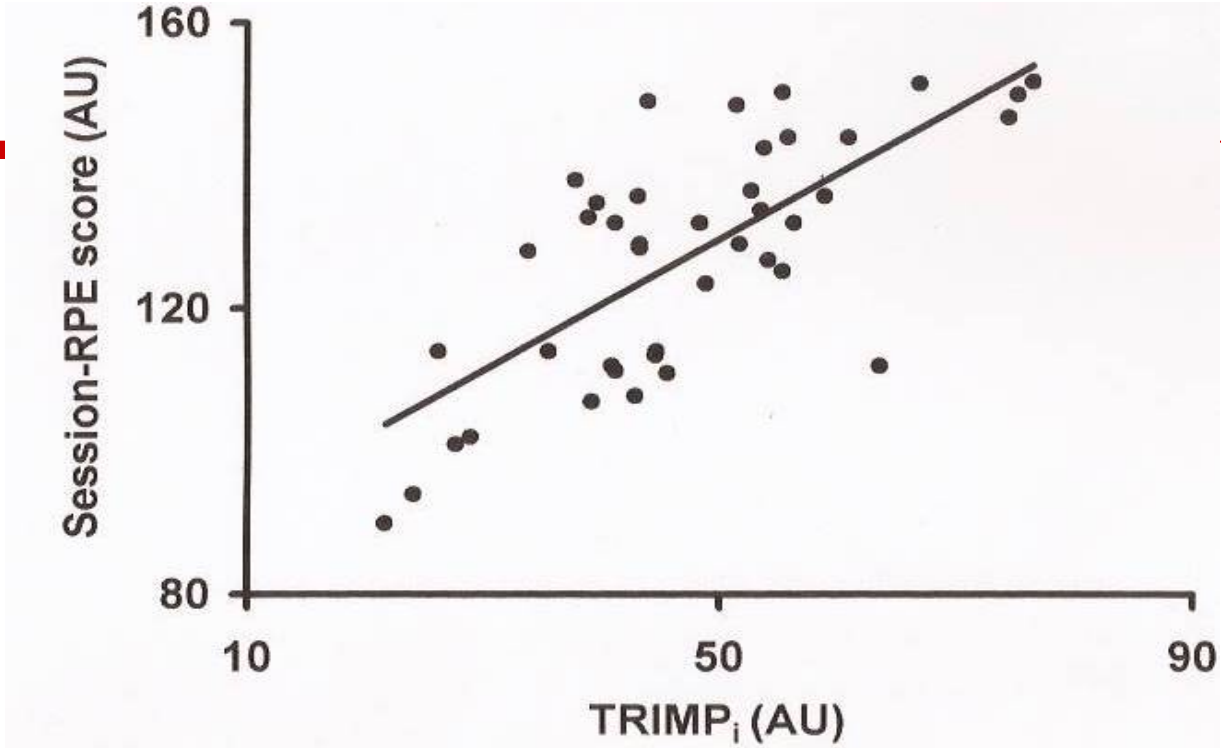


TRIMP

THE TRIMP ALLOWS CONTINUOUS UPDATING OF TRAINING LOAD ACCOUNTING FOR INCREMENTS IN AEROBIC FITNESS WITH TRAINNG PROGRESSION AND ENABLES WEEKLY TRAINING LOAD ADJUSTMENTS

SESSION-RATE OF PERCEVED EXERTION

THE SESSION-RATE OF PERCEIVED EXERTION (RPE), PROVIDES AUTONOMIC AND FUNCTIONAL CAPACITY CHANGES SUPERIMPOSABLE TO THOSE OBSERVED WITH CONSOLIDATED, HR-BASED, METHODS (e.g. TRIMP)



Relationship between session-RPE training load and TRIMPi method

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Validation of rate of perceived exertion-based exercise training in patients with heart failure: Insights from autonomic nervous system adaptations

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ABSTRACT

Background: Exercise prescription in cardiac patients is based on heart rate (HR) response to exercise. How to prescribe long-term exercise training outside medically-supervised settings also considering changes in individual physical capacity over time is unknown. In this study we hypothesized that in patients with chronic heart failure (CHF) the session-rate of perceived exertion (RPE), a subjective-based training methodology, provides autonomic and functional capacity changes superimposable to those observed with HR-based Training Impulses (TRIMPi) method.

Methods: Twenty patients with stable CHF were randomized to either aerobic continuous training (ACT) or aerobic interval training (AIT) for 12 weeks. For each TRIMPi-guided exercise session, the session-RPE was recorded. By this method, internal training load (TL) is quantified by multiplying the RPE of the whole training session, using the Borg CR10-scale, by its duration. Heart rate variability (HRV), and baroreflex sensitivity (BRS) were assessed at baseline and at 3 weeks intervals.

Results: Significant correlations were found between $TRIMP_i$ and individual session-RPE, for both ACT and AIT ($r = 0.63$ to 0.81), ($P < 0.05$). The same occurred when ACT and AIT groups were pooled together ($r = 0.72$; $P < 0.01$). R–R interval, HRV and BRS were significantly and very highly correlated with weekly RPE-session (r^2 ranged from 0.77 to 0.97; $P < 0.001$). A significant relationship between session-RPE and performance at the 6MWT was also found.

Conclusions: Session-RPE is an easy-to-use, inexpensive and valid method for exercise prescription and health maintenance, consistent with objective physiological indices of training, that could be used for long-term physical activity in patients with CHF.

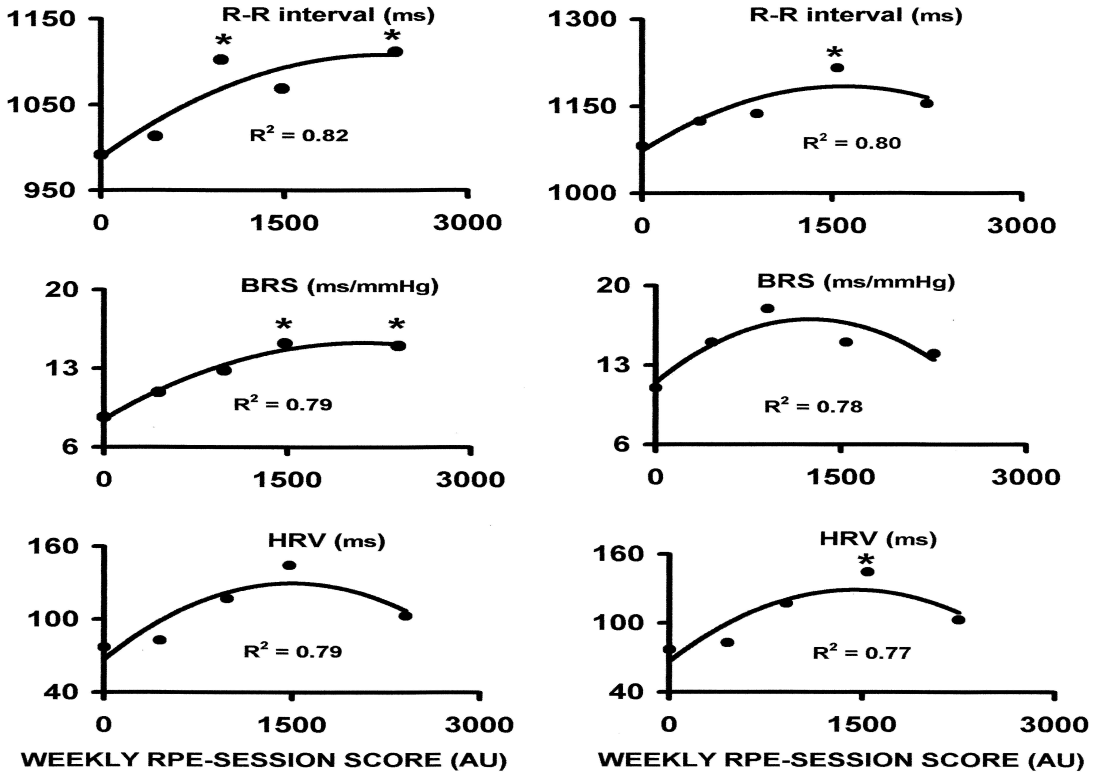
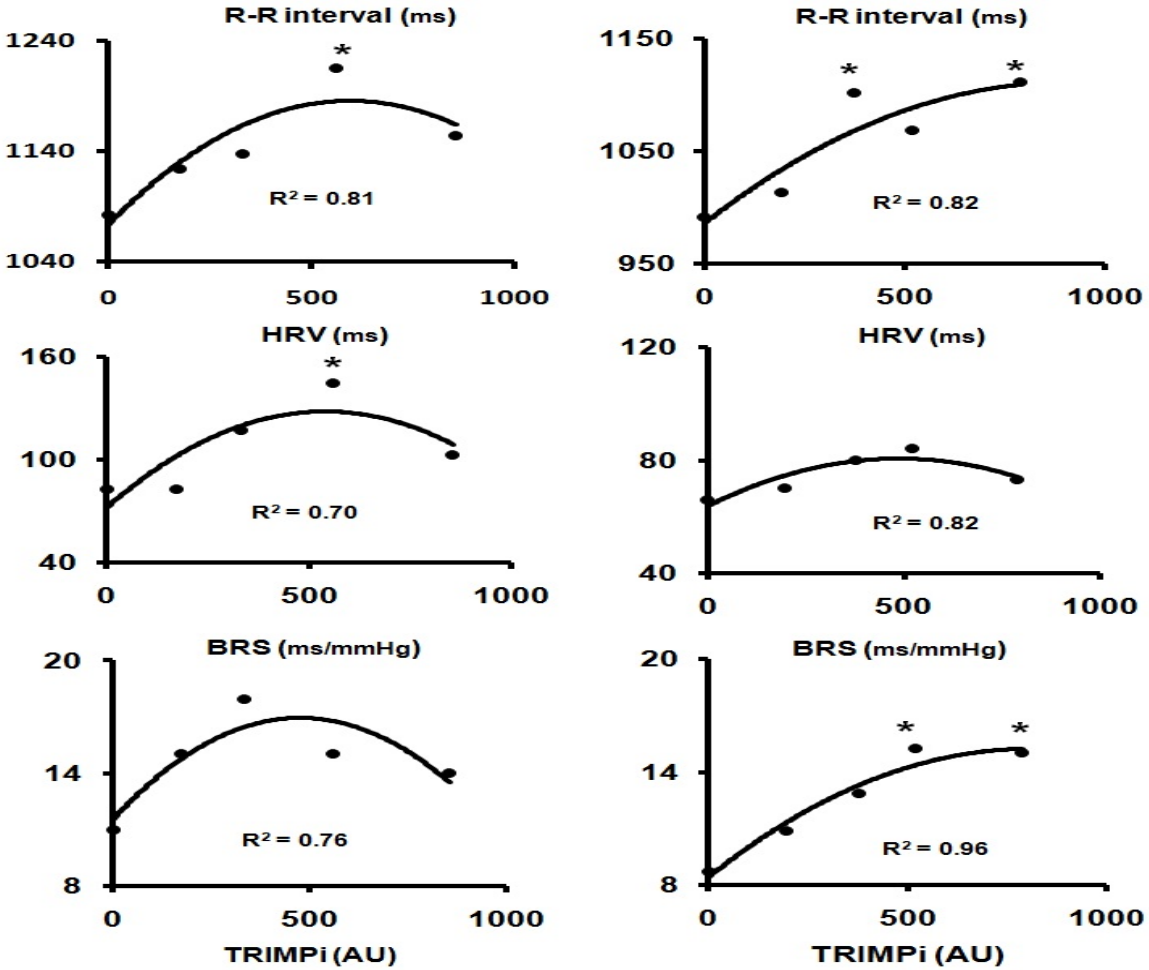


Figure 4

Iellamo et al Int J Cardiol 2014



Iellamo et al Int J Cardiol 2011

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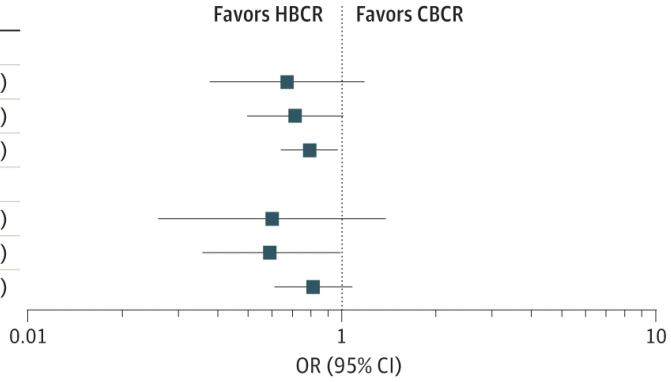
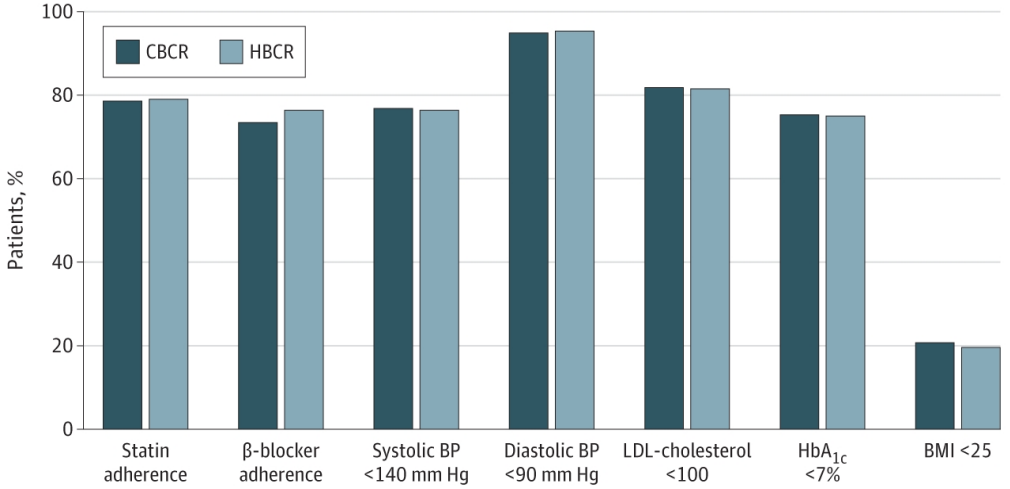
A Hospitalizations

Hospitalization	OR (95% CI)
All-cause	
30-d	0.67 (0.38-1.18)
90-d	0.71 (0.50-1.01)
12-mo	0.79 (0.64-0.97)
Cardiovascular-related	
30-d	0.60 (0.26-1.38)
90-d	0.59 (0.36-0.99)
12-mo	0.81 (0.61-1.08)



B Medication adherence and cardiovascular risk factor control at 12 mo



Nkonde-Price et al JAMA 2022

REMARKS

SESSION-RPE IS AN EASY-TO-USE AND VALIDATED METHOD FOR EXERCISE PRESCRIPTION AND HEALTH MAINTENANCE, THAT COULD BE USED FOR LONG-TERM, OUT-OF-HOSPITAL, SELF-SELECTED, PHYSICAL ACTIVITY IN PATIENTS WITH CARDIAC DISEASES.

CONCLUSIONS

RPE-session METHOD REPRESENTS A STEP FORWARD IN THE INDIVIDUALIZATION OF AEROBIC TRAINING TAILORED TO THE ACTUAL PATIENT'S CLINICAL and FUNCTIONAL STATUS.