

Individual prescription of exercise as medicine: guidelines-guided or patient based?

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Introduction: High intensity interval training (HIIT) is now recognized in international clinical-based exercise guidelines as an appropriate and beneficial adjunct to moderate intensity continuous training.¹ Moreover, prescribing precise HIIT intensity based on individual capacities and needs is mandatory to optimize results. However, intensity prescription might encounter some obstacles when it comes to implementing pre-training testing. This study showcases individual exercise prescription in a group of ST-elevation myocardial infarction (STEMI) and non-ST-elevation myocardial infarction (NSTEMI) patients to achieve progressive increase of functional capacity and therefore – better health and quality of life as primary outcomes.

Patients and Methods: 16 STEMI and NSTEMI patients (age 58 ± 10 years; height 177 ± 9 cm; weight 86.8 ± 15.4 kg; VO_{2max} 19 ± 5.3 ml min^{-1} kg^{-1}) underwent 12 weeks of supervised cycling HIIT (4x4 min at 85-95% of HRmax) 3 times per week. Functional capacity (VO_{2max}) and all cardiopulmonary parameters as well as HRmax were assessed by means of the incremental cardiopulmonary test to exhaustion (CPET) every 4 throughout the training program. Individual training zones were prescribed and adjusted according to the parameters obtained in CPET.

Results: There was a good correlation ($r=0.67$) between the predicted HRmax and measured HRmax at the beginning of the training period but a weak correlation ($r=0.43$) at the end of a 12-week training program. The absolute improvement in VO_{2peak} at the end of the 12-week training was 32% (19.2 ± 5.1 vs 25.5 ± 4.9 ml min^{-1} kg^{-1} , $P<.001$).

Conclusion: The "dose" of the exercise can be operationalized and monitored using a specific indicator (or set of specific indicators) of internal load as proxy. In this regard, to maximize safety in clinical populations, it is mandatory to precisely adjust pre-exercise screening and regular monitoring. Modifying the exercise prescription by carefully adjusting the external load in relation to internal parameters, can define an optimal dose for this group of patients.

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LITERATURE

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