

# Abstracts of the IJMS World Conference of Medical Student Research (WCMSR) 2024

**AWARD FOR THE HIGHEST SCORE DURING THE ABSTRACT REVISION PROCESS FOR ORIGINAL RESEARCH, 1<sup>ST</sup> PLACE:**

## 01. EFFECTS OF A LOW-DOSE CARDIAC REHABILITATION PROGRAM ON CARDIOVASCULAR CONDITIONING PARAMETERS IN PATIENTS WITH HEART DISEASE



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<https://www.youtube.com/live/fSpXH-3Xy5w?t=23538s>

**BACKGROUND:** Cardiac rehabilitation is a high-evidence ischemic heart disease. The optimal dose of rehabilitation is not well defined due to the heterogeneity of studies. **AIM:** To evaluate the effects of low-dose cardiac rehabilitation on cardiovascular performance parameters in patients with heart disease. **METHODS:** A longitudinal, retrospective, observational, and analytical study was conducted. Adult patients who enrolled in the cardiac rehabilitation program were included, excluding or removing those without a history of cardiovascular disease, those who did not complete at least 5 rehabilitation sessions, and those with less than 80% attendance at rehabilitation sessions. Results from the initial and final (comparative) conventional and/or cardiopulmonary exercise tests were obtained, which included functional capacity in METs, chronotropic response, pressor response, heart rate and blood pressure recovery, double product, presence or absence of ischemia, arrhythmias, determination of ischemic threshold, and ergospirometry parameters such as peak VO<sub>2</sub>, VE/VCO<sub>2</sub>, O<sub>2</sub> pulse, and aerobic and anaerobic thresholds. **RESULTS:** A total of 32 patients were included, of whom 65.6% were male. A significant increase was observed in peak VO<sub>2</sub> achieved (20.7 vs. 24.2 ml/kg/min, p=<0.001) and the percentage of predicted VO<sub>2</sub> achieved (76.3% vs. 94.5%, p=<0.001) when comparing initial and final maximal exercise tests. Improvement was found in ergometric performance indices, FC/W index (1.18 vs. 1.02, p=0.043) and DP/W index (1.78 vs. 1.39, p=0.041). No significant difference was found regarding pressor or chronotropic response parameters, heart rate and blood pressure recovery, or double product. **CONCLUSION:** It was concluded that in patients with heart disease, a low-dose cardiac rehabilitation program is effective in improving cardiovascular conditioning parameters such as peak VO<sub>2</sub> and reducing the ischemic threshold.

**Table:** Cardiopulmonary Conditioning Parameters Before and After a Low-Dose Cardiac Rehabilitation Program.

Variable	Initial	Comparative	P value
<b>Conventional or cardiopulmonary stress test (n=32)</b>			
VO <sub>2</sub> max, ml/kg/min	20.7 (±7.1)	24.2 (±7.3)	<0.001
% of predicted VO <sub>2</sub> achieved, %	76.3 (±28.4)	94.5 (±29.8)	<0.001
% of maximum heart rate achieved, %	77.5 (±15.6)	80.2 (±15.3)	0.261
Chronotropic index	0.53 (0.37-0.78)	0.63 (±0.27)	0.372
Peak systolic blood pressure, mmHg	151 (±27)	149 (±24.5)	0.418
Peak SBP/ Rest SBP	1.26 (±0.17)	1.26 (±0.17)	0.725
Heart rate recovery at 1st minute, beats	18 (10-23)	18 (±7)	0.753
Peak SPB/3rd minute SBP	1.1 (±0.1)	1.1 (±0.1)	0.536
Double product	18976 (±6221)	19257 (±5806)	0.728
Ischemia, n (%)	6 (18.8)	4 (12.5)	<0.001
Ischemic threshold, METs	3.4 (3.1-6.3)	4.7 (4.7-5.1)	0.029
Maximum ST segment deviation, mm	2.4 (±0.3)	2 (2-2.7)	0.761
Arrhythmias, n (%)	1 (3.1)	0 (0)	
Heart rate/work index	1.18 (0.96-1.88)	1.02 (0.79-1.47)	0.043
Double product/work index	1.78 (1.26-2.42)	1.39 (1.15-2.08)	0.041
<b>Cardiopulmonary stress test (n=20)</b>			
VO <sub>2</sub> max, ml/kg/min	24.6 (±5.4)	28.3 (±6.1)	<0.001
% of predicted VO <sub>2</sub> achieved, %	87 (±29.7)	106.7 (±25.4)	0.001
VE/VCO <sub>2</sub> [n = 20]	38.4 (34.6-40.1)	38.5 (±5.5)	0.79
VO <sub>2</sub> /HR [n = 20]	15.6 (12-17.6)	15.9 (±3.5)	0.003
RER [n = 20]	1.1 (±0.9)	1.1 (±0.05)	0.012

**Legend:** Categorical variables are shown as frequency and percentage. Quantitative variables are shown as mean and standard deviation or median and interquartile ranges (25-75) depending on their distribution.

**Key Words:** Cardiac Rehabilitation, Heart Diseases, Low-Dose, Program.