"Athlete's Heart" in Israel: Fact or Fiction?

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Abstract: A previous study on Israeli Olympic athletes who participated in different sport disciplines has shown that the effect of sport activities in modifying the heart anatomy is at best modest. In the present study we assessed members of the 5 leading Israeli cyclist clubs as a selected sample of high endurance sport activity participants, using echocardiography to determine the upper limits of physiologic left ventricular (LV) remodeling. Forty-seven cyclists, 5 of whom rank in the top 10 list, mean age 37 ± 10 years, 43 males were included in the study. Cyclist's body surface area was 1.8 ± 0.15 m^2. The echocardiographic results are presented in the table. LV end-diastolic diameter exceeding the upper normal limit of 56mm was measured in only one participant (57mm). In 4/47 (9%) athletes interventricular septal thickness reached 12mm, but none reached more than 13mm. Mild increment of LV mass index (>102 g/m^2) was found in 5/47 (11%) of the cyclists. LV systolic and diastolic function was normal in all the cases.

Conclusions: Endurance sport activity in well-trained Israeli bicyclists has minor impact on heart structure. Modest LV dilatation is rare and concentric hypertrophy is an uncommon finding. Significant abnormal cardiac dimensions, as found in patients with cardiomyopathy, were absent.

Parameters	Mean (SD)	Range
LV end-diastolic diameter (mm)	47 ± 4	37-57
Interventricular septum (mm)	10 ± 1.1	8-12
Posterior wall (mm)	8 ± 1.2	6-10
LV mass/BSA (g/m^2)	77 ± 16	50-114
LV end diastolic volume/BSA (ml/m^2)	66 ± 7	49-80
LV ejection fraction (%)	67 ± 7	51-80