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» Journal Abstract

# A follow-up study of the changes in left ventricle and running performance in highly trained runners

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Long-term studies have not previously been reported concerning the association among left ventricle (LV) adaptation and running performance. This association can be important for differentiation between pathological and physiological cardiac adaptation. The echocardiograms of 11 male and 9 female elite endurance-trained runners were evaluated over at least four times. The best running performance and echocardiography measurements achieved by each athlete in each year were selected in order to observe the individual association among LV and performance. Extreme LV enlargement (i.e., >60 mm) was observed in a 64% of the male runners. In a 75% of athletes, the higher value of the left ventricular internal diameters at end-diastole (LVIDd) was observed during the season whereon they obtained his/her better running performance. The mean value of range went from 5.8 and 4.4 mm for the LVIDd, and of 2.2 and 1.7 for the wall thickness; respectively for male and female runners. Individual analysis showed that LVIDd was associated with running performance in a 50% of runners ($p<0.05$). Wall thickness was negatively associated with performance in a 30% of runners, this relation was linked to LVIDd enlargement. These results represent an important criteria in considering extreme LV enlargement in elite runners to be a physiological adaptation and it leads on to thinking that the echocardiographic would be able to be utilized to determine the fitness of the athlete. However, this study's design and different difficult variables to control do that these conclusions should be taken like the start of a new field of study.

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