Left Ventricular Dimensions of Adolescent Males: A 12 Weeks Interval Training Report

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Abstract

The purpose of the study was to find out the effect of 12 weeks of interval training with 60-80% intensity for 5-15 repetitions of 400meters on left ventricular end diastolic diameter (LVEDD), left ventricular end diastolic volumes (LVEDV), left ventricular end systolic diameter (LVESD) and left ventricular end systolic volumes (LVESV) of adolescent males. Echocardiographic measurements in athletes should take into account the specific sport and the quantity and quality of training. Sixteen non-residential untrained male subjects (8 Experimental & 8 Control) ranging between 14-16 years were selected for the study. Before the 12 weeks training protocol two-dimensional and Doppler echocardiography was performed for measuring LVEDD, LVESD, LVEDV and LVESV of adolescent boys. Changes in all the parameters were insignificant in case of control group as the initial and final test means yielded lesser values than the tabulated value. The initial and final test means of LVEDD and LVEDV of the experimental group were 44.75cm, 45.5cm and 91.75ml and 95.38ml respectively and the mean difference were insignificant ($p>0.05$) whereas, ‘t’ value of LVESD and LVESV of the experimental group were 3.77 ($p <.05$) and 3.64 ($p <.05$) respectively. The result indicates that the 12 weeks interval training was effective for significant reduction of LVESD and LVESV values of the adolescent boys.

Key wards: LVEDD, LVESD, LVEDV and LVESV.

Introduction

Regular physical exercise induces changes in the body that are termed as physiological adaptations to increased loads. In general, these adaptations are favorable and enable the individual to increase physical performance capacity (*Macfarlance et al, 1991*). Adaptations of training include the structure and function of cardiovascular system in addition to its functional control (*Urhausen and Kindermann, 1992*). Strength training induces changes to pressure loads, whereas endurance training requires volume loads and elicits an increased maximal cardiac output, by increasing stroke volume (*Andersen et al, 2000 and Astrand et al, 2003*). It has been found that sports performance and training induced adaptations are determined mainly by genetic factors and to a limited extent by training (*Kuipers, 2005*).

All forms of athletic training are associated with left ventricular hypertrophy (LVH). However, the exact effects on cardiac structure and function depend upon the type of training (*Gilbert, 1977; Nishimura, 1980*). Endurance training exerts a volume overload on the left ventricle and produces left ventricular cavity enlargement with proportional increases in myocardial thickness (*Morganroth et al, 1975 and Longhurst, 1981*). Long-term athletic training is associated with cardiac morphological changes, including increased left