In the case of myocard infarction, E.F was corresponding to the degree of coronary artery stenosis, but P.M.T was within normal limits unless there was the evidence of pulmonary lesion. Lung lesions such as silicosis and chronic obstructive lung disease showed the tendency of prolongation of P.M.T, but E.F was unremarkable, at least, in early stage. Abnormal E.F was considered to be secondary heart disease damage by lung lesion. P.M.T was also prolonged in the various vulvar heart disease. This might be due to increased blood volume in pulmonary circulation or decreased in body. Left-to-Right cardiac shunt disease showed no significantly specific pattern, but a given tendency was noted, corresponding to the shunt rate and the degree of pulmonary hypertention. There was not also correlated between E.F and P.M.T in the patients of congestive heart failure and primary myocardial disease. This might be considered that these patients were well controlled by the treatment at the time of study.

As described above, there was not correlation between E.F and P.M.T, however, evaluation of them is indispensable to get the objective data compatible with other clinical findings, evaluating the effect of treatment, prognosis of the disease and follow-up study.

Effect of Exercise on Left Ventricular Performance:
Comparison between Athlete and Non-Athlete

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Left ventricular function was examined before and after the exercise with bicycle ergometer. Two cases of non-athletes and 10 cases of amateur athletes were evaluated, the latter group had history of daily road training for years.

High temporal resolution ECG gated analysis was performed after intravenous injection of $^{99m}$Tc-albumin to visualize intracardiac pool. Using scintillation camera-computer system and LIST mode data acquisition, sequential events during 20 msec intervals were continuously recorded for 1800 cardiac cycles before the exercise and for 350 cycles immediately after the exercise. From these sequential data, such indices were obtained as relative volume curve ($V(t)/V_{ED}$), ejection fraction (EF), relative volume velocity ($dV(t)/dt/V_{ED}$), maximum systolic volume velocity (MSVV) and maximum diastolic volume velocity (MDVV).

The mean value of EF before and after the exercise were 70.4 and 68.2% for middle-aged athletes, 61.3 and 70.6% for aged athletes, and 70.1 and 77.8% for middle aged non-athletes. The mean MSVV before and after the exercise were 3.7 and 5.6/sec in middle aged athletes, 3.7 and 4.6/sec in aged athletes, 5.0 and 7.0/sec in non-athletes. The mean MDVV before and after the exercise for three groups were 3.8 and 5.1/sec, 3.0 and 3.9/sec, 4.3 and 4.5/sec, respectively. Ejection fraction of non-athletes and aged athletes were increased significantly by the exercise, whereas EF remained normal in middle-aged athletes after the exercise. These results showed the significant effect of athletics on the left ventricular performance and the method proved to be of value for the evaluation of physiological function of the left ventricle.