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Serum Lactate Dehydrogenase (LDH) and Prolonged Exercise

— LDH-1 and Possible Heart Muscle Injuries after Prolonged Exercise —

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Prolonged swimming in the fresh water pool were chosen for the investigation of the influence of prolonged exercise on the changes in the blood Lactate Dehydrogenase (LDH) levels.

Fifteen students of the varsity swimming team at KEIO University performed prolonged swimming on July 5, 1982 as one of the preparatory training for the channel swimming between Ito and Shimoda (Shizuoka-ken) which was executed on July 27, 1982. Four subjects swam for 6 hours 30 minutes (6:30). Five subjects swam for 7 hours 30 minutes (7:30). Six subjects swam for 9 hours 30 minutes (9:30).

Five students of the varsity track and field team performed 1500 m and/or 5000 m races on July 5, 1982 which were chosen for the comparison of shorter time exercise.

Serum LDH were determined before and after the prolonged exercise (swimming) and track and field events. Serum LDH rose moderately after the 6:30 and 7:30 hours prolonged swimming, while that of the 9:30 hours swimming rose remarkably.

Isoenzymatic analysis revealed that most of the total LDH increment were due to increase of the LDH-5 and LDH-4 which originated from skeletal muscle. LDH-1 which originated from cardiac muscle increased significantly only in the subjects of 9:30 hours prolonged swimming. These sesults suggests that there may be a cardiac

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muscle injury in the subjects of 9:30 hours prolonged swimming.

LDH isoenzymatic analysis is very useful methods to detect the presence of cardiac muscle injury in the training subjects.