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CENTRAL AND PERIPHERAL BLOOD FLOW DURING EXERCISE IN VARYING CONDITIONS
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The distribution of the cardiac output may become an important factor which limits exercise in the heat. To study the relation between central and peripheral blood flow, four volunteer subjects underwent 20 min exercise bouts at 30, 50 and 70 per cent $\dot{V}O_2$ max in 25° and 35° environments. Each bout was performed on a separate day. Internal body temperature (T_{es}) was continuously measured from a thermocouple in the esophagus at the level of the right atrium. Eight skin surface temperatures were monitored once each minute, with mean skin temperature (T_{sk}) calculated from area and sensitivity weightings. Forearm blood flow (SkBF) was measured twice each minute by venous occlusion plethysmography, using an electrocapacitance technique. Cardiac output (\dot{Q}) was determined four to five times during each bout, using the CO_2 rebreathing technique. SkBF was linearly related to T_{es} at a given T_{sk} . The effect of increased T_{sk} was a parallel shift to the left of the SkBF/ T_{es} relation, i.e. lower T_{es} threshold for increased SkBF. \dot{Q} was proportional to $\dot{V}O_2$ during the early transient of exercise; however, \dot{Q} tended to increase during the course of exercise, as T_{es} and SkBF became significantly elevated. This increase in \dot{Q} with progressive exercise was primarily the result of an elevated stroke volume in the 25°C environment, when SkBF was not approaching very high levels (SkBF < 18 ml·min⁻¹·100 cm² forearm skin⁻¹). In the 35°C environment, when SkBF was significantly higher, increased \dot{Q} was the result of an elevated heart rate. We conclude that cardiac filling is not affected by different levels of SkBF during conditions of low and moderate thermoregulatory demand.

INTERHEMISPHERIC RELATIONS IN SPLIT-BRAIN MONKEYS.

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Split-brain monkeys (forebrain commissures and optic chiasm sectioned) have been compared with normal controls on two visual tasks, a color discrimination reversal and a nested match to sample. The nested match to sample consists of separate color and pattern match to sample problems intermixed such that one (color) starts before and ends after the other (pattern), thus nesting the pattern problem inside the color problem. The animals were tested on these tasks with one eye or both eyes open. The one eye condition directs visual information to only one hemisphere in the split animal. Results show the splits were much worse than normals in the one eye open condition but just as good with both eyes open. Since this stimulus information does not transfer between hemispheres in the split brain monkey, it is unlikely that cortical interhemispheric facilitation can explain the performance of these animals with both eyes open. Instead it is proposed that subcortical interhemispheric interference reduces the performance of the splits in the one eye condition. Thus the single hemisphere without such interference appears equal to the normal brain in certain information processing tasks. Additional confirmation comes from one hemispherectomized monkey whose performance on the nested match equals the normals.

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