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8 Cardiac output of children during submaximal exercise under different ambient temperatures

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The present study measured cardiac output (Q) in children during exercise at different ambient temperatures in order to investigate the effects of ambient temperature on this parameter. The values obtained were compared with the same measure in adults to clarify any differing characteristic features of Q in children.
Ten boys and nine girls, aged 10-1 1 years old, participated in the present experiment. All studies were carried out in a climatic chamber kept at 20, 30. and 4BC. with a relative humidity of 50%. Subjects exercised on a Monark bicycle.ergometer for **8** minutes, each at loads of 300 and 450 kg.m.min-1. Oxygen uptake (VO2) and carbon dioxide elimination (VCO_2) were determined by the Douglas bag method during 5-7 minutes of exercise. At the same time, heart rate (HR) was wunted from a bipolar chest lead ECG. Q was estimated by the Co_2 rebreathing method during the last seconds of an exercise period. The fraction of CO_2 was measured by a rapid infrared CO_2 meter (Godart Capnograph). The experiment was undertaken during fall and winter for boys, and during summer and fall for girls.

For a given VO_2 stroke volume **(SV)** tended to be reduced and HR increased in a 40^oC environment in both sexes. Accordingly, Q at 40^oC was maintained at a level similar to that in cooler conditions. A lower HR and a higher SV at a given VO_2 in boys was found to be similar to that in girls. The values of Q in relation to VO_2 in the children studied were compared with those in children and adults who had bee? previously studied. The children in the present study were found to have a (1 response corresponding to those of children of similar age already reported in the literature and to have a lower **Q co**mpared with most adults.