Maximum oxygen uptake (VO₂ max) is commonly used as an indicator of fitness in general and endurance capacity in particular. Furthermore, VO₂ max has often been the only criterion used to assess the efficacy of various training programmes. Available evidence suggests that while training may produce only modest improvements in VO₂ max they are accompanied by large improvements in endurance capacity (Williams, 1981). Therefore the aim of the present study was to re-examine the relationship between the improvements in VO₂ max and endurance capacity which occur with training.

Sixteen physical education students (10 female and 6 male) trained 3 times a week for 6 weeks on a treadmill at a speed equivalent to 90% of their pre-training VO₂ max. In addition to the VO₂ max tests, respiratory and metabolic responses to an endurance test were determined before, during and after the 6 weeks of training. The endurance test involved continuous running at speeds equivalent to 60%, 70% and 80% VO₂ max for 4 minutes at each speed, and then at 90% VO₂ max for as long as possible. Expired air and blood samples were collected after 4 minutes running at each speed and also at exhaustion. The overall improvements in VO₂ max and endurance capacity for the females were 4.5% and 178% (Table I) whereas the values for the males were 3.7% and 223% respectively. These results suggest that VO₂ max is an insensitive indicator of the training-induced improvements in endurance capacity of active male and female subjects.

Reference