

CHANGES IN METABOLIC RATE AND HEART RATE DURING MEDITATION

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There are a few ways in which man can consciously reduce his resting metabolic rate although during sleep there is a decrease of about 7%. There is evidence to suggest that meditation can reduce man's oxygen consumption (Orme - Johnson and Farrow 1977).

In this study there were nineteen adults (8 females and 11 males) aged from 18 to 67 years and weighing 50 to 85 kg that were practising meditation for a few months to 13 years. Measurements of heat production were made by indirect calorimetry using the confinement method (Lulaine 1894, cited by Brody 1945). Volunteers sat in a comfortable chair within the chamber (192 cm long x 72 cm wide x 152 cm high with a volume of 2218 l). Relative humidity was maintained at less than 70% by circulating chamber air (150 l min^{-1}) through a cold trap outside the chamber. Temperature within the chamber was controlled by heating and cooling coils. Temperature and humidity were measured as the integrated electrical output of 10 copper-constantan thermocouples sited at various points and were monitored on a recorder. Heart rate measurements were transmitted through wrist-plate electrodes and displayed on a meter located outside the chamber.

Following a 15 min period of adjustment, there were three 30 min measurement periods: during period 1, subjects were asked to rest, in period 2 to meditate, and in period 3 to rest again. Gas samples were taken initially, and after 30, 60 and 90 min. Heat production was calculated from the changes in volumes of oxygen and carbon dioxide of chamber air. The results are shown in Table 1.

TABLE 1 Mean (\pm SE) respiratory quotient, heat production and heart rate of 19 subjects measured for three 30-min periods before, during and after meditation.

	MEDITATION		
	Before	During	After
Respiratory quotient	$0.82^a \pm 0.02$	$0.82^a \pm 0.02$	$0.81^a \pm 0.02$
Heat production (kJ kg W^{-1} d)	$109.4^a \pm 3.9$	$98.9^b \pm 4.0$	$116.0^a \pm 4.5$
Heart rate (beats min^{-1})	$77.2^a \pm 2.8$	$73.3^b \pm 2.9$	$75.5^c \pm 2.7$

¹ Values with different superscripts (a-c) are significantly different ($P < 0.025$)

It is apparent that there was a 10% reduction in metabolic rate and a 5% reduction in heart rate during meditation. During the final 30 min metabolic rate returned to the pre-meditation value but there was still a significant ($P < 0.05$) reduction in heart rate.

BRODY, S. (1945). "Bioenergetics and Growth". Reinhold, New York.
 ORME-JOHNSON, D.W. and FARROW, J.T. (1977). "Scientific Research in the Transcendental Meditation Program". Vol. 1. Maharishi European Research University Press.

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