

Correspondence

Outdoor physical activity & cardiovascular health

Sir,

The article by Marwaha *et al*¹ on the effect of sports training on bone mineral density in young Indian healthy females carries the key public health message for the authorities to take note of, in preventing escalation of non-communicable disease risk factors in the younger age group in India. Apt timing of this publication coincided with the World Heart Day activities of 2011². This study looked at the effect of two important behavioural risk factors namely diet and physical activity on one of the major components of body composition namely bone mineral density. Exercise improves bones, builds muscles, and it is the best for cardiovascular health, especially in women³. Vitamin D deficiency seems to be universal and outdoor physical activity, in this study, doubles its blood levels¹.

Of the four behavioural risk factors for non-communicable diseases, namely the unhealthy diet, physical inactivity, tobacco use and alcohol consumption, the two risk factors, tobacco use and alcohol consumption are practically not observed in adolescent girls in India⁴. In adolescent women, two behavioural risk factors *viz.* unhealthy diet, and physical inactivity lay the foundation for four major non-communicable diseases, namely, diabetes, cardiovascular diseases, osteoporosis and cancer, which form the major reason for more than 50 per cent of morbidity and mortality in their life course⁵. The exponential increase in risk factors in women of child bearing age group is the outcome of the indulgence of adolescent children in unhealthy diet and physical inactivity⁶. This study also stresses the need for outdoor physical activity to improve the vitamin D status. We are now aware of the role of vitamin D in the genesis of adiposity, diabetes, and cardiovascular risk and this could be a factor in the ethnic differences in risk

profile⁷. These risk factors in pregnant women herald the early onset of diseases in the next generations, because of epigenetic reasons^{8,9}. Adolescence is the last opportunity to improve the body composition and helps to attain the best possible body composition as a mother¹⁰. Vitamin supplementation may not be enough, we need a stimulus for the bones and muscles to grow, and outdoor physical activity is the simple prescription which does all.

Two important aspects of non-communicable disease epidemiology in the developing world are the escalation of risk factors and diseases at a young age and failure of anthropometric markers of obesity to predict them^{11,12}. The loss of biological delay in the onset of cardiovascular risk factors and diseases in women in societies undergoing epidemiologic transition formed the basis of 'Go red for Women' campaign by the American Heart Association since 2004¹³. The State of Kerala heralds India in terms of health transitions¹⁴. Studies on acute coronary syndrome admissions in Kerala reveal a steady decline in the male to female ratio from 23:1 to 4:1 from 1967 to 2007^{12,15}. Breast cancer incidence has increased at least four times¹⁶. Several community surveys have shown that women suffer a heavy burden of non-communicable disease risk factors¹⁷. A survey done in children in Kerala has shown a peculiar step increase in systolic blood pressure in girls at adolescence, coinciding with social barriers which restrict physical activity in girls at puberty¹⁸. Gestational diabetes has increased four times in south India. In the recent epidemiologic survey in Kerala, 3.7 per cent of the people below the age of 30 yr were diabetic and all were women¹⁷.

The declining physical activity at adolescence has been correlated with increasing academic pressure²⁰. Vitamin D synthesis is 4 to 6 times less in dark pigmented people, and adolescent girls need 6 times

more vitamin D given their increased demands of growth, pregnancy and lactation²¹. Salt is an essential factor which contributes for acidification of the body, and loss of bone mineral density. Studies from India suggest almost double the recommended salt consumption^{22,23}.

Skeletal muscles contribute for more than 60 per cent of the body insulin sensitivity, contrary to the much discussed role of fat cells in insulin resistance²⁴. Low birth weight babies in India are not chubby, not because they lack fat, but because they lack the skeletal muscle²⁵. Maternal vitamin D levels, folate-B₁₂ levels, and dysglycaemia are documented intra-uterine risk factors. Outdoor physical activity is the best way to overcome many of these abnormalities. We need to take away the academic pressure from the adolescent children and they should have a physically active life to doze the wild fire of lifestyle diseases. There is a need to move away from the adipocentric approach to more biologic approach of assessing the body response to the epidemiologic transition.

Exercise builds muscles and bones, buffers the insult of high calorie nutrition and is the key for healthy ageing. No wonder, atherosclerosis is not a natural disease of animals, they remain physically active, indulge in natural foods and do not cover their body from the sun.

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