Much of the escalating burden of chronic disease in our ageing Australian population can be linked to physical inactivity and weight gain. Musculoskeletal disorders, depression, type 2 diabetes, cardiovascular disease and breast and colon cancer have multiple adverse (and potentially avoidable) consequences for individuals, families, the workplace and the health system. Broad-reaching preventive health approaches, informed by relevant research evidence, are needed. Studies in Australia have begun to join some of the dots linking environments, lifestyle and biology with the development of major chronic diseases. This is through a better understanding of the built-environment, social and economic factors that can influence the normal habits and choices of everyday life. We can take heart from having made internationally-leading progress in tobacco control over the past 40 years. The next big population-health challenges are to build the bases for comparable progress in relation to physical inactivity and the food supply. This lecture deals with emerging evidence, issues and implications for disease prevention and health promotion in the Australian population.