The role of epigenetics in cardiovascular health and ageing: A focus on physical activity and nutrition

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Résumé en anglais	The cardiovascular system is responsible for transport of blood and nutrients to tissues, and is pivotal to the physiological health and longevity. Epigenetic modification is a natural, age-associated process resulting in highly contextualised gene expression with clear implications for cell differentiation and disease onset. Biological/epigenetic age is independent of chronological age, constituting a highly reflective snapshot of an individual's overall health. Accelerated vascular ageing is of major concern, effectively lowering disease threshold. Age-related chronic illness involves a complex interplay between many biological processes and is modulated by non-modifiable and modifiable risk factors. These alter the static genome by a number of epigenetic mechanisms, which change gene expression in an age and lifestyle dependent manner. This 'epigenetic drift' impacts health and contributes to the etiology of chronic illness. Lifestyle factors may cause acceleration of this epigenetic "clock", pre-disposing individuals to cardiovascular disease. Nutrition and physical activity are modifiable lifestyle choices, synergistically contributing to cardiovascular health. They represent a powerful potential epigenetic intervention point for effective cardiovascular protective and management strategies. Thus, together with traditional risk factors, monitoring the epigenetic signature of ageing may prove beneficial for tailoring lifestyle to fit biology - supporting the increasingly popular concept of "ageing well".
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