

Publication

Untargeted sequencing of circulating microRNAs in a healthy and diseased older population

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We performed untargeted profiling of circulating microRNAs (miRNAs) in a well characterized cohort of older adults to verify associations of health and disease-related biomarkers with systemic miRNA expression. Differential expression analysis revealed 30 miRNAs that significantly differed between healthy active, healthy sedentary and sedentary cardiovascular risk patients. Increased expression of miRNAs miR-193b-5p, miR-122-5p, miR-885-3p, miR-193a-5p, miR-34a-5p, miR-505-3p, miR-194-5p, miR-27b-3p, miR-885-5p, miR-23b-5b, miR-365a-3p, miR-365b-3p, miR-22-5p was associated with a higher metabolic risk profile, unfavourable macro- and microvascular health, lower physical activity (PA) as well as cardiorespiratory fitness (CRF) levels. Increased expression of miR-342-3p, miR-1-3p, miR-92b-5p, miR-454-3p, miR-190a-5p and miR-375-3p was associated with a lower metabolic risk profile, favourable macro- and microvascular health as well as higher PA and CRF. Of note, the first two principal components explained as much as 20% and 11% of the data variance. miRNAs and their potential target genes appear to mediate disease- and health-related physiological and pathophysiological adaptations that need to be validated and supported by further downstream analysis in future studies. Clinical Trial Registration: ClinicalTrials.gov: NCT02796976 (<https://clinicaltrials.gov/ct2/show/NCT02796976>).

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