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## Physical Activity and Cardiometabolic Health: The ProPASS Consortium



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A recent study from UCL and the University of Sydney, supported by the British Heart Foundation (BHF) and published in the *European Heart Journal*, reveals that replacing sitting with just a few minutes of moderate exercise per day significantly enhances heart health. This research, the first evidence from the international Prospective Physical Activity, Sitting, and Sleep (ProPASS) consortium, evaluates the connection between heart health and different movement patterns throughout a 24-hour day.

Cardiovascular disease is the leading cause of mortality worldwide. In 2021, it accounted for one in three deaths (20.5 million), with coronary heart disease alone being the primary contributor. Since 1997, the worldwide population living with cardiovascular disease has doubled.

In this investigation, UCL researchers examined data from six studies involving 15,246 individuals from five countries to explore the association between movement behaviours throughout the day and heart health. Six common indicators were used to measure heart health. Participants used a wearable device on their thigh to track their activity over the 24-hour day.

The researchers identified a hierarchy of behaviours constituting a standard 24-hour day. Engaging in moderate-vigorous activity emerged as the most beneficial for heart health, followed by light activity, standing, and sleeping. In contrast, sedentary behaviour had an adverse impact on heart health.

The researchers simulated the impact on heart health when an individual substituted varying amounts of one behaviour for another each day over a week. When replacing sedentary behaviour, as little as five minutes of moderate-vigorous activity had a noticeable positive effect on heart health.

Dr Jo Blodgett, the primary author of the study from UCL Surgery & Interventional Science and the Institute of Sport, Exercise & Health, emphasized, "Our research underscores that even small changes in movement can positively impact heart health, but the intensity of the movement is crucial. The most beneficial change observed was substituting sitting with moderate to vigorous activity—such as running, brisk walking, or stair climbing—essentially any activity that elevates heart rate and induces faster breathing, even if just for a minute or two".

The researchers highlighted that while vigorous activity is the quickest way to enhance heart health, individuals of all abilities can benefit. The key is that lower-intensity activities require more time to show tangible benefits. Those with lower activity levels were found to experience the greatest benefits when transitioning from sedentary behaviours to more active ones.

While the findings do not establish causality between movement behaviours and cardiovascular outcomes, they contribute to an expanding body of evidence linking moderate to vigorous physical activity over 24 hours to improved body fat metrics. Long-term studies will be essential for comprehensively understanding the associations between movement and cardiovascular outcomes.

Exercise has proven cardiovascular benefits, and the research suggests that even minor adjustments to daily routines can reduce the risk of heart-related issues. The study indicates that substituting a few minutes of sitting with moderate activity can positively impact BMI, cholesterol, waist size, and overall physical well-being.

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