



## Physical activity in the evening shown to improve glucose regulation in overweight and obese adults

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News

**The results, obtained by a team of scientists from the University of Granada (UGR), could have multiple practical implications, especially for people at risk of developing insulin resistance or type 2 diabetes.**



The UGR's PROFITH CTS-977 Research Group, in collaboration with the "San Cecilio" and "Virgen de las Nieves" University Hospitals in Granada; the Public University of Navarre; the Centre for Networked Biomedical Research on Physiopathology of Obesity and Nutrition (CIBEROBN); and the Centre for Networked Biomedical Research on Frailty and Healthy Ageing (CIBERFES), has studied the effect of accumulating moderate-to-vigorous physical activity on glucose levels in overweight and obese adults.

Physical activity is known to have a positive effect on glucose regulation, but does it matter what time of day we do it? The study, which set out to answer this question, was led by researchers Antonio Clavero-Jimeno and Jonatan Ruiz from the UGR's Department of Physical Education and Sports (Faculty of Sport Sciences) and the Sport and Health University Research Institute (iMUDS). They explain that it was previously unknown whether being more active at a particular time of day (morning, afternoon or evening) could maximise the cardiometabolic benefits of physical activity. "Choosing the ideal time of day seems to be an emerging strategy to enhance the benefits of physical activity on glucose metabolism, especially for those with insulin resistance or at risk of developing type 2 diabetes," the researchers note.

The results of the study show that accumulating more moderate-to-vigorous physical activity in the evening, i.e. between 18:00 and 00:00, appears to have a positive effect on glucose regulation in men and women who are overweight or obese. In addition, the benefits of physical activity are greater in people who have some form

of impaired glucose metabolism, such as elevated levels of glucose, glycated haemoglobin and/or fasting insulin resistance index. The results were similar for both men and women.

A total of 186 overweight or obese adults (50% of whom were women) with an average age of 47 years took part in the study. These participants wore an accelerometer and a continuous glucose monitor for 14 days in order to measure their physical activity and glucose levels 24 hours a day. Days were classified as “inactive” if no physical activity was recorded; as “morning”, “afternoon” or “evening” if more than 50% of the recorded minutes of physical activity for that day were registered between 6:00-12:00, 12:00-18:00 or 18:00-00:00, respectively; or as “mixed” if none of these defined time periods accounted for more than 50% of the physical activity for that day.

The results could have several practical implications, especially for those at risk of developing insulin resistance or type 2 diabetes, and highlight the importance of considering the time of day when prescribing physical activity. This information may be crucial in improving the effectiveness of exercise interventions in these groups.

#### **Bibliographic reference:**

Clavero Jimeno, A., Dote-Montero, M., Migueles, J. H., Camacho-Cardenosa, A., Osés, M., Medina, J. E., Alcántara, J. M. A., Muñoz-Torres, M., Labayen, I., & Ruiz, J. R. (2024). Impact of lifestyle moderate-to-vigorous physical activity timing on glycemic control in sedentary adults with overweight/obesity and metabolic impairments. *Obesity (Silver Spring, MD.)*, 10.1002/oby.24063. Advance online publication. <https://doi.org/10.1002/oby.24063>

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