

Increased motor activity linked to improved mood

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Increasing one's level of physical activity may be an effective way to boost one's mood, according to a new study from a team including scientists at Johns Hopkins Bloomberg School of Public Health in collaboration with the National Institute of Mental Health Intramural Research Program.

The findings were published online December 12 in *JAMA Psychiatry*.

The researchers found that increases in [physical activity](#) tended to be followed by increases in mood and perceived [energy level](#). This [beneficial effect](#) was even more pronounced for a subset of the study subjects who had bipolar disorder. For the study, [activity trackers](#) and electronic diaries were used for two weeks in a community sample of 242 (150 women and 92 men) adults, ages 15 to 84, with an average age of 48 years. The sample included 54 people with bipolar disorder.

Mobile assessments in the study included wrist-worn devices that automatically recorded levels of physical movement in real time and electronic diaries that assessed mood and perceived energy levels four times per day for two weeks. These real-time mood and energy levels were rated by [study participants](#) on a seven-point analogue scale from "very happy" to "very sad" for mood and from "very tired" to "very energetic" for energy.

"Systems regulating sleep, motor activity and mood have typically been studied independently. This work demonstrates the importance of examining these systems jointly rather than in isolation," says Vadim Zipunnikov, Ph.D., an assistant professor in the Bloomberg School's Department of Biostatistics, who led the data analyses.

The findings showed that on average a higher activity level at one time-point was associated with improved mood and increased perceived energy at the next time-point during the day. (The daily time-points were personalized according to the person's daily schedule, with one in the morning, at lunchtime, at dinnertime and before bed.) Likewise, increased energy at one time-point was associated with increased activity at the next time-point. Importantly, these associations controlled for the current levels of mood, energy and activity, respectively.

Activity was inversely associated with sleep duration—more activity tended to be followed by less sleep that night, and more sleep tended to be followed by less activity the next day.

Tracking sleep, activity, mood and [energy](#) concurrently was particularly important in people with bipolar disorder because the changes in internal psychological states were strongly influenced by both sleep and physical activity. Many of the current interventions for [mood](#), sleep, and physical activity focus on only one of these systems rather than considering the collective impact across multiple systems.

Bipolar disorder affects nearly three percent of the U.S. adult population; depression is even more common, affecting about eight percent of U.S. adults in a given year. The research team is interested in applying this work to interventions that could offset depressive episodes in people with [bipolar disorder](#).

"This study exemplifies the potential for combining the use of physical-activity trackers and electronic diaries to better understand the complex dynamic interrelationships among multiple systems in a real-time and real-life context," says Dr. Zipunnikov.

The team is now exploring how physical activity and sleep interplay with pain, stress and alcohol use through an international consortium, Motor Activity Research Consortium for Health, to increase the generalizability and power of this work.

Provided by Johns Hopkins University Bloomberg School of Public Health

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