Whole body cryostimulation may be a useful extra treatment for obesity

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Whole body cryostimulation is a useful "add-on" treatment for obesity, research being presented at the European Congress on Obesity (ECO) in Dublin, Ireland (17-20 May) suggests.

Levels of cholesterol and other blood fats improved twice as much in individuals living with obesity who were exposed to extreme cold for a short period of time, compared with individuals given a sham treatment.

Those who had whole body cryostimulation (WBC) also experienced a greater reduction in waist circumference and in blood sugar levels.

Dr. Jacopo Fontana, of the Istituto Auxologico Piancavallo IRCCS, Italy, said, "We know from previous research that WBC can have powerful effects on the human body."

"It can increase the activity of the parasympathetic nervous system, as well as act as a novel anti-inflammatory and antioxidant treatment, which together can have beneficial effects on body composition including the proportion of adipose tissue."

"A growing body of work suggests that WBC is useful adjuvant, or add-on, therapy for a range of conditions, namely rheumatoid arthritis, fibromyalgia, multiple sclerosis, inflammatory musculoskeletal conditions and long COVID."

"We wanted to investigate its potential adjuvant role in the treatment of obesity."

Dr. Fontana and colleagues studied the effect of WBC on body composition, blood pressure, heart rate variability, lipid and hematological profiles and physical performance in individuals living with obesity.

29 participants (12 men and 17 women, BMI >30 kg/m^2) were hospitalized for a multidisciplinary rehabilitation program (which included a personalized diet plan, psychological support and supervised physical activity) and non-randomly allocated either to a group receiving

10 2-min WBC sessions at minus 110°C in a cryochamber over two weeks (WBC) or a control group receiving the same intervention at non-cryostimulating temperatures of minus 55°C (SHAM).

Regular vocal and eye contact was maintained with the patients, who wore minimal clothing, including a t-shirt, shorts and plastic clogs, and had removed glasses, contact lenses and metal jewelry before entering the walk-in chamber.

Triglycerides, total cholesterol and HDL and LDL cholesterol levels fell in both groups, but the decreases were twice as great in the WBC group. After two weeks, average triglyceride levels had fallen by 17% in the WBC group, compared with 8.7% in the SHAM group, total cholesterol (20.2% decrease in WBC group vs. 9.4% decrease in the SHAM group), HDL (12.7% decrease vs. 6.3% decrease), LDL (24.7% decrease vs. 10.5% decrease).

Similarly, blood glucose levels (10.3% decrease vs. 2.8% decrease) and waist circumference (5.6% decrease vs. 1.4% decrease) fell in both groups but the decreases were much greater in the WBC group.

It is thought that these results are due to the low temperatures promoting the conversion of white adipose tissue to brown adipose tissue. In cold temperatures, brown fat breaks down sugar (glucose) and molecules of fat to create heat to help maintain body temperature.

Diastolic blood pressure decreased more in the WBC group (9.9% decrease vs. 3.9% decrease), while heart rate decreased in the SHAM group but increased in the WBC group.

Physical performance, measured in tests of hand grip strength and walking speed, improved to the same extent in both groups.

Activity of the parasympathetic nervous system, the branch of the autonomic nervous system that relaxes the body after periods of stress and controls heart rate, blood pressure, digestion and other "automatic" (involuntary) responses during times of rest, increased in both groups but the increase was greater in the WBC group.

Dr. Fontana says, "Activity of the parasympathetic nervous system, or parasympathetic tone, is associated in clinical studies with mental and physical well-being and a lower risk of mortality, particularly with regard to cardiovascular disease."

"An increase in parasympathetic tone, as seen here, has potential short and long-term health benefits for participants."

The researchers conclude that the temperature of minus 110°C in the WBC group induced stronger effects on metabolic and hematological profiles (glucose and lipids), body composition (waist circumference) and vital signs than the minus 55°C experienced by the SHAM group.

Dr. Fontana adds, "Our results indicate that whole body cryostimulation is beneficial in the treatment of obesity. The improvements in blood fats and glucose were particularly striking but larger studies of a longer duration are needed to confirm these preliminary results."

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