

Controlling Blood Glucose Through Biofeedback and Relaxation Therapy

[Biofeedback-assisted relaxation in type 2 diabetes, by R.A. McGinnis and colleagues. Diabetes Care 28:2145–2149, 2005.](#)

<http://www.diabetes.org/diabetes-research/summaries/mcginnis-biofeedback-relaxation.jsp>

What is the problem and what is known about it so far?

Everyone experiences stress in their lives. For people with type 2 diabetes, stress can prevent them from being able to keep their blood glucose at a normal level. This can lead to a cycle of stress and poor health that can result in long-term problems related to diabetes, such as heart disease, eye disease, and kidney failure.

Why did the researchers do this particular study?

Stress management can include exercise, meditation, or relaxation techniques. Biofeedback is a type of therapy that uses a machine to measure the body's responses to stress. The machine records changes in the body due to stress, such as a rise in skin temperature or tense muscles, and helps the patient to learn how to control their body's reactions to stress. Researchers wanted to find out whether biofeedback could be combined with relaxation therapy, a technique that lowers stress through deep breathing and soothing images, to lower short-term and long-term blood glucose levels.

Who was studied?

A total of 30 adults with type 2 diabetes completed the 3-month study.

How was the study done?

The study participants took either 10 individual sessions of biofeedback and relaxation therapy or 3 individual diabetes education sessions. Before the survey began, each person recorded their blood glucose levels two times a day for 4 weeks. This information was used to measure each person's average blood glucose level. Then, the researchers measured signs of their stress levels, including skin temperature and muscle tension. Each person completed a survey about their medical history and exercise habits. They also answered questions

about their mental health to see if they had depression or anxiety. After the sessions ended, they measured their blood glucose levels again for 4 weeks, and the researchers compared their blood glucose levels before and after the study.

What did the researchers find?

Biofeedback and relaxation therapy helps patients to change their physical and mental responses to stress, which both play roles in controlling blood glucose levels. For example, the chemical cortisol is released when a person experiences stress, and researchers know that cortisol causes the body to not absorb insulin properly. The people who took the biofeedback and relaxation therapy had much lower short-term and long-term blood glucose levels than the people who completed the education sessions. They also lowered their muscle tension, depression, and anxiety more than the people in the education session. And, those who took part in biofeedback and relaxation therapy were able to maintain better glucose levels for longer times. When the researchers checked up with each person 2 months after the study, they found that the people who took biofeedback and relaxation therapy continued to manage their glucose levels better than the people who took the education sessions.

What are the limitations of the study?

The study groups were small, and there were few minority participants, so the results may not apply to the general population. The people who took part in biofeedback and relaxation therapy had more sessions than those who had education only, which may have affected the results. The researchers checked up with the people for only 2 months, which means that they are not sure if their results will apply for a longer time.

What are the implications for the study?

Biofeedback and relaxation therapy can help people with type 2 diabetes manage their blood glucose levels. Better blood glucose management can reduce the chances of suffering from complications from diabetes. Biofeedback and relaxation therapy can also help lower anxiety and improve mental health.

FOR MORE INFORMATION

[Type 2 Diabetes](#)

[Diabetes Burnout: What to Do When You Can't Take It Anymore, 2nd edition, by William H. Polonsky \(Alexandria, VA, ADA, 2005\)](#)

[Stress management improves long-term glycemic control in type 2 diabetes, by R.S. Surwit and colleagues. Diabetes Care 25:30–34, 2002.](#)

