

Exercise and diabetes: How physical activity can improve your health.

John Stepway*

Department of Experimental Pathology, Conway Institute of Biomedical Research, University College Dublin, Ireland

Introduction

Diabetes is a chronic condition that affects millions of people worldwide. It occurs when the body cannot properly regulate blood sugar levels, leading to either insufficient insulin production (type 1 diabetes) or insulin resistance (type 2 diabetes). Managing diabetes involves monitoring blood sugar levels, eating a balanced diet, and, most importantly, engaging in regular physical activity. Exercise plays a crucial role in managing diabetes, improving overall health, and enhancing the quality of life for individuals living with this condition [1].

Diabetes can lead to serious health complications if left uncontrolled, including heart disease, kidney damage, nerve damage, and vision problems. Type 2 diabetes, in particular, is often linked to lifestyle factors such as obesity, physical inactivity, and poor diet. Insulin resistance, a hallmark of type 2 diabetes, occurs when the body's cells no longer respond effectively to insulin, leading to elevated blood sugar levels. In people with type 1 diabetes, the body's immune system attacks the insulin-producing cells in the pancreas, resulting in a complete lack of insulin [2].

Managing blood sugar levels is essential to reducing the risk of complications associated with diabetes. While medication plays a crucial role, exercise offers numerous benefits that can help improve blood sugar control and overall health [3].

Exercise helps regulate blood sugar by improving insulin sensitivity. When you engage in physical activity, your muscles use glucose for energy, which lowers blood sugar levels. Regular exercise can also improve insulin sensitivity, meaning your cells become more responsive to insulin, allowing for better glucose uptake and more stable blood sugar levels [4].

One of the most significant benefits of exercise for people with type 2 diabetes is increased insulin sensitivity. Insulin sensitivity refers to how efficiently the body responds to insulin. Regular physical activity enhances the body's ability to use insulin more effectively, which helps maintain blood sugar levels within the desired range. Improved insulin sensitivity reduces the need for high levels of insulin, which is particularly beneficial for individuals with type 2 diabetes who often experience insulin resistance [5].

Exercise is a key component of weight management. Excess body weight, especially abdominal fat, is a major risk factor for developing insulin resistance and type 2 diabetes. By

engaging in regular physical activity, individuals can burn calories, reduce body fat, and increase lean muscle mass. Even a modest weight loss of 5-10% can significantly improve blood sugar control and reduce the risk of complications related to diabetes. This is particularly important for individuals with prediabetes, a condition where blood sugar levels are higher than normal but not yet high enough to be diagnosed as diabetes [6].

People with diabetes are at a higher risk of cardiovascular diseases, such as heart disease and stroke, due to the impact of elevated blood sugar on blood vessels. Exercise helps reduce this risk by improving cardiovascular health. Aerobic activities, such as brisk walking, swimming, or cycling, strengthen the heart, reduce blood pressure, and improve cholesterol levels. In addition, regular physical activity can help prevent other common complications of diabetes, such as peripheral artery disease and poor circulation [7].

Managing stress is essential for diabetes control, as stress hormones like cortisol can raise blood sugar levels. Exercise serves as a natural stress reliever by releasing endorphins, which are chemicals in the brain that promote feelings of well-being. Physical activity can also improve sleep quality, which further supports blood sugar regulation. As a result, individuals with diabetes may experience improved emotional health and better overall management of their condition [8].

Diabetes can lead to serious health complications if left uncontrolled, including heart disease, kidney damage, nerve damage, and vision problems. Type 2 diabetes, in particular, is often linked to lifestyle factors such as obesity, physical inactivity, and poor diet. Insulin resistance, a hallmark of type 2 diabetes, occurs when the body's cells no longer respond effectively to insulin, leading to elevated blood sugar levels. In people with type 1 diabetes, the body's immune system attacks the insulin-producing cells in the pancreas, resulting in a complete lack of insulin [9].

Managing blood sugar levels is essential to reducing the risk of complications associated with diabetes. While medication plays a crucial role, exercise offers numerous benefits that can help improve blood sugar control and overall health [10].

Conclusion

Exercise is a powerful tool in managing diabetes. By improving blood sugar control, increasing insulin sensitivity, aiding in weight management, and reducing the risk of cardiovascular

*Correspondence to : John Stepway, Department of Experimental Pathology, Conway Institute of Biomedical Research, University College Dublin, Ireland. E-mail: sbt@ptl22

Received: 02-Dec-2024, Manuscript No. AADY-25-157985; Editor assigned: 03-Dec-2024, PreQC No. AADY-25-157985 (PQ); Reviewed: 15-Dec-2024, QC No. AADY-25-157985; Revised: 19-Dec-2024, Manuscript No. AADY-25-157985; Published: 26-Dec-2024, DOI: 10.35841/aady-8.6.233

complications, physical activity enhances both short-term and long-term health. For individuals with diabetes, engaging in regular exercise can significantly improve quality of life and reduce the risk of complications. As always, it is essential to consult a healthcare provider before starting a new exercise regimen, especially for those with diabetes or other health conditions.

References

1. Roglic G. WHO Global report on diabetes: A summary. *International Journal of Noncommunicable Diseases*. 2016 Apr 1;1(1):3-8.
2. Winer N, Sowers JR. Epidemiology of diabetes. *The Journal of Clinical Pharmacology*. 2004 Apr;44(4):397-405.
3. Mokdad AH, Ford ES, Bowman BA, Nelson DE, Engelgau MM, Vinicor F, Marks JS. Diabetes trends in the US: 1990-1998. *Diabetes care*. 2000 Sep 1;23(9):1278-83.
4. Ramachandran A, Ma RC, Snehalatha C. Diabetes in asia. *The Lancet*. 2010 Jan 30;375(9712):408-18.
5. Mather HM, Nisbet JA, Burton GH, Poston GJ, Bland JM, Bailey PA, Pilkington TR. Hypomagnesaemia in diabetes. *Clinica Chimica Acta*. 1979 Jul 16;95(2):235-42.
6. Tamayo T, Rosenbauer J, Wild SH, Spijkerman AM, Baan C, Forouhi NG, Herder C, Rathmann W. Diabetes in Europe: an update. *Diabetes research and clinical practice*. 2014 Feb 1;103(2):206-17.
7. Rubin RR, Peyrot M. Quality of life and diabetes. *Diabetes/ metabolism research and reviews*. 1999 May;15(3):205-18.
8. Lago RM, Singh PP, Nesto RW. Diabetes and hypertension. *Nature clinical practice Endocrinology & metabolism*. 2007 Oct 1;3(10):667-8.
9. Buse JB, Caprio S, Cefalu WT, Ceriello A, Del Prato S, Inzucchi SE, McLaughlin S, Phillips GL, Robertson RP, Rubino F, Kahn R. How do we define cure of diabetes?. *Diabetes care*. 2009 Nov 1;32(11):2133-5.
10. Nathan DM. Diabetes: advances in diagnosis and treatment. *Jama*. 2015 Sep 8;314(10):1052-62.