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A Novel Approach to Self-Directed Healing with Diabetes

By Evan Soroka

As the rates of type 1 diabetes (T1D) and type 2 diabetes (T2D) continue to increase in the United States and globally, more people and their families are subject to the intense and relentless demands of managing the conditions, often for the rest of their lives. The current standard of diabetes care—emphasizing glycemic control and education about risks—is not sufficient to ensure positive outcomes. There is a need for a multidimensional approach focusing on stress reduction, emotional health, and positive coping strategies to transform the burden of diabetes management into personal empowerment and resilience.

The prevalence of diabetes and the concomitant low rates of patient compliance with medical regimens point to a need for yoga therapy programs conducted by therapists trained and competent in diabetes care as an important support strategy in all aspects of diabetes management.

A Growing Need for Personalized Care

Diabetes is a progressive and pervasive disease that affects virtually every organ. It is also a metabolic disorder, where the body cannot produce or use the hormones necessary for digestion and energy distribution. Although all chronic diseases are burdensome, few require such personal attention and lifestyle modifications as diabetes.

Unlike with many major and chronic diseases, people with diabetes, regardless of type, have the definitive power to positively affect their health outcomes through their lifestyle choices. Patient adherence to medical recommendations is an essential part of ensuring longevity and quality of life, reducing the risk of severe complications and early mortality. Specific health-promoting behaviors—such as medication compliance, diet, physical activity, and blood glucose self-monitoring—are recommended to reduce hemoglobin A1c levels and maintain glycemic control.¹

Despite significant advancements in diabetes health, including technological improvements and widespread education, only half of those diagnosed with diabetes meet the medical recommendation of A1c levels < 7.0%, blood pressure < 130/80 mm Hg, and low-density lipoprotein (LDL) cholesterol < 100 mg/dL. Just 1 in 5 adults with diabetes meets all three requirements.¹ Although not the be-all-end-all metric for diabetes success, the ABCs (A1c, blood pressure, cholesterol) are helpful indices to predict diabetes and other risks over the lifespan. People with diabetes are at a greater risk of developing heart disease, cancer, Alzheimer's disease, stroke, and neuropathy.

Stress plays an important role in the causes and complications of diabetes. People with diabetes are 2 to 3 times more likely to be diagnosed with depression and anxiety disorders, which can directly and indirectly impact self-management, perpetuating a vicious cycle of dysregulation, sensitivity to stress, and negative behavioral outcomes.

This article celebrates the possible intersection of diabetes and yoga therapy as a viable adjunct to the standard of diabetes care in the healthcare and institutional sectors. Yoga therapy's individual-

ized and multidimensional approach to complete health may make it a cost-effective intervention and prevention strategy for helping people with diabetes and those who work with them improve outcomes, longevity, and quality of life. Although more research is needed, studies show that yoga improves both metabolic and psychological risk profiles by increasing physical activity, strength, and weight loss² and by reducing A1c levels.³ The all-important indirect effects may be improved mental health and empowerment—the perceived ability to cope with diabetes management while maintaining a positive attitude.

Marieke Van Puymbroeck, PhD, a researcher and recreational therapist at Clemson University, says,

There is something about yoga that acts positively and brings people back to their previous level of functioning. Yoga is being incorporated and funded by healthcare institutions because they recognize the importance of patient happiness and quality of life. When they feel better, they do better.

Van Puymbroeck's work studying yoga's effect on adults with diabetic peripheral neuropathy shows a positive correlation with yoga and life-function improvement. Participants reported a greater sense of confidence and an increased engagement in daily life activities and participation.⁴

Two Main Types, Many Effects

T1D is an autoimmune condition where the immune system destroys the body's own insulin-producing pancreatic beta cells. People with T1D are insulin-dependent, requiring subcutaneous administration of exogenous insulin via injections or insulin pumps. The presence of synthetic insulin increases risk for hypoglycemia (low blood sugar events). All people who take insulin are at risk for hypoglycemia, but people with T1D are at a higher risk because they have to take multiple insulin injections a day. Any physical activity, even ones as simple as cleaning the house or taking an exercise class, requires skillful and intuitive insulin adjustments to keep levels in control.

Hypoglycemia is a central challenge for people with T1D every single day, and its mitigation is essential for improved metabolic control. Low blood sugar symptoms are physically uncomfortable: extreme hunger pangs, dizziness, disorientation, and profuse sweating, to name a few. When left untreated, hypoglycemia can result in immediate death. Given its physiological (sympathetic overdrive) and psychological (fear of death) costs, learning to reduce the occurrence of hypoglycemia and empowering individuals to recover from it are both essential.

Whereas hypoglycemia is insufficient glucose with an immediate risk for fatality, hyperglycemia is more insidious. Its effects are slow, progressive, and often unrecognizable because a person's neuroendocrine responses have adapted to living with high levels of circulating glucose. If an individual typically has a normal range and suddenly experiences a spike in their numbers, they will notice side-effects of hyperglycemia like physical lethargy, mental fogginess,

dramatically heightened emotions, thirst, and profuse urination. Otherwise, the side-effects of hyperglycemia can go unnoticed and untreated for years.

T2D cases represent 95% of diagnosable diabetes and constitute a progressive disease characterized by insulin resistance and hyperglycemia. Although people with T1D can also experience insulin resistance from the insulin they inject, people with T2D are by definition insulin resistant. Their bodies still produce insulin but cannot utilize it efficiently; thus, they produce more insulin to cover energetic demand and exhaust their production capabilities. Treatment for T2D is about helping the body do its job and involves lifestyle modifications, including diet and exercise, combined with oral medications that either help the pancreas produce more insulin or block the liver from releasing glycogen (glucose in a readily mobilized storage form).

Diabetes accounts for the second largest total of avoidable healthcare costs in the United States, estimated at \$24.6 billion in unnecessary spending.⁵ Studies bolster the obvious logic that increased patient adherence to diabetes management requirements is associated with decreased costs. It is also self-evident that increased adherence correlates with better health outcomes. In T2D patients, every 25% increase in medical adherence results in a 0.34% reduction in A1c.⁶ (That small number belies the significant health effect of such a decrease in A1c.)

Redefining Health in Diabetes

Arguably, focusing more on self-management strategies and decision support would revolutionize diabetes care and the health of those with the disease. It is not enough to tell people what they have to do and the risks if they don't. They must not only want to make the changes; they must feel like they can. As an adjunctive method, yoga therapy stands to provide patients with a sense of control and hope, increasing resilience to diabetes stressors and empowering action.

Linda Stern Lang, C-IAYT, a yoga therapist who has taught programs at the Smithsonian Institution, notes, "What we're teaching people to do is to make intelligent choices. Yoga is the language of hope. We have to teach them the vocabulary of hope. That vocabulary informs them." Lang reiterates a growing need to clarify self-help as lifestyle medicine, with small, definitive goals. "When we help people speak our language, that of yoga," she says, "their

lifestyle choices are more compatible with the goals they have."

Everyone arrives at a diagnosis with a unique constitution and learned impressions. They see the world, themselves, and diabetes through a lens colored by personal experiences and by the physiological effects of high and low blood sugars. To get good at managing diabetes requires a lot of trial and error.

You can do everything you are supposed to and still get it wrong. Every mis-step stands to perpetuate mistaken beliefs about inevitability and lack of choice. By providing more people with positive tools and experiences, we can support the whole person by encouraging self-sufficiency.

A yoga therapy approach fills a particular void in the diabetes medical model for health, addressing the essential but less prioritized pillars of diabetes management like stress reduction, energy management, sleep, mental health, and behavioral modifications. The cumulative result of practice instills essential attributes often missing from the standard of care: self-awareness, self-regulation, and self-efficacy. Although these qualities are universally beneficial, in diabetes care their specific application may be a lifesaver, with the hoped-for result being support to awaken perception, personal responsibility, resilience, and self-mastery.

What We Can Do

As yoga therapists, we look for doorways into each client to help them become the conduits for their own healing. When working with people whose diseases have diverse presentations, such as diabetes, it is essential to ask ourselves how we can create the most positive change with the least amount of wasted effort. Yoga postures are adaptable to suit personal needs, even within a small-group class; so, too, are

the duration and intensity of practices. Breathing practices are among the most effective and accessible ways of influencing physiological change without physical effort.

Often a practice is geared toward the big picture, focusing on general prevention of health problems rather than on disease-specific interventions. Prevention starts with awareness. People need small goals to feel successful and to encourage repeat attendance. If we can teach people how to become more aware of their bodies, emotions, and behavior, we can help them understand the value of consistent practice.



Judi Bar, lead yoga therapist at Cleveland Clinic's Department of Wellness and Preventive Medicine, collaboratively works with physicians, psychologists, and other wellness providers to create programs for a variety of disease processes. She emphasizes clarity by meeting patients with simplified communication, which usually means omitting Sanskrit and complicated medical terms. "What is important in a group setting is for people to feel safe and communicate how they feel," says Bar. "It is the role of the therapist to maintain a positive, supportive note at all times" and to keep the group focused on how they can make changes by and for themselves with simple, easy-to-understand tools.

It is not the scope of the yoga therapist to inform diet or diabetes management recommendations. That is the role of the dietitian and diabetes educator. Our job is to work in conjunction with these professionals, providing additional self-management support.

We can teach patients interventions to self-regulate and reduce the physical and mental cost of recovering from blood glucose extremes. A strategy could be to teach energetic recovery techniques to increase vitality and provide support strategies for improving appropriate responses during hyper- or hypoglycemia. An example of this would be discussing how to remain calm amid discomfort, teaching pacifying breath techniques, and inviting awareness of internal cues that signify the onset of hypoglycemia.

As people with diabetes have an increased chance of developing anxiety and depressive disorders, mental health strategies like stress reduction and behavioral therapy are always central to constructing practices. Even if a patient is not clinically depressed, they can experience diabetes burnout or diabetes distress. In these subclinical yet highly detrimental disorders, individuals exhibit anxiety or depressive symptoms toward diabetes-specific circumstances. One helpful intake assessment for risk is the Problem Areas in Diabetes scale.

Self-care behaviors supported by yoga practices and applicable philosophy like the *yamas* and *niyamas* (yogic codes of conduct) can increase physical and mental awareness, teach adaptation skills, and build trust. When people recognize the mechanisms underlying their suffering and recognize their ability to change how they feel, think, and behave, they are empowered to take charge of their lives and partake in activities they would otherwise say no to. Self-care is no longer a burden because the intention has shifted within and awakened an appreciation for life.

The ultimate goal is health. Health comes in many forms, but essentially, we want people to develop a relationship with diabetes and, through diabetes, a relationship with Self. The Sanskrit term *svastha* means to dwell in one's Self, within one's own nature, while not attaching to changing circumstances beyond our control.

The Future of Diabetes Care

There is enormous room for improvement in how healthcare views, copes with, and treats diabetes. We can implement proactive systems that focus on keeping people well rather than responding only when they are already sick—a salutogenic versus pathogenic approach. By adding supportive care strategies that focus on individual well-being, we teach people how to have a working relationship with diabetes and with themselves.

The chronic care model⁷ provides a straightforward, evidence-based method for improving care in health systems at the commu-

nity, organizational, practice, and patient levels with outpatient interventions like those we provide in yoga therapy. Merging healthcare and community outreach, including group practices, results in healthier patients, more satisfied providers, and reduced costs.

Lifestyle interventions are highly successful within the diabetes population when they combine self-management tools and community support. There is something about personal connection that sparks accountability; people learn from the experiences of fellow participants. Bar speaks to the power of the community effect, saying, "There is an efficiency of like circumstances meeting together as a community. There is feedback from others. A person can speak to their experience, and another person hears it, and understands that they can do it, too."

One of the benefits of COVID is the transformation of in-person group programming to telehealth classes. Telehealth yoga therapy programs can reach a broader, more diverse audience due to their convenience and accessibility. People who have never tried yoga may be more apt to experiment in the familiarity of their homes.

There are still many hurdles to overcome. Despite growing research on the viability of yoga interventions within healthcare settings, institutions are data- and cost-driven. The majority of existing research is with T2D in South Asian populations.⁸ Although many studies show positive results, no studies have examined yoga's effects on T1D, and more conclusive research is needed overall.

We are on the frontier of something exciting. There is a need for yoga therapy programming within the healthcare and institutional sectors for diabetes and other chronic conditions to produce informed and activated patients. As Lang says, "yoga is the language of hope," and there is hope for the future of our work. The more we can educate doctors, specialists, and people with diabetes about the potential benefits of yoga therapy for diabetes, the sooner it will be normalized and widely celebrated within healthcare settings. **YTT**

As yoga therapists, we look for doorways into each client to help them become the conduits for their own healing.

To Find a Solution, We Must Understand the Problem: A Vocabulary Primer for Diabetes

Diabetes is one of the fastest-growing global epidemics of modern history, affecting more than 112 million people in the United States alone and growing each year. Of this number, 24 million people have diagnosable diabetes, and 88 million have prediabetes. To put that into perspective, that's 10% of the U.S. population with diabetes and 34% on their way to diabetes. Of the 24 million people with diabetes in the United States, 1.6 million adults have T1D, an autoimmune condition once thought to be a juvenile disease but now commonly diagnosed in adults.

A1c: A test measuring blood glucose average over 3 months. A value of less than 7.0% is ideal for reducing the onset of severe complications and early mortality.

Blood glucose: Also known as blood sugar. Blood vessels transport glucose throughout the body. High blood glucose damages the blood vessels over time. A typical range for a person without diabetes is less than 100 mg/dL fasting and 140 mg/dL after meals.

Blood pressure: Every time the heart beats, its force pushes and exerts blood through its arteries to circulate to the rest of the body. The energy of the movement creates pressure on the blood vessels. This pressure is blood pressure. Normal levels of blood pressure are below 120 mm Hg.

Cholesterol: Not all cholesterol is bad. The basic level for heart health is a total level under 200 mg/dL, or a total of non-HDL cholesterol under 130 mg/dL. Higher numbers signify a higher risk for heart disease.

Exogenous insulin: Synthetic insulin not produced by the body.

Gestational diabetes: A form of hyperglycemia during pregnancy. Women with gestational diabetes are at higher risk for developing T2D after pregnancy.

Glucose: The body's primary fuel source. All of the foods we eat eventually turn into glucose. The liver stores glucose as glycogen for future use.

Glycemic control: Refers to the maintenance of blood glucose levels in people with diabetes.

Hyperglycemia: High blood glucose levels. In people with diabetes, hyperglycemia is defined as levels above 180 mg/dL.

Insulin: A hormone secreted by the pancreas that regulates the amount of glucose in the blood and acts like a key to allow glucose into the cells so they can use it as energy.

LADA: Latent autoimmune diabetes in adults. A variant of T1D that occurs later in adulthood. Individuals with LADA may retain some insulin production with increased glycemic control.

Metabolic syndrome: A cluster of co-occurring conditions that increase the risk for T2D, stroke, and heart disease. They are abdominal fat and elevated blood glucose, blood pressure, and cholesterol levels.

Prediabetes: Elevated fasting blood glucose levels above 100 mg/dL. Without intervention, prediabetes will progress into T2D.

Type 1 diabetes: An autoimmune condition where the body attacks the pancreatic beta cells that produce insulin. T1D patients are insulin-dependent.

Type 2 diabetes: A chronic condition where the body either produces too little insulin or is resistant to the insulin it makes.

Some Complications of Diabetes

Autonomic neuropathy: Damage to the autonomic nervous system, affecting everything from "glucosensing" (ability to detect low blood glucose symptoms) to the gut (resulting in gastrointestinal disorders like gastroparesis, a slowing of the stomach's release of food that makes it difficult to determine insulin doses).

Peripheral neuropathy: A condition caused by damage to the peripheral nerves (those outside the brain and spinal cord). Typically, people experience pain and numbness in their hands and feet. This complication is problematic because it increases the risk for infections from cuts and tends to lead to dramatically reduced activity.

Retinopathy: Damage to the eye vessels that can eventually lead to blindness.



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