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# From Froot Loops to Fitness: My Journey as an Educator and Person With Diabetes

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# From Froot Loops to Fitness: My Journey as an Educator and Person With Diabetes

Sheri R. Colberg-Ochs

**EDITOR'S NOTE:** This article is adapted from the address Dr. Colberg delivered as the recipient of the American Diabetes Association's Outstanding Educator in Diabetes Award for 2016. She delivered the address in June 2016 at the association's 76th Annual Meeting and Scientific Sessions in New Orleans, La. A webcast of this speech is available for viewing at the ADA website (http://professional.diabetes.org/search/site?f%5B0%5D=im_field_dbp_ct%3A7&f%5B1%5D=sm_field_wcast_mname%3Anode%3A120&retain-filters=1).

I was diagnosed with type 1 diabetes at the age of 4 years. In our family, the years before my diagnosis are known as "BD" (Before Diabetes). The era that began with my diagnosis is known as "AFL" (After Froot Loops). Far worse for me than taking daily shots was giving up my favorite sugary cereal.

My mother had decided not to become a nurse because she hated needles. The first time she gave me a shot in the hospital, she jabbed my arm so hard the needle rebounded back out. I am told I started crying and said, "Mommy, go practice on the orange some more." I gave myself my first shot at the age of 6.

Thankfully, my mother changed the whole family's diet to a healthier one instead making me eat differently. I got over losing Froot Loops. Even as a preteen, I felt so much better when I was active, although I never participated in organized sports until high school.

My first notable event as an educator occurred when I was 12 years old and spent a week with my grandparents in Kansas. I had bonded with my grandmother because she was the only other person I knew who had diabetes, although she had type 2. During my visit, she was on yet another Weight Watchers diet, and I decided to be her coach and personal trainer for a week. I had her running laps around her backyard, helped her measure out her cottage cheese, and weighed her daily. We had a deal that she would pay me $1 for every pound she lost. In the first week, she lost 8 lb. I was a rich kid! That was my first paying job as an educator, and it was easy money; no wonder I went back for more.

By the time I went to high school in Atlanta, Ga., I was a "jack of all sports, master of none." I participated in gymnastics, swimming, tennis, volleyball, and soccer. I did not have a blood glucose meter, and that made it harder for me to do well in sports, but it never kept me from trying. I also won many academic honors, including valedictorian of my graduating class, and I started practicing public speaking.

As a high-school junior, I wrote my first paper about diabetes titled "Recent Innovations in Research for the Cause, Treatment, and Cure for Juvenile-Onset Diabetes Mellitus." I wrote a letter to my biology teacher

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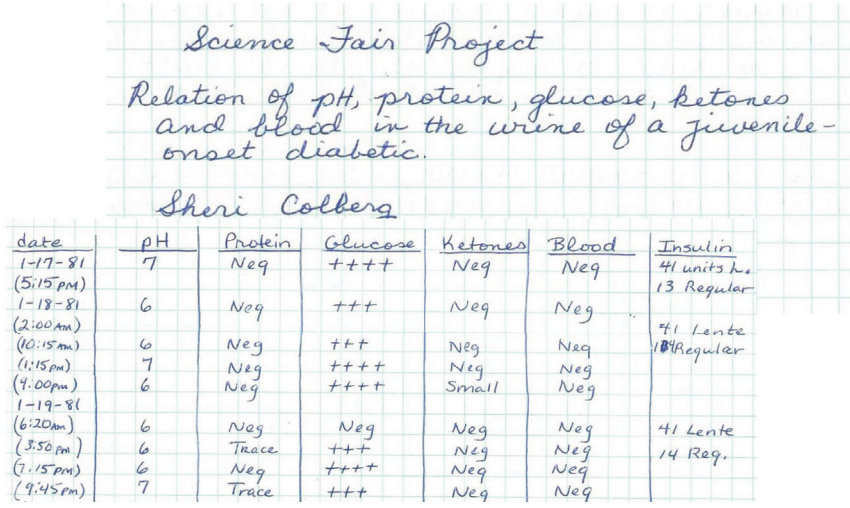

Science Fair Project

Relation of pH, protein, glucose, ketones and blood in the urine of a juvenile-onset diabetic.

Sheri Colberg

| date | pH | Protein | Glucose | Ketones | Blood | Insulin |
|---|---|---|---|---|---|---|
| 1-17-81 (5:15 PM) | 7 | Neg | ++++ | Neg | Neg | 41 units h. 13 Regular |
| 1-18-81 (2:00 AM) | 6 | Neg | +++ | Neg | Neg | 41 Lente |
| (10:15 AM) | 6 | Neg | +++ | Neg | Neg | 18 Regular |
| (1:15 PM) | 7 | Neg | ++++ | Neg | Neg | |
| (4:00 PM) | 6 | Neg | ++++ | Small | Neg | |
| 1-19-81 (6:20 AM) | 6 | Neg | Neg | Neg | Neg | 41 Lente |
| (3:50 PM) | 6 | Trace | +++ | Neg | Neg | 14 Reg. |
| (7:15 PM) | 6 | Neg | ++++ | Neg | Neg | |
| (9:45 PM) | 7 | Trace | +++ | Neg | Neg | |

**FIGURE 1**. The results of the author's high-school science fair project, exploring the relationships among pH, protein, glucose, ketones, and blood in the urine of a person with type 1 diabetes (herself).

and included a postscript that said, "If you ever have any questions about juvenile-onset diabetes, I would probably be able to answer them." Ah, the ignorance of youth—thinking I knew everything about diabetes after writing only one paper!

I started my research career when I was a senior in high school. For a science fair project, I did a study on a diabetic subject—myself—using urine testing. After seeing my results (Figure 1) and researching the complications of diabetes, I was convinced I was going to die in a matter of weeks—even before the end of high school. I carried this burden privately. Despite believing that my death was coming soon, I applied for college with the intention of becoming a doctor and finding a cure for diabetes.

To my surprise, I survived and finished both high school in Atlanta and then college at Stanford University in Stanford, Calif. I studied abroad in France my junior year, managing my diabetes in foreign countries without the benefit of a blood glucose meter. I also worked as a student equipment manager for the football team, which involved moving equipment around, running after overthrown footballs, and attending every practice. I worked out daily on my own—mostly swimming, weight training, and racquetball—but also essentially played football every day during the season. I overcame many barriers to become the first woman student head manager of a Pac-10 or Division I collegiate football team. I stayed at Stanford an extra quarter just to serve in that capacity because I wanted to prove that I could do it.

After volunteering in an emergency room, I decided I did not like being in hospitals or around sick people. So, my undergraduate major ended up being in something unrelated. However, I still loved science, so I earned a master's degree in exercise physiology, studying exercise and self-concept in teens with type 1 diabetes. For this project, I collected data at two summer camps for teens with diabetes to see whether regular exercise offset a negative self-concept. However, my results were inconclusive because not enough of my subjects were regularly physically active.

After having lived with diabetes for 18 years, I finally got my first blood glucose meter. Soon thereafter, two events really tested me. First, I got kicked out of a scuba diving class because the National Association of Underwater Instructors (NAUI) did not—and still does not—certify anyone with type 1 diabetes. This was the first time diabetes kept me from doing something, and it was a real blow to my psyche. Soon thereafter, my grandmother with type 2 diabetes had a major stroke. For the next 5 years, she was bedridden, had partial leg amputations, and eventually became unable to communicate or feed herself. I decided then that living without quality of life is pointless, and I did not want that for myself.

Figure 2 shows a healthy retina and the retina of someone with diabetic proliferative retinopathy who has had extensive laser surgeries—the only option available in the 1980s to save central vision. This is how one of my retinas looked after I had a total of 15 surgeries in one or the other of my eyes over the course of 2 years. At one point, I had severe hemorrhages in both eyes within the space of 1 week and was legally blind for about a month. I did not know whether my eyes were going to stabilize or whether I was going to be blind at

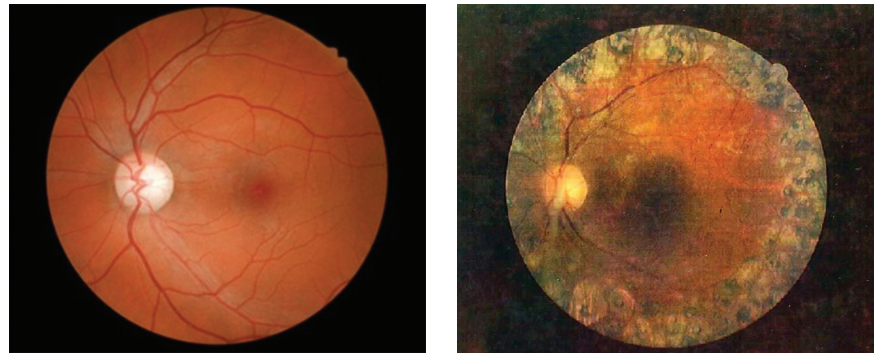

**FIGURE 2**. A healthy retina (left) and the retina of someone with diabetic proliferative retinopathy who has had extensive laser surgeries (right).

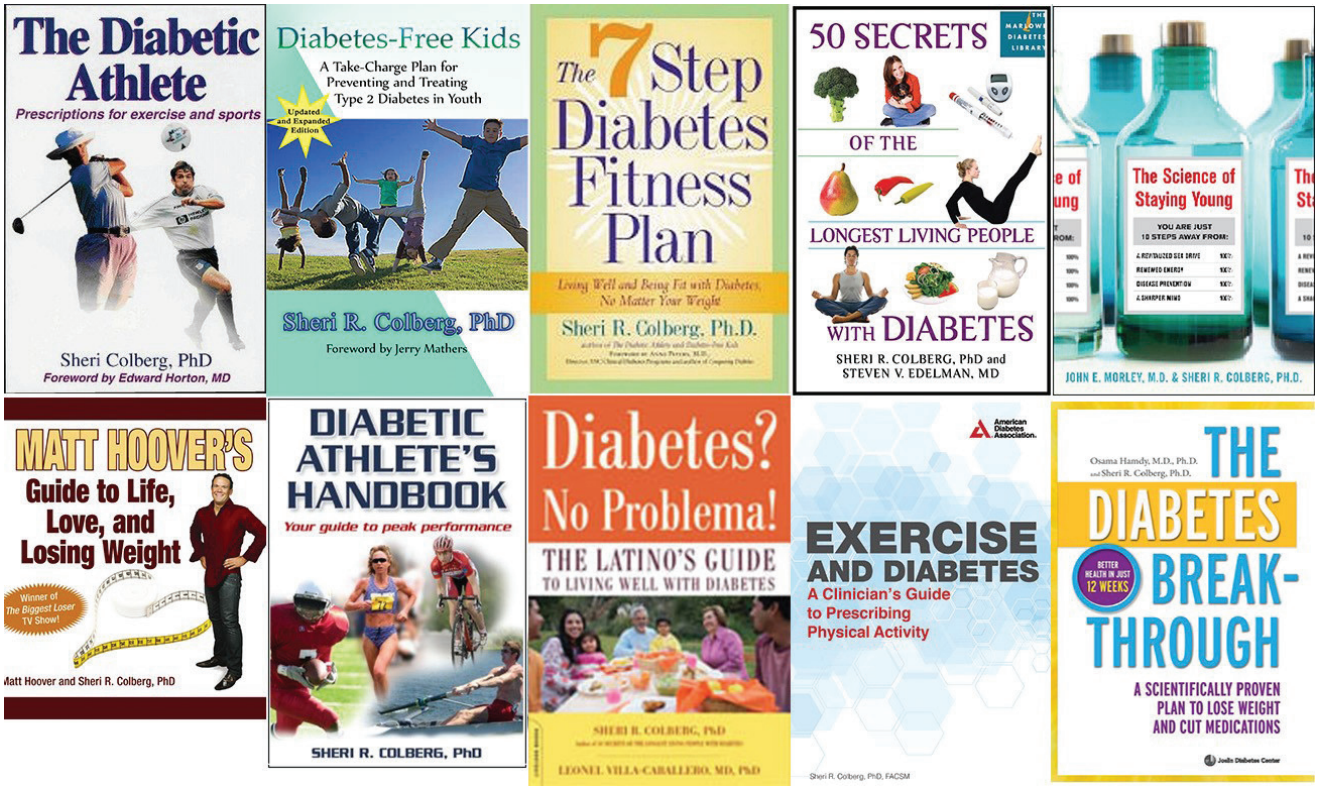


**FIGURE 3**. A collage of the covers of the author's 10 books.

the age of 24. For a while, I thought was my life was over.

At the time, I was working as an exercise specialist in a diabetes treatment center in San Francisco, Calif., but I quit my job because I lived alone and could not drive myself to work. I then lived for a while in Atlanta with my mother, who drove me to my temporary job entering data for the Centers for Disease Control and Prevention, which I did despite looking through internal black clouds in my eyes.

I was accepted into a doctoral program at the University of California, Berkeley, and started classes in the fall of 1989 when my retinopathy was still unstable. I took my biochemistry final with vision in only one eye, which perhaps explains why I only got a B+ in the class! I was determined not to let diabetes stop me, though, and I earned my doctorate in 1992, with fairly stable vision.

I then researched diabetes and exercise as a postdoctoral fellow working with Dr. David Kelley at the University of Pittsburgh School of Medicine in Pennsylvania. After that, I taught at California State University in Hayward for 3 years before taking a tenured position at Old Dominion University (ODU) in Norfolk, Va. Then I began writing books, mostly about fitness and diabetes (Figure 3). To date, I have published 10 books and have more on the way. I have also written 22 books chapters and about 300 articles. I write monthly columns for the *Diabetes in Control* newsletter, as well as articles for the dLife website and several blogs. My goal with all of my writings has been to empower people to live long and healthy lives.

## Telling Secrets

I want to share a few of the secrets of living long and well with diabetes from the book *50 Secrets of the Longest-Living People With Diabetes*, which I co-wrote with Dr. Steve Edelman. As its title suggests, the book includes 50 secrets, divided into eight categories: Emotional, Knowledge, Control, Dietary, Exercise, Medication/Tech, Support, and Other Life.

### *Attitude Is Everything*

For this book, I interviewed almost 60 people who had lived from 20 to 83 years with diabetes. One of my favorites was Gladys Dull, who, at 90 years of age, was the longest-living person with type 1 diabetes at that time. She had been diagnosed in 1924, shortly after insulin was discovered, and had to travel more than 300 miles each way to start her insulin treatments. She died at the age of 91, after living for more than 84 years with diabetes—most without a blood glucose meter. Amazingly, she outlived all four of her siblings and her husband, none of whom had diabetes. After watching her sister suffer through Alzheimer's disease, she said she was glad to have diabetes instead.

My favorite secret in the "Emotional" category is "Live first and be diabetic second." This does not mean you should ignore your diabetes. Most of the long-timers I interviewed simply chose not to let diabetes define their lives. They managed their diabetes using the available

**FIGURE 4**. Bob Stewart, a retired podiatrist with type 1 diabetes who, at age 95, set two world records in the 95+ age-group at the Senior Olympics and knew a thing or two about living a long and healthy life with diabetes.

tools and lived their lives the way that they wanted to. "Be grateful for the whole package . . . . I thank God I'm alive and healthy," one said. "You have to have a sense of humor with a chronic disease," said another.

One of the people I interviewed was Dr. Bob Stewart, a podiatrist who was diagnosed with type 1 diabetes as an adult and went on to live with it for more than 60 years (Figure 4). At the age of 95, he competed in the Senior Olympics, won five gold medals, and set world records in the shot put and long jump, jumping 6 feet, 7.5 inches. Of course, there were no other competitors in the 95+ age-group but still, he beat existing world records in those events, and he tried some new ones, including pole vaulting, the next year. Dr. Stewart made the local news in Virginia Beach, Va., when, at the age of 98, he married his 91-year-old sweetheart. They were the oldest couple to ever get married at the Virginia Beach courthouse. He never stopped living life to the fullest, and he lived to the ripe old age of 102.5. May we all live so long and well!

### *Keep Moving*

Among the many exercise tips I could share are a few especially important ones:

- Exercise daily (or close to it)
- Live an active life
- Make it strenuous
- Erase your mistakes with exercise
- Control your weight

I also interviewed Bob Cleveland, who was in his late 80s at the time and had been diagnosed as a child in 1925. When I asked him his top secrets for living long and well with diabetes, he said he had always stayed active. I wanted to tell him, "Right answer!" At age 87, he still rode his bike 10 miles each day.

Exercise is a natural antioxidant and lowers inflammation. It is likely the only reason I am still alive and well myself, after 48 years with diabetes. If you learn nothing else from me, know that it is possible to "erase" your blood glucose mistakes with exercise. Muscle cells have two separate, but additive, ways to remove glucose from the blood: one is insulin-mediated, but the other involves glucose transporter type 4 proteins activated by muscle contractions. So exercising usually helps lower blood glucose levels, but if you take insulin and have too much on board during exercise, you will be likely to have a crashing low blood glucose event. Although vigorous activity may be good in most cases, it also can cause blood glucose levels to increase. Intense exercise causes an exaggerated release of glucose-raising hormones such as adrenaline and glucagon, which can actually cause control to worsen in the short term.

### *Family Matters*

It is a myth that women with pre-existing diabetes cannot give birth to a healthy baby. Although this is not true, doing so safely can be a lot of work because keeping blood glucose under control during pregnancy is crucial. I should know, given that I have had three children myself. One of the men I interviewed said that the doctors even told him not to have more than three children to have a stress-free life. Good thing I stopped at three!

### *Exercise Safely*

One of my other books, *Diabetic Athlete's Handbook*, has helped countless people exercise safely with diabetes. I got the idea for this book after attending a meeting of the now-defunct International Diabetic Athletes Association. There, I heard about so many different regimen changes people made for different activities, and I thought, "Wouldn't it be great if we could all benefit from knowing that?" In the book, I shared advice from more than 250 active people with diabetes. As one reader noted on Facebook, "The book saved my life when I was diagnosed." Such comments drove me to be an educator and continue to make me feel that I am actually helping people live better with diabetes.

For years, I have answered questions via email, chatrooms, blog posts, and more, explaining what people need to know to be more active with diabetes. Why does it take a whole book to fully explain it? It's because predicting and balancing all of the potential factors that can affect blood glucose levels during exercise is no small feat (Figure 5).

### *Mix It Up*

Aerobic activities are good for cardiovascular health, so try to do them for at least 150 min/week. Resistance

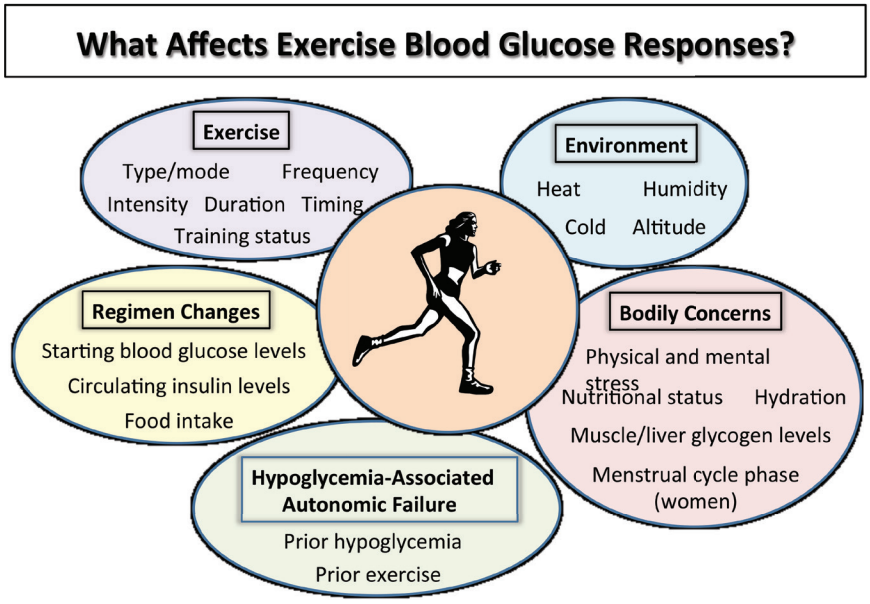


**FIGURE 5**. Factors influencing blood glucose response to exercise. Adapted from Colberg SR, Laan R, Dassau E, Kerr D. Physical activity and type 1 diabetes: time for a rewire? J Diabetes Sci Technol 2015;9:609–618.

training is crucial for muscle mass and should be done at least twice a week. It is also important to stretch and flex your joints through a full range of motion regularly to stay limber.

Those who are older than 40 years of age should also work to maintain or improve their balance. People with diabetes have a much higher risk of falling, and for those with peripheral neuropathy, the risk is even higher. The good news is that lower-body and core resistance exercises double as balance training. Something as simple as practicing daily to stand on one leg at a time can improve balance, and activities such as yoga and tai chi can help with balance, flexibility, and muscular strength.

Above all, it is essential to move as much as possible throughout the day, even if only by taking frequent breaks to walk around. Think outside the box about ways to be more active. Doing what you enjoy and building up gradually will help you avoid becoming discouraged or sustaining injuries.

## Spreading the Word

I have been involved in more lectures, professional activities, and interviews than I can count, running the gamut from being interviewed by Pat Robertson on "The 700 Club" to being (loosely) quoted in *The National Enquirer* about Paula Deen's lifestyle. I have encouraged this media attention because it allows me to help more people. Really, what is the point of living longer if you can't live well and feel good every day?

I recently retired from a 24-year career in academia, 19 of which were spent at ODU. When I announced my retirement on Facebook, the first comment I received said, "I hope you'll still write about diabetes. Your advice on working out with type 1 diabetes has been greatly helpful!" I replied, "Of course! I'm just giving up teaching college students."

I am now focused on finding new ways to help more people with diabetes lead an active lifestyle. I founded the website DiabetesMotion.com in the fall of 2014, and I constantly add new blog posts on timely topics related to being active. It is free and intended for people with any type of diabetes who want to stay abreast of the latest research-based information and exercise advice.

In spring of 2016, I also launched the Diabetes Motion Academy, accessible at DMAcademy.com. This site offers continuing education courses for fitness and health professionals whose work involves exercise for

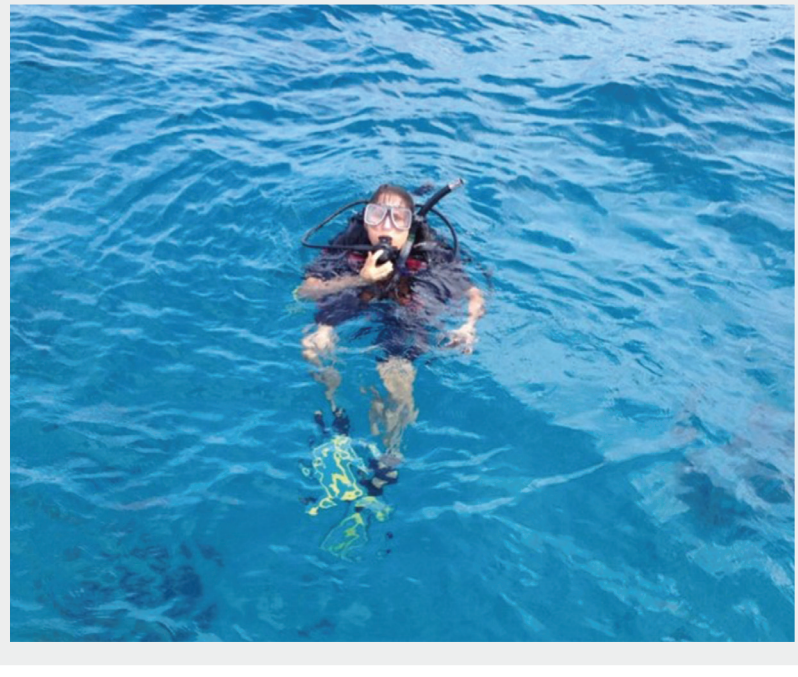

**FIGURE 6**. The author, scuba diving in St. Thomas, U.S. Virgin Islands.

people with diabetes. I have seen too many personal trainers injure people by not understanding their physical limitations and their diabetes, and many providers do not know enough about prescribing exercise to their patients with diabetes. So, although I'm no longer working with college students, I am still educating people about exercise and diabetes.

On a personal level, my greatest accomplishment has been giving birth to and raising three healthy sons, all of whom now tower over me physically. I am very proud of what fine young men they have become. I also want to spend more time with my husband and children while I am still healthy. Having had diabetes for close to half a century and almost my entire life, I want to enjoy the rest of my life doing everything else I want to do. I have focused my whole career on diabetes, and yet I spend very little time stressing about my own diabetes; I simply control it the best I can, feeling grateful to have a blood glucose meter. I am going to keep taking my own advice to "live first and be diabetic second."

We all know that exercising is good for us. It is time we started being better role models by being more physically active ourselves and encouraging everyone else to do the same. It is time to walk the walk, not just talk the talk. I am proud to help the American Diabetes Association (ADA) announce that it has started walking the walk by forming a Physical Fitness department, which will be leading the charge in promoting more physical activity. I will be helping ADA in this capacity, as I have been for years as a volunteer, only now in a more official capacity. As a start, the new national center offices ADA will move into later this year will include standing desks for all employees.

To close, I would like to finish a story I started earlier. I only had to wait about 25 years to fulfill my dream of scuba diving. With the help of my friend and fellow person with type 1 diabetes, Steve Prosterman, I celebrated my 50th birthday in style a couple of years ago by finally going scuba diving in St. Thomas, U.S. Virgin Islands (Figure 6), and snubbing my nose at NAUI. Final score: Sheri 1, NAUI 0!

## Duality of Interest

No potential conflicts of interest relevant to this article were reported.