Can Pilates Alleviate Migraine Associated Vertigo?

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September 22, 2016
CAP 2015
Balance Point Pilates, Davis, CA
My wife remembers the exact date – November 5, 2010, in the late afternoon, that her vertigo suddenly came on. She was at her job at an art supply and picture framing store, and there was no reason for it to be there, no accident or injury or strange new exercise or new medication. Elizabeth was 56 years old at the time with no maladies other than a little soreness in the neck and some arthritis developing in her hands. She had been a swimmer in her youth and a member of the track team, and played competitive tennis through high school. She had continued exercising through adulthood: running and later on working out on machines in gyms and taking group exercise classes, including an occasional mat class.

She walked home carefully after work, seemingly unable to focus on objects and landmarks around her. Her balance was unaffected. Much later one of her chiropractors explained that we can experience two kinds of vertigo: that which everything around you seems to be spinning, or that which everything seems to spin inside your head. Elizabeth was suffering from the later.

At first we believed it would fade and disappear within hours or days, like those mysterious little afflictions that come and go. It did not. As I’ll describe shortly, Elizabeth began a long journey through neurologists, chiropractors, audiologists, acupuncturists, homeopaths, and massage therapists. We never thought about Pilates. When her vertigo began I was an avid student but not a teacher.
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The Cervical Spine and the Radiofrequency Ablation Procedure

Fig. 1: Overview of the human spine

Fig. 2: The cervical spine. Nerves are shown in yellow. –myissc.com

Fig. 3: The Radiofrequency Procedure

-Delilah Cohn

Radiofrequency ablation is a minimally invasive procedure performed under fluoroscopy (live x-ray) to guide the RF needle to the desired location, in Elizabeth’s case lateral branch nerves on each side of C3, C4, C5 and C6. RF waves are introduced to heat the tip of the needle to create a heat lesion on the nerve to disrupt the nerve’s ability to send pain signals[1].
I myself have had vertigo for short periods and it always went away; this has been the story for a surprising number of people, we realized later. In Elizabeth’s case days went by and then weeks, and the vertigo was still there. Some days she stayed home from work. Driving was out of the question, reading more than a paragraph or two would set her head spinning faster, moving her head a little too fast and even the simple act of tilting her head upward made things worse. At its worst she had to hold on to a wall while walking to another room. Headaches and nausea frequently accompanied her dizziness. Her only relief was sitting back and resting her head on something, or lying down.

The first neurologist she saw diagnosed BPPV (benign paroxysmal positional vertigo), a fairly common disorder arising from problems in the inner ear. An MRI showed no problems, and a home program performing a modified Epley maneuver (a series of movements consisting of sitting, turning the head, and lying supine or sideways in a prescribed pattern) three times a day was assigned. A physical therapist she was sent to gave her an additional home routine.

Elizabeth stopped the PT after one week; it made her feel worse. She continued the modified Epley maneuver for over three months but made no progress at all. It was back to square one.

For the next six months Elizabeth saw her chiropractor, who felt he could alleviate the symptoms with neck adjustments and performing the standard Epley maneuver regularly. She also went to a few appointments with a naturopath. Nothing was helping.

After some online research Elizabeth scheduled testing and evaluation at the UCSF
Audiology Clinic in San Francisco. After a four hour visit and lots of testing it was determined there was no problem with her ears and that she was suffering not from BPPV but from migraine associated vertigo, or MAV (see Wikipedia for an overview of MAV). Again, physical therapy was prescribed but was not effective and frequently intensified her symptoms.

In the summer of 2012 Elizabeth found a functional neurologist who was having some success with neurological patients by administering varying IV treatments, usually concentrated doses of vitamins, antioxidants or supplements. After evaluation he felt he might be able to successfully treat her MAV. Once a week we drove from Sonoma to his office in Davis where Elizabeth sat comfortably for an hour or more receiving up to three solutions.

(During this time I discovered Balance Point Pilates Studio in Davis and we scheduled her appointments to coincide with me taking Booty Barre classes there, and through this I discovered BASI Pilates and eventually took my teacher training there. But that is another story!)

Her treatments actually seemed to be helping. The vertigo was becoming a little less severe; she was having fewer “bad days” and began having more “not so bad” days. Her improvement leveled off after a point, however, and after about nine months she ended the visits.

For the next 18 months Elizabeth tried acupuncture, another neurologist, a chiropractic neurologist, and a neurological chiropractor. At best her condition would improve a bit but then the improvement would plateau.
In 2014 another neurologist suggested a more detailed MRI of the head and cervical spine, mainly to look for white matter lesions on the brain or any other problems related to migraines or vertigo. What the MRI showed was degenerative damage in the cervical spine and a narrowing of the spinal column, possibly explaining the headaches and the vertigo, as well as neck pain that was beginning to develop. Elizabeth was sent to a pain management specialist who performed a type of nerve block, called radiofrequency ablation, in the cervical spine: injections that heat (in order to deaden) the medial branch nerves that supply the facet joints. Her doctor explained that the procedure had the potential to relieve pain for one to two years, until the affected nerves heal or grow back together, after which she had the option of repeating the procedure. The treatment would not affect the vertigo, he explained, but since the headaches exacerbate the vertigo, her condition would still improve.

Results were almost immediate. The headaches and neck pain were virtually gone, but the vertigo was still there.

Visits with one more neurological chiropractor put things in perspective for her. After proprioceptive light-touch tests on the forearms and extraocular (eye movement) testing, he explained that parts of the brain controlling movement were not quite syncing with the parts receiving visual feedback. The more she moved her head around (and her eyes) the more difficult it was to focus on things. Activities like looking for one small item in a grocery aisle were especially challenging. Her brain also had difficulty listening and following along in a conversation; imagine a person talking at 50 MPH when the ears and brain are only capable of 40 MPH. Her cognitive process was also hampered.
Which is why, once I finished comprehensive teacher training last October (2015) I was reluctant to recruit Elizabeth for my practice teaching. She was still unable to keep up a moderate exercise program – elevating the heart rate to a certain point even now throws her vertigo into hyperdrive. So I was surprised when she agreed to be my student.

Before beginning I prepared Elizabeth by having her perform the Head Float, in which the client lies supine, head on a folded towel for alignment with the thoracic spine, and barely begins to lift the head off the floor or towel. This pre-engages the deep anterior cervical muscles. Then she performed the Small Curl-up, lifting the head and just the upper part of the thoracic without changing the distance between the xiphoid and the pubic bone(2). I needed to know her neck was strong enough to hold lifted without undue strain or soreness after the sessions. Still, I would modify many exercises by having her keep her head down or interlacing fingers behind the head as in Chest Lift.

We were ready to begin.
The Early Sessions

The Warm Up

We began with some careful roll-downs – I was concerned about her head hanging and the possibility of neck discomfort worsening her vertigo. She did fine, though. I did notice asymmetry in her shoulders. She had begun complaining of shoulder pain several years earlier, which I would soon realize was impingement.

The Footwork

The movement of the Reformer carriage did not affect her vertigo as I was afraid it might (good news!) so I took her through the full footwork routine to include Prehensile, Calf Raises, Prances, and Single Leg. Soon I modified Single Leg (both Toes and Heels) by having her take movement in the stationary table top leg, extending and flexing the knee to coincide with the concentric/eccentric movement of the working leg. Then I had her reverse the flexion/extension of the knee(3). The mental focus required to orchestrate the coordinated movements did wonders for clearing her brain.

The Abdominal Work

Standing Pike on the Wunda Chair was next. Again, there was no problem with her head dropped forward. I added Chest Lift on the Step Barrel, which provided valuable spinal extension, as Elizabeth had started developing moderate kyphosis over the years.

The Hip Work

She especially enjoyed the hip work on the Reformer (don’t we all?) and we went through the entire series. We discovered some asymmetry in the leg movements.
Spinal Articulation

I wanted to avoid any challenging spinal articulation for now, especially anything that risked compression in the cervical spine, so I started her with Pelvic Curl on the chair, where I felt her neck would be safer. It was just challenging enough.

The Stretches

I set her up on the Reformer for the Standing Lunge. Like most people, she doesn’t stretch enough and thoroughly enjoyed the lengthening.

Full Body Integration

Reverse Knee Stretch and either Round Back or Flat Back (Knee Stretch Series). I kept the springs light so she could focus on precision.

The Arm Work

Even the Arms Supine Series with a very light spring was too painful for her shoulders, so I borrowed two exercises from Samantha Wood’s Pilates for Injuries and Pathologies Course: Supine Retraction and Supine Protraction (Cadillac). The client lies along a half-roller with the shoulders underneath the push through bar and pulls down the top-loaded bar, then pushes up the bottom-loaded bar (straight arms), wrapping the scapulae around the roller or lifting them up(4). These were invaluable for teaching Elizabeth control of the shoulder complex. They’re definitely feel-good exercises!

The Leg Work

Elizabeth loved Leg Press Standing on the chair; it challenged her balance and engaged her focus and concentration. It was another exercise that she claimed “clears the fog” from her brain.
**Lateral Flexion/Rotation**

We alternated between Side Stretch on the chair and Spine Twist Supine on the Step Barrel. The lengthening was something she needed and enjoyed.

**Back Extension**

I was hesitant about Swan Basic on the chair, but her neck was fine and she relished the feeling of “opening up”.

We ended sessions with either a rest pose or a few roll downs.

To my surprise she thoroughly enjoyed the sessions! She would be pleasantly fatigued but not exhausted, and we continued one to two sessions a week, sometimes for a full hour but usually 30 to 40 minutes, depending on her energy level. Overexertion will still exacerbate the vertigo.

Soon we added some of my mat classes to her routine, also my stretch/core classes (again on the mat) that incorporates fundamental Pilates and yoga, popular with older and deconditioned clients. Currently she is doing one apparatus session and two mat classes a week.

**Later And Current Sessions**

**The Warm Up**

The Footwork

Elizabeth now can perform all the footwork on both the chair and the Cadillac. I let her decide which she feels like on that day.

The Abdominal Work

We’ll pick one or two: On the Reformer, Coordination, usually with her head remaining down to avoid neck strain. This exercise is called Coordination for a reason, and it really engages cognitive ability; just what Elizabeth needs! On the chair, Standing Pike Reverse and/or Cat Stretch Kneeling. On the Cadillac, Bottom Lift With Roll Up Bar.

The Hip Work

Either the entire Supine Leg Series on the Step Barrel, or on the Cadillac, the Supine Leg Series or the Single Leg Supine Series. Walking and the Bicycle exercises are favorite brain challenges.

Spinal Articulation

We now feel safe with Bottom Lift on the Reformer. When she is feeling energetic we add the Extension.

The Stretches

The Standing Lunge on the Reformer is still fabulous, and we’ve added The Lying Splits from Anthony Lett’s Innovations In Pilates course: lying on the Reformer in the Openings position (legs open), grasping the ropes with the hands and controlling the stretch of the adductors(5). Probably no better way to stretch the inside of the thighs without being tied to horses!
**Full Body Integration**

On the Reformer: Scooter, good for speeding up the heart rate just a little. On the Cadillac, Sitting Forward for control of the spine and Side Reach for lengthening.

**The Arm Work**

Sticking with Supine Retraction and Supine Protraction for now. We will try exploring the Arms Supine and the Arms Sitting Series soon.

**The Leg Work**

On the chair, the Hamstring Curl. Sometimes we add a Leg Press Standing variation from the Injuries and Pathologies course called Leg Press Standing Side(4), in which the client stands sideways to the foot pedal, at a moderate distance away, and enjoys external hip rotation while pressing the leg down while rotated out to the side.

**Lateral Flexion/Rotation**

Side Kneeling Stretch on the chair. Sometimes Mermaid on the Reformer if her head is clear; Mermaid can be a vertigo-inducer.

**Back Extension**

There is probably no way to scientifically measure whether or how much Pilates has helped Elizabeth's vertigo. MAV is not a well-understood malady; there has been some success with multiple medications (usually after long trial-and-error) and avoiding trigger foods. With some people halting the migraines means halting the vertigo. It has been about two years since her RF procedure and her headaches have been getting a little more intense and frequent, and longer-lasting.

Her vertigo has definitely improved since the first year. We believe the various treatments have helped in little ways, and that avoiding stress helps (she was able to retire in April of this year). Overexertion and exhaustion are to be avoided. The wonderful thing about Pilates is that one can have a workout at any level, and I believe Elizabeth returning to a regular exercise program has helped her body physically and also reinvigorated her spirit.

We still hold out hope that this thing will eventually just go away, but if not, Pilates may be the best way to cope with it.
Bibliography and Resources

3. Pilates Anytime, Rael Isacowitz, Online Reformer Class No. 1896
4. Pilates For Injuries And Pathologies, Samantha Wood, Advanced Education Course, BASI Pilates, Costa Mesa, CA, 2015, and accompanying workbook