



Summer 2023

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Enjoy Your Summer



Message from the President

Diane Lemon



Spring has finally arrived and before we know it Summer will be on our doorstep. The severe winter with lots of snow and cold temperatures has kept many of us indoors more than we would have

liked. I hope everyone has a cherished memory or two from something special that happened recently

in your life. My daughter Kirsten and I were chosen to lead the Torch Relay to open the Saskatchewan Winter Games. That event was very special to us.

Now many of us are planning and starting our gardens as well as getting rid of all the winter debris. Polio survivors are a resilient group of people. We need to be reminded to be willing to accept help if offered or needed. We often have been described as “warriors”. In many situations our parents and siblings were also engaged in pursuit of normalcy for their “polio children”. I have heard many stories of the fierce fight that parents faced in enrolling their children in school and other activities.

Now, as many of us enter our senior years and develop new or worsening weakness and pain we are still fighting for accessibility. I encourage all of us to bring to attention any situations which should be accessible but are not.

My wish is that we all have a summer filled with lovely outings even if that means a hotdog on the patio.

Best Wishes

Diane



At the Meetings

November 2022 – Nicky’s Café - Odds and Ends:

Diane Lemon mentioned several items:

Rotary clubs will be putting more emphases on Post-Polio Syndrome in the future.

Emory University, Atlanta Georgia conducts weekly Zoom educational sessions on aging and brain health called “Brain Talk”. If interested in attending any of the sessions the contact email is: cornelya.D.derbin@emory.edu

Daryl Strubel is the Executive Director in the Office of Disability Issues for the Government of Saskatchewan. He can be contacted for information relating to what the government is working on related to disability.

Australia lights up buildings in recognition of “International Polio Awareness Day”

Christmas party: We all enjoyed a turkey dinner with all the trimmings and were able to socialise with fellow members after the meal.

February 2023 – Zoom meeting – Open Forum - our guest speaker was Dea Graessli Wise RN, BSN, MAEd, CIC who is a registered nurse who specializes in foot care. She teaches foot care at Saskatchewan Polytechnic where she is on the Faculty of Saskatchewan Collaborative Bachelor of Science in Nursing (SCBSn). She spoke about

the importance of taking care of your feet and gave examples of proper foot care. Her presentation is included later in this issue.

Odds and Ends – Diane lemon was a flag bearer prior to the Saskatchewan Winter Games.

March 2023 - Renaissance Retirement Residence and by Zoom. This was our Annual General meeting. Treasurer David Cotcher presented the annual financial statement for 2022 with comparative figures for 2021.

The following people were elected as Executive Officers/Directors of Polio Regina Inc. for 2023-2024:

President – Diane Lemon

Vice-President – Carole Tiefenbach

Secretary – Ivan Jorgensen

Treasurer – David Cotcher

Phone Co-ordinator – Elaine Cotcher

Web Master – David Cotcher

Post Box Editor – Ivan Jorgensen

Directors at Large – Ken Holliday, Wilf Tiefenbach

Open Forum: We had a general discussion among members about how they survived the winter followed by a tour of Renaissance Retirement Residence. Those who stayed enjoyed a meal at the Renaissance.

April 2023 – Zoom meeting - Odds and Ends: Diane Lemon mentioned that the March of Dimes will be hosting a virtual Polio Canada Conference on World Polio Day October 24th, 2023.

Diane Lemon asked about recliner chairs. The consensus was that it was best to buy a lift chair from a mobility aids retailer who can fit you to the proper chair for your needs.

Diane Lemon asked how the members rest during the day. Most members took an afternoon nap in a recliner chair.

Open Forum: Our guest speaker was Calynda Triffo who is a Reflexology Therapist and Teacher Licensed with the Reflexology Association of Canada. She explained what reflexology is and gave examples of how it can be helpful. Calynda www.calyndatriffo.com recorded the presentation and included some specific relaxation techniques for polio symptoms. It is available on YouTube. Here is the link: <https://youtu.be/cGQjlyPD5IU>

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Presentation on Foot Care to Post-Polio Group

by Dea Graessli Wise RN

Foot Care- General Overview

No matter your age, gender, or health condition, everyone should take care of their feet. As you age, checking your feet becomes more important. Even the smallest foot problem can snowball into a bigger problem. By checking your feet regularly, these early problems can be dealt with. By knowing what your feet look like normally, you can more easily notice changes when they happen. This can be in shape, color, and temperature.

Foot Care- Self Care

Socks should be clean, dry, free of holes, and not too tight. Shoes should be comfortable, supportive, protective, and fit you properly. When toenails are cut wrong, it can lead to problems like ingrown toenails. Cut your toenails using proper clippers and cutting straight across the nail. Take off your socks and take a good look at your feet. If you can't get a close look, use a mirror or get another person to help you look for anything out of the norm on your feet. Check for any red spots, dry/cracked skin, calluses, cuts, or blisters. Use your hands to check the temperature of every surface of your foot. Temperature changes can mean inflammation or problems with blood flow. Use your fingers to lightly squeeze each toe to check for numbness or tingling. Let your health care provider know if you have any loss of feeling in your feet. Check for pain when moving your feet in several directions, when both sitting and walking. White socks can show signs of injury (blood, pus, etc.) that you may not be able to feel. Choose proper footwear. Never go barefoot. Cut toenails straight across. See your foot care specialist regularly.

Services provided by a foot care nurse

Your foot care nurse has specialized training and could be either a Licensed Practical Nurse or a Registered Nurse. The nurse does provide various services such as assessment, screening, nail trimming, application of lotions/creams/sprays. The nurse can fix corns, calluses, ingrown toenails, thick toenails and may be able to apply a fungal nail treatment.

Tasks of a foot care nurse

There are certain tasks that every foot care nurse should provide, which include having Insurance, charting-a chart for every client. Others such as billing, cleaning equipment, sterilizing equipment using autoclave, storing equipment properly. Maintenance of equipment and record keeping.

Another important thing to remember with care of your feet is what shoes to wear. It is always best to see a pedorthist/orthotist who can show you the proper shoe for you.

References

Canadian Foot Care Nurses: [CAFCN National Competencies for Advanced Nursing Foot Care.pdf](#)

Advanced Foot Care Nurse: <https://www.advancedfootnurse.com/what-is-a-medical-foot-care-nurse/>

What is the Difference Between Post-Polio Sequelae and Post-Polio Syndrome?

Dr. Richard L. Bruno, HD, PhD

“POST-POLIO SEQUELAE” was coined by the always insightful Dr. David Bodian, at the First Warm Springs Conference on PPS in 1984. It means “the sequel” to having had polio and refers to all of the things that could possibly happen to a person as a result of their having had polio (not just fatigue, muscle weakness and pain) but also brain stem damage causing slowing of their guts, heightened sensitivity to pain and to anesthesia.

“POST-POLIO SYNDROME” has many definitions but typically refers to muscle weakness and, depending on who's suggesting the definition, it could also cause fatigue and pain.

Post-Polio Syndrome is a subset of Post-Polio Sequelae. It is important to note that Post-Polio Sequelae is the diagnosis used by the US Social Security Administration to determine sedentary work disability.

This is a summary of the presentation by Susan L. Schoenbeck for the March 2023, Canada March of Dimes Zoom meeting, regarding pain and fatigue. She presented a tool for use which is a mnemonic called OLDCART. It is a pathway to track and talk about Post-Polio Syndrome (PPS) pain and fatigue with family, friends, and healthcare professionals.

Susan L. Schoenbeck, MSN, RN is a nurse educator with a background in critical care nursing and education. She currently volunteers as an online tutor for nursing students at Walla Walla School of Nursing, Portland, Oregon. She contracted polio at age 7 months and was isolated in an iron lung. With her family's support, she overcame doctors' warnings that she would never walk. Her unique clinical expertise is interwoven with her own experience with polio. She shares her knowledge with polio to survivors throughout the world.

Peer-reviewed national and international journals have published her research. Susan is author of 6 books, the most recent, POLIO GIRL: It Only Takes One (amazon.com: July 2022). She and colleague Karen Tetz, PhD have an article teaching nurses about polio and post-polio pain featured in March NURSING 2023.

Post-Polio Syndrome Pain

A Tool to Help Polio Survivors Talk to Healthcare Professionals

By Susan L. Schoenbeck, MSN, RN



There are over 12 million polio survivors worldwide. However, physicians and advanced practice clinicians (APCs) specialized in treating the sequelae of polio are rare. The care of the patient with post-polio syndrome (PPS) is not included in the curriculum of the majority

of medical or nursing education programs. Today polio survivors suffering post-polio syndrome may interact with healthcare professionals who are not educated or experienced in helping polio survivors manage their chronic pain, a pervasive long-haul symptom of poliovirus infection.

Research studies report that over 90% of polio survivors report pain. The causes of PPS pain are multifactorial. Pain is a bio-psychological experience.

It has physical, mental, emotional, and psychological components. Pain is not static. It comes and goes and changes form.

PPS pain intensity is often rated as high and described as “deep aching” in muscles and joints. Pain may increase with movement. Polio survivors complain that muscle cramps and fasciculations interrupt daytime activities and interfere with sleep. In addition to chronic pain, polio survivors may experience other common PPS symptoms including new degenerative joint pain, increasing muscle weakness, extreme fatigue, breathing and sleep disturbances, cold intolerance, difficulty swallowing, gastrointestinal reflux disease, alteration in gait, and general distress.

NUMBER AND FACE PAIN SCALES

A polio survivor telling a healthcare professional a single number on a scale from 0-10 to describe their pain does not capture the fullness of the pain experience a polio survivor with PPS struggles with daily. Choosing a facial expression ranging from smiling to tearful face can shed light on pain intensity but not tell the complete story. A recent research study asked subjects if they thought using a numbered of face pain scale was effective. Fifty-nine percent answered “No.”

Interviews with people using number and face scales revealed they often under-reported their pain so that when and if in the future they really needed help, doctors would believe them. Some people said the stigma of pain made them under-report pain so they would be seen as strong. Others did not want to be viewed by healthcare professionals as too sensitive or asking for too much. Another group of people chose lower numbers and more smiley faces because they feared they could not afford the cost of strong pain medications. Under-reporting led to inadequate pain management. In summary, one number or one face is not enough information to collect to make an effective pain management plan.

OLDCART

Polio survivors need an efficient, effective conversational tool to describe their pain. OLDCART is an instrument that can be used to plan prevention and relief of pain. It can serve as an outline for discussion with the polio survivor's family and healthcare providers. OLDCART brings to light not

OLDCART

Date/time of recording information	Onset (Time pain begins)	Location/s (Where it hurts)	Duration (How long the pain lasts)	Characteristics (Dull, gnawing, Burning, Aching)	Aggravating Factors/Associated symptoms (What makes pain worse, e.g., movement, awakening; fatigue; overuse of limbs; muscle spasms; fasciculations)	Relieving Factors (What makes it better...e.g., elevation, icing, rest, electrical stimulation, distraction)	Treatments (What have you tried that works to stop the pain: and what does not work)

only pain intensity but other descriptors of PPS pain. The details gathered using OLDCART help the polio survivor and the healthcare provider agree on what interventions might be useful and doable within circumstances.

Polio survivors are advised to print out several sheets of the OLDCART chart on which to record information about:

Onset (when pain occurs)

Location (the places it hurts)

Duration (how long pain lasts)

Characteristics (words that describe the pain, for example, burning, cramping, deep, gnawing)

Aggravating factors (what makes it worse, for example, doing too much, cold, bending, standing, walking)

Relieving factors (what helps make it better, for example, ice, warm packs, acetaminophen, electrical stimulation, menthol cream)

Treatments which the polio survivor has found to work and not work.

As polio survivors conduct their daily activities, pain changes. Some polio survivors with PPS report spine pain after standing, bending, and lifting, for example while using a mixer and putting baking pans into the oven. Others say their worst pain comes at night when muscle spasms do not cease. Many say deep, aching pain follows walking to grocery shop. Polio survivors should gather several weeks' worth of information to ensure that all the variations of their pain can be discussed with their healthcare provider. The polio survivor with PPS wants a plan that prevents and relieves pain.

Examine your OLDCART chart: What are the usual words you use to describe your pain? Does pain follow certain activities. Do you become fatigued after a bout of pain? Does pain interrupt your sleep? What have you tried that helps to relieve your pain? What pain relief methods would you like to try?

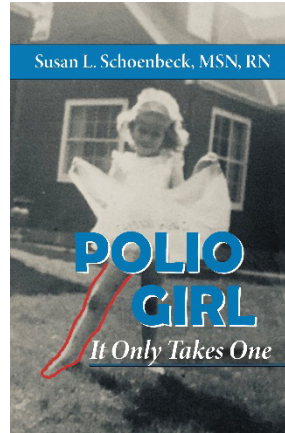
Cautionary advice regarding NSAIDs (non-steroidal anti-inflammatory drugs) and polio survivors:

Polio survivors are cautioned that NSAIDs may prolong bleeding time.

Polio survivors have 6Xs the likelihood of having ulcers compared to the general population.

Learn the signs and symptoms of peptic ulcer disease and gastrointestinal bleeding when taking NSAIDs.

Polio survivors who gather data using OLDCART say that what causes their pain and what is useful to prevent and relieve pain becomes evident. This information when presented to healthcare providers can lead to improved pain management.



POLIO GIRL: It Only

Takes One contains

extensive information about PPS and how to talk with health care providers. It also has an extensive URL listing of resource articles.

This book was written for the everyday reader. Polio survivors tell me they find their symptoms in the book, tab each, and take the book

with them to the doctor to show what research has confirmed are valid PPS complaints.

Experiences with Surgery and Radiation Treatment

By David Cotcher

In early 2022, I started having small amounts of blood from my left nostril, and later felt like it was getting plugged up. I thought it was from dry air and tried using saline spray. In the spring, I started to have a growth on the side of my nose like a large pimple around an oil duct. It became painful but I was still convincing myself it was nothing serious. I saw my family doctor in mid May, and when he examined my nose, he said right away I have a tumour. He referred me to my ear, nose and throat specialist.

I got an appointment on June 21 with my ear, nose and throat specialist (ENT), Dr Chikukwa. After he examined my nose, he said surgery should be done by a plastic surgeon. He went next door to plastic surgeon, Dr. Chang's office and got me in to see him the same afternoon. After Dr. Chang examined my nose, he said "I have good news and bad news. The bad news is I think it may be cancer. The good news is we will take care of it very soon." The next day I got a phone call from the surgery schedulers with a

date of June 29 for a pre-operation assessment and July 5 for surgery.

The surgery was planned for about 2.5 hours with general anesthesia. I was concerned about the possible effect of the anesthetic with my post-polio condition and my reduced lung capacity from kyphoscoliosis. I read that people who had polio may need less anesthetic to fall asleep and take longer to wake up. I was also concerned about the need for breathing support with a ventilator during surgery and recovery. I have had a tracheostomy and have used a ventilator at night to support my breathing since 2007.

I reviewed some references on the effects of anesthetic on people with post polio symptoms and took some information with me to the pre-operation assessments on June 29. There were tests and examinations and detailed interviews with nurses, an internal medicine specialist and an anesthesiologist. The anesthesiologist was receptive to talking about the post-polio effects of the anesthetic and seemed to be aware of it. I also shared an experience from 2012 in hospital when a dose of Gravol for nausea put me right out asleep for four hours. He noted my post-polio condition and the experience with the sedative effect of Gravol in the surgery plan. He said I would need a smaller dose of anesthetic. I was scheduled for a night in ICU after surgery, with a ventilator to support my breathing in recovery.

I had the surgery on the growth in my nose on Tuesday July 5, 2022, at the Regina Pasqua Hospital. I had a chance to talk to the anesthesiologist before the surgery and she was very reassuring. She was an older woman and familiar with the effects of polio. The surgeon, Dr. Chang suspected cancer so removed most of the left side of my nose to make sure he got all the growth. He rebuilt the side of the nose with skin grafts from my forehead and neck. I went to sleep from the anesthetic about 8:30 AM for the surgery and woke up about 1:30 PM in ICU.

My main concern beforehand was about my breathing, but that was fine. I did have some bleeding and pain from the surgery, but I did quite well with that. The problem was that I was not able to urinate. The nurse said this sometimes happens after general anesthesia. The same problem continued, so they put in a catheter for the night. I got no sleep at all

that night in ICU with a lot of pain from the catheter, back pain, uncomfortable bed, and all the sounds of talking and alarms going off. I was discharged the next afternoon July 6 and went home.



9 days after surgery

After one night at home, I had the same urinary problem again. I went to ER, and they sent me home with a urinary catheter for 5 days. The ER doctor sent a referral to a urologist specialist for follow up. After the catheter was removed, a few days later I had a high fever from a urinary infection. A strong antibiotic took care of that

in a few days. The urinary problems were the worst part of my recovery. The surgery recovery went well. The stitches on my nose and forehead came out after 9 days and healed very well.

About two weeks after surgery, the pathology report said the growth removed from my nose was a fast-growing cancer. The report termed it aggressive squamous cell carcinoma. The main part of the tumour removed was relatively large, 3.6 cm x 2.5 cm x 2 cm deep. The good news in the report was that the surgery removed all the cancer tissue.

I had examinations and discussion with the surgeon and several cancer specialists at the Regina Allan Blair Cancer Centre on August 4, 2022. They recommended I have radiation treatments on the side of my nose to reduce the chance of the cancer recurring. I had two sessions on the CT simulator, which is a CT scanner with special software to plan the radiation treatments. The radiation technicians fitted the tight mask I had to wear to hold my head in place for radiation treatments. The first radiation treatment was Wednesday August 31st, 2022, and continued 5 days per week. The first treatment took over an hour getting me in position and fitting the mask. Afterward, the continuing treatments were about 15 to 20 minutes. I started to get sores in my mouth from the radiation. I had to have soft foods, and as soreness got worse needed only puréed foods or liquids. I could not open my lips very far so had to sip from a spoon or use a straw. I had to rinse my

mouth with a solution of salt and baking soda for the sores. My face was red and swollen and I was using lotion and gauze with saline to soothe it.



After 3 weeks radiation treatments

I was scheduled for six and a half weeks of radiation treatments, but by the fourth week I was getting more fatigue and it was all I could do to try to eat my meals, and rest, and go to my daily treatments. It was getting to be more effort to breath while held in place for the treatment with the tight mask. Toward the end of my fourth week at my 20th

treatment, I passed out while held in place on the treatment machine. I had to lay still for the treatments, and the machine sensed movement of my legs and shut itself down. The technicians investigated and found I was unresponsive. They hit an alarm for help and several nurses and doctors came to revive me. I became vaguely aware of people there but did not fully wake up until I was in ER. They checked me out and I was fine so able to go home and rest. I had continuing extreme fatigue after that. The next week I had two phone conversations with Dr. Mahmood, the head of radiation therapy and she agreed I was not up to continuing the radiation treatments.

The recovery from the radiation treatments was very gradual. I still could only have liquids and pureed foods due to painful mouth sores. About 5 weeks after treatments ended, I started eating soft foods. My mouth was the first to get sore and the last to recover. I was thankful by Christmas 2022 to be eating all types of food again.

I was back to the cancer clinic after 6 weeks for a check up and then back every 3 months. Each time the specialists do a thorough examination inside my nose, and all over my head and neck. They say everything looks good and no signs of cancer. I am very thankful for that.

On February 5, 2023, I had a follow up surgery on my nose by Dr. Chang at the Pasqua Hospital



May 2023 after recovery

ambulatory care. There was an extra fold of skin over the bridge of my nose from the original skin graft from my forehead. In a short surgery with local freezing, he removed the fold of skin giving a more normal shape to the bridge of my nose, and easier to wear my glasses. The stitches from the surgery healed very quickly.

I am thankful how well I have recovered from the surgery and treatments. And I am especially thankful my checkups show there are no signs of cancer. I had excellent doctors and nurses and other health staff for the surgery, ICU, ER, and cancer clinic. I could not have made it through without support from my wife Elaine and my family, as well as from church members and many others. I felt real peace through it all from my faith in God and knowing many were praying for me.

References:

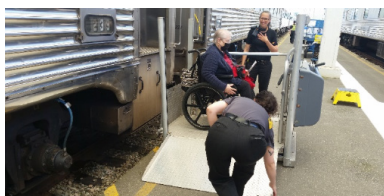
1. My Polio Story – David Cotcher, Polio Postbox, May 2009
2. High Tech Breathing, David Cotcher, Polio Postbox, Christmas 2012
3. My Experience with a Tracheostomy, David Cotcher, Polio Postbox, Summer 2017
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The following is a story from our friends and Polio Regina members, Betty and Barry Williams from Mission, BC about their trip to Saskatoon by Via Rail.

Our Trip on Via to Saskatoon

A year ago in June of 2022, our daughter Lisa invited us to come to Saskatoon for the long weekend in July and go to their cabin at Emma Lake. We checked with Via Rail if we could get the wheelchair accessible room and bathroom on the train. I was sent the medical forms that had to be filled out by our doctor. After seeing the doctor, we faxed the forms back. We then could reserve the wheelchair accessible room and bathroom. I got to go for free as I had enough Via Preference Points, but had I not had the points it would have cost me \$1000 to travel Vancouver to Saskatoon. Barry got to go for free as he was assisting me.



Betty going onto wheelchair lift to get onto train

We packed our bags, and our son Steve took us to the West Coast Express that we can catch in Mission and the train will take you to downtown Vancouver. The staff

on the train sent a message to head office to ask for someone to help us get our luggage to a taxi.

We arrived in Vancouver and the boss of the head office came to help us. He was so nice and made sure we had a taxi and did not leave until our taxi left. It was awesome.

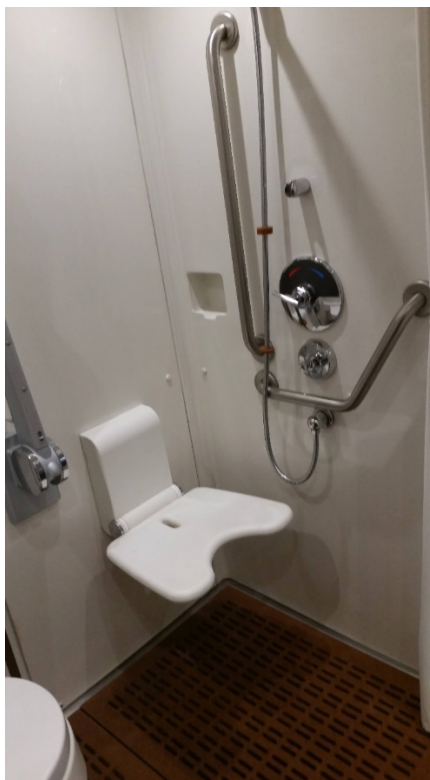
The taxi took us to the Via Rail station, and we were able to move to seats. Our tickets were checked and when it was time to go on the train we went to the door, there was a lift to the train. I was pushed through one room into our bathroom of which the door would be locked and into our bedroom.

In the bedroom there was bench seating which turned into the lower bed. There was a lot of storage, and the window was five feet wide and high. It has a screen to cut the sun, but you could see outside, and it had another screen to block the view. There was a TV which was great when it was pitch black. Being in a wheelchair I could not go anywhere so being able to watch a movie was pretty nice.



Bathroom in handicapped room

meals were brought to our room. We had a table that could be assembled. I have a lot of food allergies and the chef took my list and all my meals were just so



Shower with lots of grab bars and heated floor

The door to the bathroom opened by pressing a button and it closed that way as well. The bathroom was big enough to have the toilet and shower on one side and the sink and mirror on the other side. There were bars to help if you could stand up.

This accessible room is in the prestige area of the train. There were three attendants, and all meals were brought to our room. We had a table that could be assembled. I have a lot of food allergies and the chef took my list and all my meals were just so good. He even checked out a veggie patty to make sure there were no vegetables in it that I was allergic to, and I enjoyed that with my eggs for breakfast.

The attendants made sure I got drinks and snacks and they also made up the beds at night. Barry had to climb to the top bunk, and we had a good sleep.

We arrived in Saskatoon early, so we called our son-in-law, and he came to get us.

At the lake, I was able to get around the cabin okay but not so well when everyone was in the house. Our son James and his family came and had tents outside. Our granddaughter Aymie came with Jake and their four children, and they stayed in the trailer, everyone else slept upstairs. We had the hide-a-bed in the living room, and it worked well for us.

The biggest treat I had was the second day when it was sunny and hot. James came and said he was taking me to the beach. I said my chair would not go through sand, but he said he would work it out. He dragged my chair through the sand, picked me up and put me in a lawn chair. Barry sat beside me, and our daughter Lisa put up a big umbrella to keep the sun off us. It was wonderful to be able to watch and talk with our grandchildren and great grandchildren. I got to go to the beach two days in a row.

We went to Regina with our family. We stayed in a hotel as none of the family have a wheelchair accessible home. We went to a niece's wedding and the next day joined Barry's side of the family for a barbeque at the farm. Their deck and home are wheelchair accessible.

We were fortunate to get the wheelchair accessible room on the train to go home.



Bracket and table in handicapped room



Betty enjoying the room



Betty in handicapped washroom



Beds made up for the night

Chat GPT and Post-Polio Syndrome

I was wondering if Artificial Intelligence would take over my job as editor of the Postbox so asked Chat GPT some questions about PPS. I got the answers in seconds. I think the information is pretty good except some would argue that exercise does not strengthen PPS affected muscles. What do you think? Do I still have a job?

IJ - What is Post-Polio Syndrome?

ChatGPT

Post-Polio Syndrome (PPS) is a condition that affects some people who have had polio, usually many years after their initial recovery from the illness. It is estimated that between 25-40% of people who had polio will develop PPS, typically 30-40 years after the acute polio infection.

PPS is characterized by the gradual onset of new symptoms, including muscle weakness, fatigue, muscle and joint pain, breathing difficulties, sleep apnea, swallowing problems, and cold intolerance. These symptoms are caused by the degeneration of nerve cells that survived the initial poliovirus infection, which leads to the gradual weakening of muscles that were previously affected by polio.

The exact cause of PPS is not known, but it is believed to be related to the aging process and the increased stress on already weakened muscles over time. Treatment options for PPS include physical therapy, exercise, and medication to manage pain and other symptoms.

IJ - What treatments are available for Post-Polio Syndrome?

ChatGPT

Post-Polio Syndrome (PPS) is a condition that can develop in some individuals who had previously contracted and recovered from polio. It is characterized by the gradual onset of new weakness, fatigue, and pain, typically affecting the muscles that were initially affected by the polio virus.

There is no known cure for PPS, but there are various treatments that can help manage the symptoms and

improve the quality of life of individuals with the condition. Some of these treatments include:

1. Physical therapy: Physical therapy can help improve muscle strength and mobility, and reduce pain.
2. Occupational therapy: Occupational therapy can help individuals with PPS learn new techniques to conserve energy and reduce fatigue.
3. Assistive devices: Assistive devices, such as braces, crutches, and wheelchairs, can help individuals with PPS maintain mobility and independence.
4. Medications: Medications, such as nonsteroidal anti-inflammatory drugs (NSAIDs), anticonvulsants, and antidepressants, can help manage pain and other symptoms of PPS.
5. Breathing support: Some individuals with PPS may require breathing support, such as a bi-level positive airway pressure (BiPAP) machine, to help them breathe more easily during sleep.
6. Surgery: In some cases, surgery may be necessary to correct skeletal deformities or to release tight muscles.

It's important for individuals with PPS to work closely with their healthcare team to develop a personalized treatment plan that addresses their specific needs and symptoms.

IJ - How can Polio survivors reduce fatigue?

ChatGPT

Polio survivors may experience fatigue as a common symptom of Post-Polio Syndrome. Here are some ways they can reduce fatigue:

1. Rest: Taking regular breaks throughout the day to rest and conserve energy can help reduce fatigue.
2. Pacing: Pacing activities and breaking them down into smaller, manageable tasks can help avoid overexertion and fatigue.
3. Exercise: Low-impact exercises, such as swimming or walking, can help improve muscle strength and endurance, and reduce

fatigue.

4. Energy conservation techniques: Learning energy conservation techniques, such as planning ahead, using assistive devices, and delegating tasks, can help conserve energy and reduce fatigue.
5. Medications: In some cases, medications, such as stimulants or antidepressants, may be prescribed to help reduce fatigue.
6. Cognitive behavioral therapy: Cognitive behavioral therapy (CBT) can help individuals with PPS manage fatigue by identifying negative thoughts and behaviors that contribute to fatigue and developing strategies to overcome them.

It's important for polio survivors to work closely with their healthcare team to develop a personalized plan to manage fatigue and other symptoms of PPS.

Bruno Bytes Bits and Tidbits from the Post-Polio Coffee House

From Dr. Richard Bruno, HD, PhD
Director, International Centre for Polio Education and
author of *The Polio Paradox*

On the topic of Chronic Pain

Dr. Bruno's Original Post: "Flexibility" is the Key to Mental Wellbeing In Spite of Chronic Pain.

Research has found the biggest threat to the mental health of people living with chronic pain isn't necessarily how intense their pain is, but the extent to which it interferes with their daily life . . . From Australia's Edith Cowan University: "Chronic pain impacts around 20 per cent of the population. Along with the medical and physical effects it can have far-reaching consequences for employment, lifestyle and mental health. A new Edith Cowan University (ECU) study has found that for people living with chronic pain it's not necessarily how intense their pain is, but the extent to which it interferes with their daily life that can pose the biggest threat to their mental health."

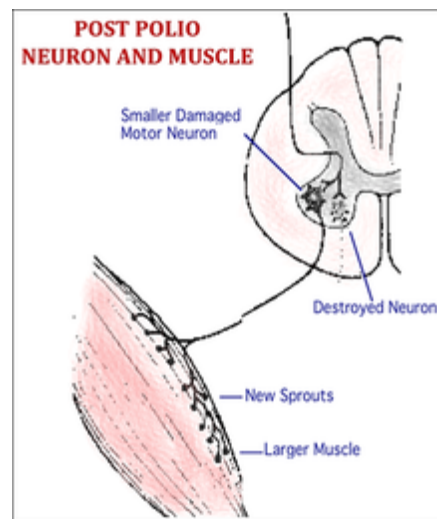
"The findings from this study have implications for

informing public health policy developments and public health campaigns focused on promoting psychological strengths rather than deficits, for example positive self-care messaging related to pain management."

On the Topic of Muscle Sprouts and "Fibers"

SPROUTS AND FIBERS: The "Diet" of Polio Recovery

- "As polio survivors recovered strength after the initial onslaught, their individual muscle fibers grew and were on average twice the size of fibers in those who didn't have polio. Fibers also looked abnormal, appearing "moth eaten" and showing damage typically found only in heavy weightlifters. What's more, thanks to axonal sprouting, the remaining motor neurons turn on about 16 times more muscle fibers than in someone who didn't have polio." From *The Polio Paradox*



Sprouting isn't unique to polio survivors. It occurs in motor neuron diseases and in normal aging; as motor neurons die their c o m p a t r i o t s sprout to take over the newly o r p h a n e d muscle fibers. Unfortunately, older motor

neurons sprouting to "adopt" orphaned muscle fibers comes at a cost. As polio survivors age, their reduced number of remaining, damaged motor neurons are metabolically stressed as they stimulate more and more muscle fibers. A handful of autopsies have been performed on polio survivors who died more than 40 years after having had polio and who reported muscle weakness later in life. Those polio survivors' motor neurons were found to be smaller in size and their sprouts were thinner than normal. This is no surprise.

Neurons in older non-polio survivors have been found to be less able to make sprouts and, when they do, the sprouts are thinner and are not covered with myelin, the fatty insulation separating one sprout from another. What's more, fewer muscle fibers are reconnected to the new sprouts and less acetylcholine (the chemical that "tells" muscle fibers to contract) is released.

However, even if sprouts were insulated, fat and fully functioning, the muscle fibers they are supposed to turn on are not. Everyone who gets older, not just polio survivors, loses muscle fibers. Remaining fibers atrophy, get smaller in size. And aging muscle is not as pliable or as able to contract quickly as does younger muscle. These changes cause a loss of muscle strength, reduced muscle contraction speed and decreased muscle endurance as everyone ages. These effects of aging can further overwork polio survivors' decreasing number of damaged motor neurons and reduce polio survivors' muscle strength.

Given this description of the state of muscle fibers and motor neurons, is it any wonder that overexertion and exercise are the number one causes of PPS?

On the Topic of Muscle Fibers and Polio

Question: When looking at people from the African nations we see a significant number of medal-winning long-distance runners ...obviously due to their genetic makeup. So, this brings my thoughts to PPS: Did the poliovirus attack slow twitch, i.e., Type I endurance muscles more often than it attacked Type II fast acting muscles? Could one's muscle type leave one more genetically predisposed to contracting poliomyelitis?

Dr. Bruno's Response: MUSCLE FIBERS and POLIO: SURPRISING CONNECTIONS
When we talk about polio and PPS, the focus is almost always on the damage poliovirus did to motor neurons, damage that prevented their stimulating muscle fibers and causing weakness or paralysis. But there's more to be said about post-polio muscle fibers. Let me try to give an oversimplified, but I hope understandable, description.

MUSCLE FIBER TYPES

Muscles contains two types of fibers that contract when stimulated by motor neurons:

- Type I fibers are metabolically suited for sustained

muscle activity that provides endurance.

- Type II fibers are metabolically suited for rapid movements, like sprinting, rather than running a marathon.

So while motor neurons activate all the fibers in a given muscle, the fiber types themselves have their own agendas: to provide endurance or speed.

For example, typically the anterior tibialis (the muscle in the front of your lower leg that, when its motor neurons are damaged by polio, causes foot drop) has about 75% of the "slow" Type I fibers and 25% of "fast" Type II fibers. When walking, the anterior tibialis' Type I fibers contract many times with each step, while Type II fibers contract only during rapid walking and then usually just a few times.

POLIO AND MUSCLE FIBERS

The poliovirus did not attack muscle fibers. It attacked motor neurons. Yet muscle fibers were affected.

The above description of how Type I and Type II fibers function in walking is not the same for affected -- but still working -- post-polio muscles. Surviving motor neurons sent out "sprouts", like little telephone lines, to activate muscle fibers that were orphaned when their motor neurons died. This process of sprouting causes what's called "fiber type grouping". One study of the anterior tib muscle in polio survivors found that Type I "endurance" fibers predominated. Polio survivors had nearly 21% more Type I fibers as compared to nondisabled controls.

This Type I fiber "grouping" is seen in most other polio affected muscles where sprouting occurs. And grouping makes functional sense. Apparently the Type I muscle fibers "knew" that polio survivors needed endurance more than they needed the ability to sprint.

ETHNICITY AND...MUSCLE FIBERS?

In his 2000 book *Taboo*, journalist Jon Entine makes a painstaking case that race and genetics are indeed "significant components" of the "stunning and undeniable dominance of black athletes".

Said Jim Holt in the "New York Times", "Entine cites credible research, for example, that blacks of West African ancestry (which would include most African-Americans) have a higher ratio of (Type II) muscle fibers than whites do, which gives them an edge at leaping and sprinting. East African blacks have

more energy-producing enzymes in their muscles and seem to process oxygen more efficiently, which translates into greater (Type I fiber) endurance.”

“But why conclude that such differences are encoded in the genes? Mightn’t there be an environmental explanation? It is true that Kenyans have won every Boston Marathon since 1990, but these runners come from a mountainous region whose altitude is perfect for building aerobic capacity.”

The achievements of African runners “obviously due to their genetic makeup?” Be careful not to separate nurture and nature.

On the topic of Muscle Spasms

Question: I had polio at age 3 in 1954, affecting the left quadricep and ankle. I have not had to use assistive devices until now and I use a cane when I want to walk faster. I have just started doing Pilates, but I am having muscle spasms making my left foot quiver a bit at rest. Is this related? This has not happened before.

Additional Post: When I was diagnosed in 1999, I had an evaluation by the PT who treated the patients with neurological issues. One of the things she told me was not to take yoga. I also have muscle spasms, cramps, fasciculations, muscles that seize up. Sometimes the pain & acting up happens only when I’m at rest; other times it happens with activity, like when I’m trying to put on a coat or pull a shirt over my head. If I were you, I’d take those muscle spasms as a warning.

Dr. Bruno’s Response: The easiest thing to do is stop Pilates and see what happens with the muscle spasms in your foot.

On the Topic of the “Types” of Polio

Question: Can you get multiple “types” of Polio?

Dr. Bruno’s Response: Yes, you can be infected at the same time with more than one type of poliovirus. But, polio survivors should be very careful about their belief, often without evidence or as part of family lore, regarding the “types” of polio they had. This is especially important now that poliovirus from the oral vaccine has been found in wastewater in Canada, Israel, the UK and US, and you may be deciding if you need polio vaccination.

During the polio epidemics, and still today, there is

confusion with there being three types of poliovirus and three types of clinical polio:

Three Types of Polioviruses

You could have been infected by one (or very rarely more than one) polioviruses:

- Type I (Mahoney, the epidemic strain that caused most cases of polio),
- Type II (Lansing) or
- Type III (Leon).

Statistically, polio survivors were infected only with the Type I poliovirus. Each of the three types of poliovirus is genetically different and therefore each requires its own unique polio vaccine to get the body to generate the specific antibodies needed to counteract each type of virus. Unfortunately, the three different polioviruses get confused with the “three types of clinical polio”:

Three Types of Clinical Polio

- Bulbar Polio - Indicates the virus affected your brain stem and would cause trouble swallowing and breathing.
- Spinal Polio - Indicates the virus primarily affected your spinal cord and would cause limb paralysis.
- Bulbar-Spinal Polio - Indicates the virus affected both your brain stem and your spinal cord, which would cause limb paralysis and trouble swallowing and breathing.

Some polio survivors were told that the body areas affected were determined by infection with specific types of poliovirus. So, someone who had bulbar polio might have been told that they had one type of poliovirus, while someone with bulbar-spinal polio might have been told that they had two types of poliovirus. Any of the three polioviruses could have caused spinal, bulbar or bulbar-spinal symptoms.

The symptoms that you experienced were not predetermined by the type of poliovirus that got into your body. When you talk to your doctor about the need for polio vaccination, don’t depend on your original polio symptoms or family memory to decide the type of poliovirus you had and type of vaccine you may need now.

About The Need for Vaccination.

- Adults who are unvaccinated or are unsure if they have been fully immunized (including polio survivors, who likely had only one type of polio) would need a total of 3 vaccine doses.
- Adults who only have had 1 or 2 doses of the polio vaccine would need to get all 3 doses.
- Adults who are at increased risk of exposure to poliovirus and who have previously completed a routine series of polio vaccine can consult with a health care provider and receive one lifetime “booster” dose of Injectable polio vaccine.



Eradicating Polio Will Require Changing the Current Public Health Strategy

Leadership of the Global Virus Network Say Policy Decisions Should Reflect the Science

6-Mar-2023 9:00 AM EST, by [Global Virus Network](#)

Newswise — Baltimore, MD, March 6, 2023— The recent public health emergency declarations in New York and London due to polio infections and detection of the virus in these cities’ wastewater strongly indicate that polio is no longer close to being eradicated.

Now, four members of the [Global Virus Network \(GVN\)](#) proposed changes in global polio eradication strategy to get the world back on track to one day eliminating polio’s threat. Authors of the recommendations included University of Maryland School of Medicine Institute of Human Virology’s Director and Co-Founder Robert C. Gallo, MD, The Homer & Martha Gudelsky Distinguished Professor in Medicine, and Co-Founder and Chair of the Scientific Leadership Board of GVN; two of the world’s most prominent poliovirus experts, Konstantin Chumakov, PhD, DSci, Adjunct Professor at the George Washington University and the University of Maryland, and Stanley Plotkin, MD, Scientific Advisor of the Coalition for Epidemic Preparedness Innovations (CEPI); and GVN’s

President Christian Bréchet, MD, PhD, Professor of University of South Florida.

They suggested that eradication is possible only through ensuring the highest possible vaccination coverage worldwide and maintaining it indefinitely. Vaccination policies must be tailored individually for different regions of the world and use both the polio vaccine made of inactivated virus (in combination with other vaccines), as well as improved novel oral polio vaccines that use live, weakened virus. The experts also urged reconvening a scientific group advising the World Health Organization on poliovirus eradication that can respond as needed and adapt policies in the face of newer data or public health emergencies.

The infectious disease experts published their views in a perspective in the *New England Journal of Medicine* on February 16, 2023.

The Global Polio Eradication Initiative (GPEI), which formed 34 years ago, aimed for a goal of polio eradication by 2000. This group developed the original polio eradication plan and formed a scientific advisory group, which was later disbanded before the projected goals were reached. According to the authors, this led to some decisions that were not based of solid science, including no longer immunizing against one of the three kinds of poliovirus while a weaker version of this poliovirus was still present in communities. The resulting resurgence of poliovirus circulation continues until this day, and the virus reappeared in the U.K., U.S., and other countries after decades when it thought to be eradicated.

“The Initiative based their guidelines on the strategy that was used to eradicate smallpox. However, poliovirus is trickier in that for every person paralyzed by infection, hundreds have no symptoms at all, meaning the virus can silently circulate in communities without anyone knowing it,” said Dr. Gallo. **“It was premature to assume that plans would run their course smoothly. These recent outbreaks confirm the need for an active scientific advisory group that can council, mobilize, and adjust the polio eradication plan in real-time as needed.”**

Over the last few decades, there has been an increase in global travel, which can allow infections to migrate from developing nations where they are

more common to communities in industrialized nations where they can spread undetected becoming the greatest danger to the unvaccinated and people with weakened immune systems.

With most people in the U.K. and the U.S. vaccinated against polio, how did this recent outbreak in two major international cities happen? As with other viruses once thought rare in more developed countries, such as measles or mumps, some communities chose not to vaccinate. Also, the nature of the polio vaccines in industrialized nations may have allowed asymptomatic infections to circulate undetected for a while now.

There are two main types of polio vaccines: the injectable version uses noninfectious virus particles to generate immunity (IPV) or the oral polio vaccine (OPV) that uses a live, weakened version of the virus.

“The injectable ‘killed’ polio vaccine protects from paralysis, but unlike the live version it does not generate robust immunity in the intestinal tract needed to prevent virus circulation. This means that asymptomatic cases can circulate in vaccinated individuals. So then, why do we use not the live version instead?” said Dr. Chumakov. **“The live, attenuated version can revert to virulence (a more an infectious version) and spread to people who are unvaccinated or who have compromised immune systems and occasionally cause paralytic disease. In fact, mutated versions of the oral polio vaccine are what are currently circulating in London and New York. It’s a Catch-22, but there may be a way out: recently a new version of the vaccine was developed that does not convert to virulent vaccine-derived poliovirus. In combination with the injectable polio vaccine, this novel oral polio vaccine can become an effective tool to safely create comprehensive immunity that can stop the spread of the disease.”**

The current polio eradication planned for phasing out the live, oral polio vaccines three years after the last wild or natural poliovirus case is documented, replacing it with the injectable polio vaccine.

“As history has recently shown us with COVID vaccines, just because we would like these vaccines to be available, it does not mean they will be. There may be a scramble and the richer countries

will secure vaccines before the others,” said Dr. Plotkin. **“Therefore, we at the GVN propose that the group institute a policy change not based solely on milestones, but rather whether there is an appropriate supply to compensate for the increased demand. Better yet, incorporate a strategy for ensuring there will be available injectable polio vaccines to support the world supply when the time comes.”**

Once the world converts entirely to injectable vaccines, the GEPI’s plan was to remove all polio vaccines ten years after this transition.

“The biggest problem in the way of polio eradication is to do it safely through the combined use of inactivated and live oral vaccines. The former would prevent paralysis from both wild and vaccine-derived poliovirus, whereas the latter would eventually prevent circulation of both forms of poliovirus and paralysis,” said Dr. Bréchet. **“The vaccine industry is capable of making both if they are given the order to do so.”**

About the Global Virus Network (GVN)

The Global Virus Network (GVN) is essential and critical in the preparedness, defense, and first research response to emerging, exiting, and unidentified viruses that pose a clear and present threat to public health, working in close coordination with established national and international institutions. It is a coalition comprised of eminent human and animal virologists from 71 Centers of Excellence and 9 Affiliates in 40 countries worldwide, working collaboratively to train the next generation, advance knowledge about how to identify and diagnose pandemic viruses, mitigate and control how such viruses spread and make us sick, as well as develop drugs, vaccines, and treatments to combat them. No single institution in the world has expertise in all viral areas other than the GVN, which brings together the finest medical virologists to leverage their individual expertise and coalesce global teams of specialists on the scientific challenges, issues, and problems posed by pandemic viruses. The GVN is a non-profit 501(c)(3) organization. For more information, please visit <https://gvn.org/>. Follow us on Twitter at [@GlobalVirusNews](https://twitter.com/GlobalVirusNews)

3D-printed insoles measure sole pressure directly in the shoe

15-Mar-2023 5:50 PM EDT, by [ETH Zürich](#)

Credit: Marco Binelli / ETH Zurich



The insoles, together with the integrated sensors and conductive tracks, are produced in just one step on a 3D printer.

Newswise — In elite sports, fractions of a second sometimes make the difference between victory and defeat. To optimize their performance, athletes use custom-made insoles. But people with musculoskeletal pain also turn to insoles to combat their discomfort.

Before specialists can accurately fit such insoles, they must first create a pressure profile of the feet. To this end, athletes or patients have to walk barefoot over pressure-sensitive mats, where they leave their individual footprints. Based on this pressure profile, orthopaedists then create customised insoles by hand. The problem with this approach is that optimisations and adjustments take time. Another disadvantage is that the pressure-sensitive mats allow measurements only in a confined space, but not during workouts or outdoor activities.

Now an invention by a research team from ETH Zurich, Empa and EPFL could greatly improve things. The researchers used 3D printing to produce a customised insole with integrated pressure sensors that can measure the pressure on the sole of the foot directly in the shoe during various activities.

“You can tell from the pressure patterns detected whether someone is walking, running, climbing stairs, or even carrying a heavy load on their back – in which case the pressure shifts more to the heel,” explains co-project leader Gilberto Siqueira, Senior Assistant at Empa and at ETH Complex Materials Laboratory. This makes tedious mat tests a thing of the past. The invention was recently featured in the journal *Scientific Reports*.

One device, multiple inks

These insoles aren’t just easy to use, they’re also easy to make. They are produced in just one step – including the integrated sensors and conductors – using a single 3D printer, called an extruder.

For printing, the researchers use various inks developed specifically for this application. As the basis for the insole, the materials scientists use a mixture of silicone and cellulose nanoparticles.

Next, they print the conductors on this first layer using a conductive ink containing silver. They then print the sensors on the conductors in individual places using ink that contains carbon black. The sensors aren’t distributed at random: they are placed exactly where the foot sole pressure is greatest. To protect the sensors and conductors, the researchers coat them with another layer of silicone.

An initial difficulty was to achieve good adhesion between the different material layers. The researchers resolved this by treating the surface of the silicone layers with hot plasma.

As sensors for measuring normal and shear forces, they use piezo components, which convert mechanical pressure into electrical signals. In addition, the researchers have built an interface into the sole for reading out the generated data.

Running data soon to be read out wirelessly

Tests showed the researchers that the additively manufactured insole works well. “So with data analysis, we can actually identify different activities based on which sensors responded and how strong that response was,” Siqueira says.

At the moment, Siqueira and his colleagues still need a cable connection to read out the data; to this end, they have installed a contact on the side of the insole. One of the next development steps, he says, will be to create a wireless connection. “However, reading out the data hasn’t been the main focus of our work so far.”

In the future, 3D-printed insoles with integrated sensors could be used by athletes or in physiotherapy, for example to measure training or therapy progress. Based on such measurement data, training plans can then be adjusted and permanent shoe insoles with

different hard and soft zones can be produced using 3D printing.

Although Siqueira believes there is strong market potential for their product, especially in elite sports, his team hasn't yet taken any steps towards commercialisation.

3D-printed insoles measure sole pressure directly in the shoe (newswise.com)



How active joints in the summer reduce winter pains

Your joints do know when it's cold outside

16-Mar-2023 4:10 PM EDT, by **Michigan Medicine - University of Michigan**

BYLINE: Valerie Goodwin

Newswise — Can your joints predict the weather? Well, actually, maybe, explains a bone specialist at Michigan Medicine.



Many people with arthritis, chronic joint pain, or those who have experienced joint injuries tend to report increased pain in their joints when the seasons

start to change, specifically during the transition from warmer weather to colder. Pain sites in the body reported the most are hips, knees, spine, hands and shoulders. Some find that this pain doesn't inhibit their daily activities, while others struggle to complete basic tasks due to their pain.

Michael Kheir, M.D., an orthopaedic surgeon at University of Michigan Health, sees the striking influx in reported joint pain at the change of seasons within his own practice. He says the phenomenon is more than a simple saying; it has some science behind it.

“Colder weather causes an increase in humidity and a drop in pressure,” Kheir explains. “When the pressure drops around you, the soft tissue in your

joints expand causing increased pressure in the confined space in your joint capsule. This means your joints can sometimes feel the change in weather before the rest of your body can.”

“Patients with arthritis or damaged joints already have year-round intermittent swelling and pressure in their joints,” Kheir says. “This means the increase of swelling from the drop in pressure can cause an increase of pain in problematic joints.”

Winter joint pain tends to worsen in the mornings and evenings for most patients, Kheir says. These are the times of day when the joints are the “coldest” and the pressure is the highest due to the drops in temperature at night and a lack of movement while sleeping causes stiffness in the joints. As the day goes on, most patients will find that the joint pain decreases, as the joints “warm up” and stiffness decreases with movement throughout the day.

Many people who experience winter joint pains will turn to quick remedies, such as over the counter pain relievers, to help the pain subside. While these remedies work, Kheir says, strengthening painful joints in the summer helps to create less pain in the winter.

With warmer weather, pressure in the joints decreases making it easier to stay active. That increased physical activity in the summer builds muscle strength that becomes necessary in the winter, decreasing inflammation and allowing for the joints to “warm up” quicker in the colder weather. “Using the spring and summer to your advantage to stay active can have positive results for the following winter season.” Kheir said.

“Swimming is a great way to stay active in the summer and strengthen joints,” Kheir explained. “The water will relieve weightbearing pressure in the joints that might make it challenging to stay active without being in pain.”

Other easy activities include biking, walking, and yoga. These exercises can be simple and short. It is important to not work your body more than feels comfortable. A little pain is okay, but if there is significant pain, your body is telling you to slow down. “While the goal is to strengthen the joints, it's also important to make sure they don't get injured further,” Kheir says. If you're looking for specific exercise recommendations for problematic joints,

talk to your orthopaedic doctor and physical therapist about what they recommend for your situation.

“Preventative medicine is the ideal treatment method,” Kheir said. “Anything patients can do that works towards preventing pain in the winter is preferred.”

While strengthening your joints in the summer can help, it doesn’t mean you’ll be completely be relieved of joint pain in the winter. Kheir says quick remedies include taking pain medications, such as ibuprofen to reduce inflammation, and acetaminophen for pain relief, as well the use of a heating pad around the stiff joints, to help warm them up, or wearing extra clothing layers around them to keep your joints warmer.

Sleep, food, exercise, stress: Why working on one of these can improve the others

24-Apr-2023 10:00 AM EDT, by **Mayo Clinic**

Newswise — LONDON — Sleeping enough, eating well, exercising and coping with stress are all components of good health, but focusing on all four at once while managing a hectic schedule may seem impossible. Safia Debar, M.B.B.S., an expert in tailored medical exams at Mayo Clinic Healthcare in London, explains how giving a little extra attention to any one of these areas can improve the others.

“By pulling any of these levers, you can have a big impact on your health,” Dr. Debar says.

It all starts in the brain, Dr. Debar says. It can be in a state of “rest, repair and relaxation,” in which, assuming general good health, the body is functioning optimally, or the brain can be in a stress state, in which the body’s primary concern becomes handling one or more perceived threats and other physical needs are relegated to second place, she says.

“Our brain does not distinguish. The perception of threat and real threat are the same, so once that button is pressed, the same cascade ensues,” Dr. Debar says.

Stress can impact sleeping, eating and exercising. For example, when the brain is in a stress state, it is thinking in the short term and focused on feeling better immediately. That’s why it’s common to crave

sugary and/or fatty foods and not make the effort to exercise when stressed: The brain tells the body it needs immediate energy, Dr. Debar says.

“The brain wants to feel better right now, so it is not going to think about going to exercise and then feeling better afterward,” she says. “It is all intertwined.”

Similarly, sleeping, eating and exercising can affect how we handle stress. Key questions to ask yourself include:

- “What is my sleep like?” If it’s not good, maybe that’s where to place your attention, by going to bed earlier or changing another aspect of your sleep routine, Dr. Debar says.
- “How is my gut functioning?” If you are having digestive problems, it may help to optimize your nutrition, Dr. Debar says.
- “What is my social support like?” That can affect mood, she says.
- “Do I find certain things are making me feel stressed?” For example, if checking email before bed or immediately upon waking generates stress, think about how to change that part of your routine to maintain calm, Dr. Debar says.
- “What kind of exercise am I getting?” If the answer isn’t much, try to find ways to incorporate more movement into your day, she says.

“By helping your gut, that might be enough for you, or helping your sleep, that might be enough for you,” Dr. Debar says. “It’s those simple foundational elements that can have huge impact. Be intentional about certain things.”

Pulling these levers of health ourselves can feel empowering, she says.

“It’s not, ‘A doctor said I had to lose weight and sleep and reduce my stress.’ When you understand the foundations of health, it then doesn’t become about you having low self-control, or procrastinating, or not being disciplined,” Dr. Debar says. “Instead, how do we take what you have in your life and embed these practices in it?”

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