

July 2019 Newsletter

Turramurra Trotters

Running since 1974

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The Newsletter

Re-cap of the month, plus announcements:

Dear all

I would like you to read the attachments, especially the two relating to CPR. A salutary lesson with a good result. Every TT member should consider doing a CPR course and so can apply that knowledge should it be necessary.

Brian and Lynne Matthews handled the drinks superbly during July, thank you Brian and Lynne. John and Margaret Marshall will be doing August and an early reminder for September for John Sheppard.

Les Bryce arranged for some participants who took part in the Winery Festival for our 45th Anniversary to write their comments/stories. It is attached.

Most of our members know the City to Surf is on 11 August and TT the day before, will follow tradition by having the runners start at 7:00 am (massed start, 6.5 km). Walkers will still start at 6:30 am.

The Westlink M7 Blacktown Running Festival took place on Sunday, 28 July. Alex Matthews was 3rd overall in 2:28:16 and father (Brian) did the 10 km course in 56:57.

After the City to Surf we start winding down the length of each course so on Saturday, 10 August we will be doing 12 km.

Regards

Alan

These 12 Exercises Will Help You Reap the Health Benefits of Good Posture

From our pain levels to our self-confidence, our posture impacts more than we think.

Putting in the effort to improve your posture has huge payoffs. But what is good posture really? “Good posture is also known as neutral spine. When we have good posture, the muscles surrounding the spine are balanced and supporting the body equally,” explains [Nina Strang](#), physical therapist and certified strengthening and conditioning specialist at the University of Michigan.

Here’s a quick posture check-in: When sitting, your feet should rest flat on the floor, with even weight on both hips.

Your back should be mostly straight (you’ll have natural curves in your lumbar, thoracic, and cervical areas). Your shoulders should be back but relaxed and your ears should line up over your collarbones.

When standing, your legs should have a slight knee bend so you’re not hyperextending or locking your knee joints, says [Kara Griffith](#), exercise physiologist at Colorado Canyons Hospital & Medical Center.

Now that we know what good posture is, here are 12 key benefits along with tips to achieve them.

1. Reduced low back pain

Sitting or standing in a slouched position for prolonged periods of time stresses your lower back. More specifically, it puts pressure on the posterior structures of the spine, including the intervertebral discs, facet points, ligaments, and muscles, explains Strang.

Do bridges to strengthen your lower back

Bridges strengthen and engage your gluteal and abdominal muscles, so your body relies on them instead of stressing your lower back.

Lie on your back with your knees bent and feet flat on the floor, instructs Strang. Tighten your core without changing your back position. “Lift your hips and lower torso off of the ground by contracting your gluteus maximus muscles.” Slowly lower your hips back down.

Posture tip: Move around frequently—[every 20 to 30 minutes is recommended](#). “No one is able to sit with perfect posture all of the time; it takes a lot of strength to do so. When you feel your muscles tiring, or yourself slowly slouching, get up and move around,” encourages Strang.

What to look for: Don’t anticipate a decrease in lower back pain on your first day. “Posture is something that you should expect to work at your whole life,” says Strang.

By stretching your chest, and strengthening your core and upper back muscles, you’ll see gradual but noticeable pain reduction.

2. Fewer headaches

“Poor posture can contribute to [tension headaches](#), due to increased muscle tension in the back of the neck. Often if we correct our posture, we can reduce muscle tension and improve our headaches,” says Strang.

Stretch your neck muscles with a head retraction exercise

This exercise strengthens the neck muscles that are often weak and stretched out.

Lie on the floor on your back with your knees bent and feet flat on the floor. Pull your chin back toward the floor like you’re trying to make a double chin. Hold for 10 to 15 seconds and repeat 10 times.

Posture tip: Check in with your body often. “Awareness is essential to good posture. We get busy working at our computers or eating a good meal, and we compress into poor posture,” says Griffith. Post a note on your computer screen to remind you to get yourself in proper alignment.

What to look for: Headache prevention will differ from person to person. If you’re not experiencing the progress you want, incorporate more [core exercises](#) and [pectoral stretches](#) into your routine.

3. Increased energy levels

When your bones and joints are in correct alignment, it allows the muscles to be used as they're intended, so you'll have [less fatigue and more energy](#), explains Griffith. In other words, "the muscles don't have to work so hard to do what they're supposed to do."

Twist your torso to activate your side abs

Strengthen your obliques so the right muscles are activated when you're sitting or standing.

Start by sitting on the floor with your knees bent. Lift your feet off of the floor about 6 inches. Tighten your core as you rotate your upper body and elbows from side to side.

Posture tip: To keep your energy levels high, remember it's okay to relax from time to time. "Give your postural muscles a break once in a while. They can get overworked and cause pain as well," explains Strang.

What to look for: Noticing a spike in your energy levels is variable. It depends on how poor your posture is, how strong you are, and how aware you remain of your posture.

"You should notice improvement within a week, but if you want to make it habit, it may take a month for good posture to become natural," says Griffith.

4. Less tension in your shoulders and neck

A forward head posture puts strain on the upper back, shoulder, and neck areas. With proper alignment, the joints and ligaments are less stressed and less subject to chronic overuse, explains Griffith.

Look in the mirror and perform this neck stretch

Stretch out your neck to relieve pressure and correct tension.

Stand with a straight spine and neck. Slightly tuck your chin backward. You should feel a slight tensioning of your clavicle muscles and a lengthening of the posterior part of your neck. Hold for 3 seconds and complete 15 repetitions.

Posture tip: Set reminders on your calendar to check in with yourself several times throughout the day. Ensure your ears are above your shoulders and that you're using your front neck muscles — not just your posterior muscles — to hold your head up.

What to look for: You'll likely notice reduced tension in your shoulders and neck within the first week or two. Applying heat or ice may provide additional relief.

5. Decreased risk of abnormal wearing of the joint surfaces

Crooked sitting and standing, such as resting on one leg or side of your body, leads to hip strain. "Your joints wear down naturally over time. If your posture is even, not many problems arise. But if you're uneven, more pain and issues tend to occur," states Griffith.

Strengthen your core and lower back with this hip flexor stretch

This exercise strengthens your core and lower back at the same time while [stretching your hip flexors](#).

Start in a lunge position with one knee on the floor and your leg extended backward. The other leg should be at a 90-degree angle in front of you with your foot planted on the floor. Engage your core by pulling in slightly.

Posture tip: When sitting, "utilize a lumbar roll or rolled towel to support your natural lumbar curve," suggests Strang. That way, you'll have support for a straighter posture, allowing it to be more sustainable.

What to look for: The longer you work at strengthening your core and straightening your posture, the more natural and less challenging it will be.

6. Increased lung capacity

"If you're slouching, you're compressing your lungs," explains Griffith. "If you're sitting and standing taller, your lungs have more space to expand." In other words, [good posture improves your breathing](#).

Push out the pecs to relieve your lungs

Stand with your feet hip-width distance apart. Interlock your hands behind your back. Hold for 20 seconds to stretch your chest and pectoral muscles.

As an alternative, place your forearms along a door frame at shoulder height. "With one foot in front of the other, begin to shift your weight forward until you feel a stretch in your chest. Hold for 30 to 60 seconds," recommends Strang.

Posture tip: "In a sitting position, rock your pelvis back and forth to determine how much available motion you have in your spine. Your ideal spinal posture will be in the middle of those ranges," says Strang.

Another easy trick is to make sure most of the pressure is on your "sit bones" not your tailbone or the back of your thighs.

What to look for: "If we're sitting slouched, it's difficult for our diaphragm to fully contract and our lungs to fully expand," Strang describes. For faster improvement, lengthen your seated position and open your lungs with three deep breaths several times a day.

7. Improved circulation and digestion

Griffith explains: “If you’re compressing vital organs, your circulation is poor, and those organs aren’t going to work as well.” Healthy blood flow requires proper alignment and avoiding positions which cramp circulation, like crossing your legs.

Roll out your spine with a thoracic foam roll

Lie on your back on the ground and place a firm foam roller in a horizontal position underneath you at the bottom of your rib cage. Support your neck with your arms.

Slowly extend your spine over the roller. Hold for 5 seconds and take a deep breath. Slowly move up 1 to 2 inches at a time. Strang suggests performing this exercise daily.

Posture tip: “When sitting, scoot your hips all the way back into the chair. Your feet must be on the ground to improve support. You may use a lumbar roll along your low back to assist with maintaining this posture. Shoulders should be back and your neck muscles relaxed,” offers Strang.

8. Reduced TMJ (temporomandibular joint) pain

When we have a forward head position, our mandibular joint and jaw muscles experience stress and tension. “This can contribute to pain with eating, talking, yawning, as well as clicking with opening, and headaches,” says Strang.

Loosen your jaw

With your head and neck in a neutral position and your eyes looking forward, turn your head slowly from one side to the other to stretch your neck muscles.

Posture tip: Adjust the ergonomics at work and home to support a better posture. Find a more supportive chair, use a sit-to-stand desk, and purchase a lumbar roll that you can take wherever you go, suggests Strang.

What to look for: Releasing the tension in your neck and upper shoulders should reduce the effects of TMJ pain. Focus on relaxing your jaw throughout the day, especially in high-stress situations like driving during rush hour or focusing on a difficult work project.

9. Improved core and scapular strength

As Strang describes, muscular effort is required to maintain good posture. If you’re holding a good posture, your core and upper back muscles will remain active and engaged.

Engage your back muscles with the overhead arm raise

Sit in a chair with your feet flat on the ground with even weight on both hips. Engage your core by slightly tucking in and flattening your lower back. Let your arms fall to your sides comfortably. Raise them both up at the same time over your head and bring them back to the starting position.

Posture tip: “In a standing posture, keep your shoulders back and aligned. Engage your abdominals and keep a tiny knee bend so you’re not hyperextending or locking your knee joints,” explains Griffith.

Over time, your core strength will improve — helping to support the rest of your body.

What to look for: Your core will continue to strengthen every day if you engage it while you sit and stand properly.

10. Better form during your workouts

Our posture doesn’t just affect us when we’re sitting and standing, but when we’re exercising, too. For example, having an engaged core and neutral spine during a squat will help prevent injury.

Try the tree pose

Stand upright with your feet firmly planted on the ground. Bring your hands to meet in the middle of your chest with palms and fingers touching. Pull your shoulder blades back with your ears resting above your shoulders.

Lift one leg up to your thigh or shin (not your knee), and press the sole of your foot into your leg for stability. Both legs should be engaged, and your core should be tucked slightly as you maintain a neutral spine.

Posture tip: “Most of the environments we live and work in encourage us to do things in front of us, leading to more of a forward posture,” explains Strang. By focusing our attention on proper alignment, we improve our workout results and prevent injury.

What to look for: Focus on your core strength and pay attention to your balance. Over time, you’ll notice this position come with more easily and become a center for calm.

11. Appear taller

While it’s icing on the cake, good posture can make us more attractive. “People look taller and slimmer when they have good posture,” admits Griffith. Sometimes it can even make our abdominals appear more defined.

Flex with the forearm plank

Lie on the floor with your frontside down. Keep your forearms parallel and your feet hip-width apart.

“Tighten your core and lift your torso off of the ground. Make sure you’re looking down between your elbows, your shoulder blades are pulled back, and your core muscles are tight. Don’t stick your hips in the air,” says Strang.

Hold your plank for up to 30 seconds, but stop sooner if your form starts to decline. Complete 3 sets.

Posture tip: Stand in front of a mirror with your normal posture. Look at yourself from all angles. Then, straighten your posture and notice the difference in how you look.

What to look for: Your appearance is one of the first aspects that will change when you practice good posture. It can be almost immediate. To make good posture a habit, continue to build the amount of time you stay in an aligned position throughout the day.

12. Increased self-confidence

Not only can good posture boost your energy levels and reduce your pain, it can also increase your self-esteem. One 2009 study says good posture gives you [more confidence in your own thoughts](#).

Practice the shoulder pull back

Sit or stand with a neutral spine. Shift your shoulder blades to the back. Lift both forearms to a 90-degree angle at your sides. Pull your shoulder blades closer together, as if you're squeezing them, while your arms naturally extend backward. Complete three sets of 12 reps.

Posture tip: Before a meeting, presentation, or job interview, make sure your shoulders are relaxed, your spine is in alignment, and your ears are resting over your shoulders.

What to look for: Feeling more confident in yourself can start from day one. Simply pay attention to your posture as you enter a room, sit down to a meal, or work on a project at your computer.

Why do so many people say you should run in the morning?

I'm a morning runner. So, I'll share my reasons. If you aren't a morning person, starting a morning run regimen is one way to become one. That's what happened to me. For the past twenty five years I wake up excited and happy... yeah, I'm one of those weirdos.

I started running marathons in my 20s. Training was tough with several jobs and little time. So, I started getting up mad early to train before work. That way I knew I'd make time for it. Bonus #1 is that if you run first thing, you rarely miss a run. In fact, most days I'm half habit getting out the door to do it. I never even think about not going. Once it's a habit like this, you'll stay SO consistent. Being half awake definitely helps!

Also, I always run in a fasting state. That means I have an empty stomach - other than water for hydration. This way of running increases my speed, agility, and progress. It also ensures that I never get stomach sick/cramps from running. On rare occasions when I'm not energetic and feel sluggish, I may have some tea before jetting. As long as I drink clear liquid, it's still a fasting state. This is easy to do when I run first thing in the morning. When you wake up is the most natural fasting state possible - effortless. So, this is a bonus of running in the morning.

Another benefit - how lovely to get so much done early in the day. I return from my runs before the rest of my family is even awake. It feels pretty great. That's not just because it's an accomplishment. I need alone time. Usually when I get back from running I meditate. That's a perfect setup for me to have a great day.

Sunrises are another reason I love morning runs

It's summer now. So, that means it's nice and cool when I get up early to run. If I have to run in the evening it's usually still a bit hot and/or humid. That's because the air stays pretty warm until the sun's been set awhile. Morning runs have an advantage this time of year for that reason.

I also find that running puts me in a better mood. No matter what day I've got ahead of me, I'm not stressed about it after a run. It works like a physical version of "morning pages". Have you heard of them? They're a practice from the book **The Artist's Way** by Julia Cameron. Many practice this freestyle writing first thing in the morning. It helps empty out all the random stuff we often wake up with in our heads. That's the purpose and there's lots of payoff. Running helps me empty that out just as those pages do. I can clear

my mind and feel more set for the day's business ahead.

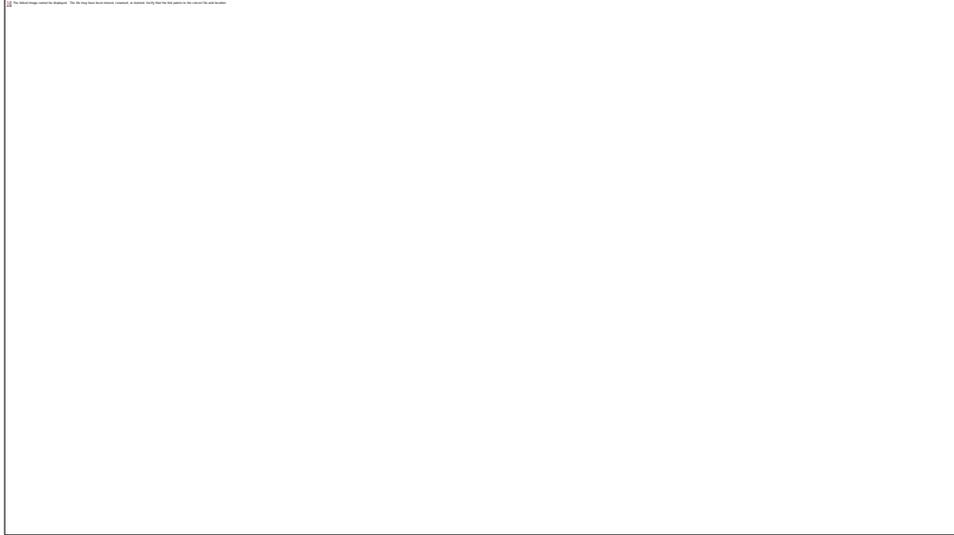
It's also considered a metabolic boost to get your body moving first thing in the morning. Your jets get fueled with exercise rather than food. So, when you do eat, it metabolizes faster. At least I've read a few studies that say this... I'm not a scientist. I didn't do the experiments myself that prove it. There are several out there, though.

In my experience, running in the morning also energizes me. Though it may exhaust a rookie runner, it gets me riled. So, in my case it's better to do in the morning than evening. The more you run, the more it energizes you.

Running also sweats out all the goop from whatever mess I engaged in the day before. That means whether I hit a buffet hardcore or overdid the self tanner, it's sweated out/off by the end of a long run.

Can't think of a better way to start my day

Anti-terror rules and precautions are crushing community events with sky-high costs



Beefed-up security and street bollards required under new anti-terror laws are threatening the future of popular community events, with organisers fearing they may have to divert donations to cover costs.

Research out this week by Roy Morgan [shows](#) only one in every 50 Australians counts terrorism as a concern. It's firmly on the minds of organisers of parades and fun runs, however, as the price of security rules blows event budgets to the point many are now being cancelled. Guidelines by the Australia-New

Zealand Anti-Terror Committee mean events that move must be protected by safety bollards and extra security must be on hand to "reduce the impact of vehicles being used as weapons".

But the new safety measures cost more than \$10,000 – an amount many organisers said is far too great for them to bear. In regional Victoria, organisers of the annual Bendigo Bank Fun Run have been forced to cancel it for the first time in 12 years after folding under the pressure of financing the extra security.

Bendigo Health Foundation chair Scott Elkington said he was "frustrated" after finding out he may be forced to spend tens of thousands of dollars out of the event budget on security.

"Just to pay for the bollards alone we'd need about \$20,000, and then 15 semi-trailers and another 40-50 vehicles," Mr Elkington said.

He said it wasn't fair to splash the community's generous donations on extra security measures instead of raising money for the Bendigo Health Foundation.

"It got to the point where the event was starting to look like it was either going to break even or worse, and the costs associated with the anti-terrorism laws were a big part of it," Mr Elkington told *The New Daily*.



The Bendigo Bank Fun Run has raised more than \$888,000 since its inception.

Despite the setback, the Bendigo Bank Fun Run looks likely to make a comeback.

"I think it's really important the community wins in this space and not the terrorists," Mr Elkington said.

"That makes us even more determined to make sure we don't give up."

In the small town of Murwillumbah in northeast New South Wales, the annual street parade at the Tweed Valley Banana Festival won't go ahead either.

For the first time in 64 years, organisers said they were forced to pull the pin after they

realised they couldn't afford the traffic control plan, concrete bollards and guards required to host the popular street parade featuring oversized bananas.

Even powerful Cyclone Yasi in 2011 didn't stop the parade from going ahead.



The Tweed Banana Festival street parade has been drawing crowds since the 1960s. Festival co-coordinator Carol Mudge told the ABC the festival could not afford the \$10,000 it would cost to meet the ‘hostile vehicle mitigation’ measures. “It has decimated us,” Ms Mudge said. She said the banana festival would still go ahead without the parade. A NSW Police spokesperson, meanwhile, has defended the safety measures. “Police, council, and event organisers have a duty of care to take all steps to ensure the safety of attendees,” the spokesperson told *The New Daily*. “As with any major event, police conduct security

assessments, implement traffic management plans, and provide advice to event organisers and other relevant agencies, to ensure the safety and security of participants, volunteers and the wider community.”

The new anti-terror regulations follows a series of deadly vehicle-ramming attacks around the world, such as the 2016 Nice terror attack in which a cargo truck was used to plough into crowds celebrating Bastille Day in the south of France.

Recently, in the United States, a [self-proclaimed neo-Nazi who killed a woman](#) by crashing his car into a crowd of counter-protesters in Charlottesville, 2017 was given a life sentence.

Just a short burst of exercise primes the brain for learning



Exercise not only gets the blood pumping, but new research finds that even a brief burst of exercise can bolster a person’s memory powers. What this demonstrates is that exercise primes the brain for learning – and suggests that school students would benefit from more frequent, if shorter, periods of exercise in schools. It also has implications for middle aged and older people seeking to put up a defence against memory loss. It’s also a significant addition to the body of evidence linking brain health

to physical activity.

Previous research has found that [structured exercise training can significantly improve brain function in stroke survivors](#); [aerobic exercise increases brain volume, notably in the hippocampus](#); [sustained physical activity leads to long-term cognitive gains](#); and [exercise was associated with improved brain function in a group of adults diagnosed with mild cognitive impairment](#).

Now neuroscientists, working with mice, have discovered a short burst of exercise directly boosts the function of a gene that increases connections between neurons in the hippocampus, the region of the brain associated with learning and memory.

“Previous studies of exercise almost all focus on sustained exercise,” said co-senior author Dr Gary Westbrook, senior scientist at the Oregon Health and Science University (OHSU) Vollum Institute and Dixon Professor of Neurology in the OHSU School of Medicine.

“As neuroscientists, it’s not that we don’t care about the benefits on the heart and muscles but we wanted to know the brain-specific benefit of exercise.”

The scientists designed a study in mice that specifically measured the brain’s response to single bouts of exercise in otherwise sedentary mice that were placed for short periods on running wheels. The normally lazy mice ran a few kilometres in two hours.

The study found that short-term bursts of exercise – the human equivalent of a weekly game of pickup basketball or 4000 steps – promoted an increase in synapses in the hippocampus.

(A synapse is a junction between two nerve cells, consisting of a tiny gap across which impulses pass by diffusion of a neurotransmitter.)

Scientists made the key discovery by analysing genes that were increased in single neurons activated during exercise. One particular gene stood out: Mtss1L. This gene had been largely ignored in prior studies in the brain – and is now a source of excitement in the research community.

The Mtss1L gene encodes a protein that causes bending of the cell membrane. Researchers discovered that when this gene is activated by short bursts of exercise, it promotes small growths on neurons known as dendritic spines – the site at which synapses form.

Dendritic spines contain neurotransmitter receptors, organelles and signalling systems essential for synaptic function and plasticity.

Numerous brain disorders are associated with abnormal dendritic spines. Spine formation, plasticity, and maintenance depend on synaptic activity and can be modulated by sensory experience.

The researchers note that human studies give support for the idea that exercise within four hours of a learning task improved memory performance.

In the next stage of research, scientists plan to pair acute bouts of exercise with learning tasks to better understand the impact on learning and memory.

Forces and Tissues: The Real Cause of Running Injury



When an injured client walks into my office, I have two goals:

- To do something that day that helps them feel better, and
- To figure out how the injury happened and how to prevent it (and something like it) from happening again.

The first goal is the easiest. We do manual therapy, mobility, strength, rest, ice, and heat. It's so easy, in fact, that I half-jokingly share with my clients my favourite Voltaire quote, "The art of medicine consists of amusing the patient while nature cures the disease." While getting better is usually easy, it can be trickier to stay healthy.

In order to prevent injury, we need to better understand the factors causing it. To begin, let's define an injury as the breakdown of the body's tissues due to excessive physical load. This breaking down can either be due to mechanical or chemical factors. The physical load is the force imparted on tissue, either volitionally by physical activity—running—or by involuntary factors such as falls or accidents. Since the vast majority of injuries I treat do not involve trauma, we will focus on the voluntary forces of running.

The million-dollar question of injury treatment and prevention is, what constitutes an excessive load? How do we know how much is too much? Moreover, how can load X be safe and effective running at time Y, but the same load causes severe injury at time Z? Perhaps the more important question is, what constitutes healthy versus unhealthy tissue? Successfully completing a run depends on our body's ability to absorb load, so any deficit in tissue integrity decreases capacity to absorb force. No integrity, no run.

Thus, injuries are born at the intersection of tissue and force. Abnormalities of either or both dictate whether we run pain-free or create injury. [In my first-ever iRunFar article back in 2012](#), I briefly outlined the tissue-force relationship. In this article, I expand on how the interaction of force and tissue dictates either healthy or injurious running.

The Definition of Forces

Let's start by talking about the simpler and more recognized factor in injury, force. In physics, force is defined as the product of mass and acceleration. For our purposes, we can define force as the amount of energy generated by impacting the ground during running.

Force has characteristics of quantity and quality. Quantity is straightforward. The more we run, the more force is imparted. It is also readily acknowledged as a primary factor in injury. Non-runners are quick to jump onto the quantity hypothesis for injury causation, "So-and-so got injured because they ran too much!" But did they actually run too much? And what does that even mean? Force goes deeper than mere quantity.

Force has acute and chronic characteristics. Because of the adaptive nature of tissues, which we will address later, some forces are absorbed easier than others. On one end, acute forces can be extremely stressful and injurious. Many runners fear sprinting, for example, because it is a sharply increased force load that makes them sore. This soreness is a result of a larger force than tissue is accustomed to. Likewise, an inversion ankle sprain represents an acute force, wherein that force is applied in both high quantity and at a unique angle.

However, there is a relevant flip side. Chronicity is also an injury factor. Running the same surface at the same speed every day can cause tissue breakdown over time. While we'd like to think that tissue always adapts to consistent force, a simple analogy explains this concept well. Just as constant friction on the same spot of skin may cause a callus, it can also cause a blister.

Lastly but most importantly, we return to quality. How forces are applied to the body plays an enormous role in injury creation. How we run—our stride mechanics—is the most powerful factor in how forces are applied and absorbed by the body. The characteristics of [posture](#), [hip mobility](#), [foot contact](#), and even [arm swing](#) heavily dictate how much and in what ways forces are imparted into tissues.

A good example is how bone tissue is extremely strong but also extremely specific in its strength. The long bones of the legs—the femur and tibia—can absorb incredible forces, but only if applied straight through the length of the bone. Yet at different angles, such as oblique angles, bending, or torsion, much smaller forces can cause fracture. This specificity, due to its complex internal microstructure, is likely dictated by the balance between the need for strength as well as lightweight efficiency. So, if we apply the same force at a different angle, the outcome may be widely different. This is why running efficiency is so important and needs to be examined constantly for every runner trying to reach his or her potential while avoiding injury.

Normal force is defined as:

- A volume of running that has previously shown to be sustainable;
- A quality of efficiency, where the force is imparted biomechanically, as dictated by our anatomy and physiology, to be most easily attenuated and impart the least amount of stress; and
- A consistency that allows for optimal adaptation (thus avoiding sharply acute changes).

The Definition of Tissues

While quantity of force is easy to measure and quality is easily observed, even with an untrained eye, tissue integrity is both ill-defined and extremely difficult to measure. For this reason, it is often overlooked and looms enormously in the injury equation. Tissue integrity has several characteristics:

- Strength – Does the tissue possess normal passive and/or active strength to capacitate loads?
- Mobility – Does the tissue have anatomically normal extensibility or the ability to fold and lengthen in an efficient way?
- Physiological balance – As living cells, does the tissue possess optimal nutrition, hydration, and stress-rest (both immune and hormonal) balance?

Strength has both extrinsic and intrinsic qualities. Is the tissue big or strong enough to support the load? Thankfully, our physiological adaptation creates strength quickly. We do an activity, the acute stress causes micro-trauma to tissues, we allow the tissues to repair, and hyper-compensation results. Because of this, it is my clinical experience that tissue strength is not a dominant primary factor in injury. However, if a runner lacks the strength to move their body in an efficient way, a strength deficit can secondarily cause injury. We'll talk more about this shortly.

Adaptive shortening, or the gradual loss of soft-tissue extensibility, is a common occurrence with heavy running loads over many months and years. Mobility may be the easiest to measure, though deficits can be difficult to perceive.

The [Performance Mobility Series](#) is intended to help runners identify specific mobility metrics necessary to achieve and maintain normal tissue and joint mobility.

The loss of a tissue's functional mobility then creates abnormality in two ways. First, the tissue may lose its ability to absorb forces. Secondly and far more importantly, mobility loss can alter running mechanics and the quality of force loading. For example, range-of-motion loss in hip flexors or hamstrings can significantly alter the running stride and change how forces are applied to the body. Again, inefficient force loading—applying forces outside the tissue's specific design—is a potent stressor and injury producer. All else equal, [a runner with Jim Walmsley's posture, hip mobility, and foot fall](#) might at the same given speed be able to absorb, say, 70 miles per week of training, while more inferior stride mechanics might cause injury at 35 miles per week.

Lastly but perhaps most importantly is the tissue's physiological balance. This is by far the most overlooked aspect of injury because it is so insidious and difficult to measure at the tissue level. Yet at the same time, physiological balance is representative of whole-body health. As such, pervasive, big-picture physiological states of health and wellness or a lack thereof directly impact tissue integrity.

I have written on this concept with multiple angles, ranging from the impact of [running during and after major illness](#) and the impact of chemical stressors—both [running intensity](#) and [non-running factors](#)—on tissue integrity. In short, chemical stressors and physiological deficits can radically decrease the mechanical capacity of tissue. We cannot ignore acute illness, chronic inflammatory conditions, or unremitting physical or psychological stress. They all impact tissue integrity.

Abnormal Tissues and Forces

If the definition of injury is a breakdown of the body's tissues due to excessive physical load, then I contend that every injury is the result of abnormality of either force and/or tissue. Specifically, various factors can either multiply force and/or diminish tissue capacity. This results in a force-tissue imbalance and an injury.

Moreover, an injury's severity also depends on the amount of distortion between force and tissue. For example, slightly modified forces such as from overstriding due to stiff hips on otherwise normal shins may result in shin splints. Likewise, persisting through your typical training week while under heavy work stress might result in increased muscle soreness. However, almost every serious injury involves both abnormal forces and abnormal tissue. Last month, **Tracy Høeg MD**, wrote [a fabulous article on iRunFar about the science of bony stress fractures](#), which included several insightful ultrarunner case studies. In each case, potential force and tissue abnormalities are evident and include:

- Systemic illness,
- Acute/novel force application,
- Potential stride alterations due to previous injuries, and/or
- Potential work and lifestyle stress.

Again, I contend that serious injuries such as stress fractures result from abnormality in both force application and tissue integrity. It takes a lot to break bone, but this is the one-two punch to do it.

In Review

If you've made it this far, then your reward is in knowing that the key to injury prevention is not:

- Running exactly X miles at Y pace on Z days;
- Drinking or not drinking milk or taking the entire vitamin alphabet; and/or
- Doing several hours of rehab or prehab exercise daily.

Instead, the solution is maximizing tissue integrity and minimizing force.

For force mitigation:

- Be patient and consistent with activity.
- Vary activity but do so gradually.
- Be consistently [mindful about efficient movement!](#)

For tissue integrity:

- Prioritize optimal health throughout your body, and respect the limits of—and any deficits in—your overall health.
- Maintain optimal hydration throughout the day, not just during activity.
- Maintain optimal nutrition.
- Acknowledge the importance of the stress-rest balance.

How we move is how we feel, but how we are is also how we feel. If we move with ease and efficiency in a healthy system, seldom will we have problems. Thus, healthy, sustainable, joyful, and injury-free running may lie in these crossroads.

Call for Comments (from Meghan)

- If you look back at your last injury, can you pinpoint the force or tissue abnormalities which might have contributed to it?
- Do you think you are running right now with a force or tissue abnormality? Can you describe it?

Healthy Lifestyle May Offset Genetic Risk Of Dementia

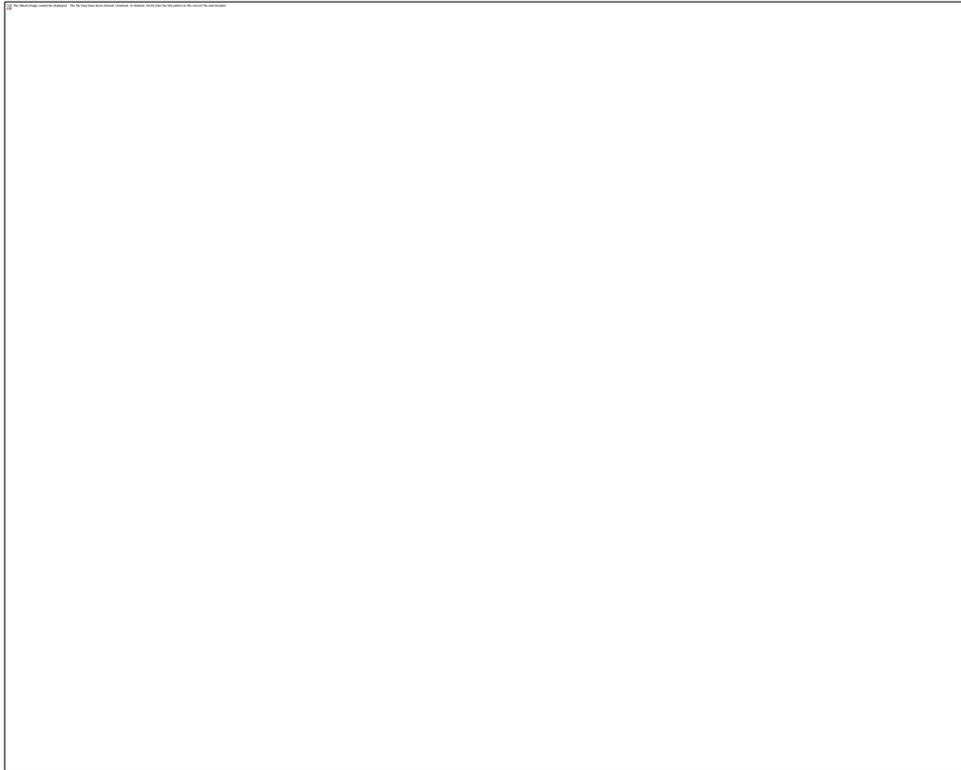
- Living a healthy lifestyle may help offset a person's genetic risk of dementia, according to new research.
- The study was led by the University of Exeter – simultaneously published in *JAMA* and presented at the Alzheimer's Association International Conference 2019 in Los Angeles. The research found that the risk of dementia was 32 percent lower in people with a high genetic risk if they had followed a healthy lifestyle, compared to those who had an unhealthy lifestyle.
- Participants with high genetic risk and an unfavourable lifestyle were almost three times more likely to develop dementia compared to those with a low genetic risk and favourable lifestyle.
- Joint lead author Dr Elbieta Kuma, at the University of Exeter Medical School, said: "This is the first study to analyse the extent to which you may offset your genetic risk of dementia by living a healthy lifestyle. Our findings are exciting as they show that we can take action to try to offset our genetic risk for dementia. Sticking to a healthy lifestyle was associated with a reduced risk of dementia, regardless of the genetic risk."
- The study analysed data from 196,383 adults of European ancestry aged 60 and older from UK Biobank. The researchers identified 1,769 cases of dementia over a follow-up period of eight years. The team grouped the participants into those with high, intermediate and low genetic risk for dementia.
- To assess genetic risk, the researchers looked at previously published data and identified all known genetic risk factors for Alzheimer's disease. Each genetic risk factor was weighted according to the strength of its association with Alzheimer's disease.
- To assess lifestyle, researchers grouped participants into favourable, intermediate and unfavourable categories based on their self-reported diet, physical activity, smoking and alcohol consumption. The researchers considered no current smoking, regular physical activity, healthy diet and moderate alcohol consumption as healthy

behaviours. The team found that living a healthy lifestyle was associated with a reduced dementia risk across all genetic risk groups.

- Joint lead author Dr David Llewellyn, from the University of Exeter Medical School and the Alan Turing Institute, said: “This research delivers a really important message that undermines a fatalistic view of dementia. Some people believe it’s inevitable they’ll develop dementia because of their genetics. However it appears that you may be able to substantially reduce your dementia risk by living a healthy lifestyle.”

These Big Guys Prove That Everyone Can Run

The Pansa Boyz are here to run. They don’t care what you think.



Tyrone Alomia remembers exactly when he started running in May 2011. He was working at the old Nike flagship in New York City, and his boss challenged him to run a four-mile New York Road Runners race around Central Park. Alomia was standing at 6 feet 2 inches and weighed 330 pounds at the time, and the race would be the first four miles he’d run in his entire life. “He saw how unhealthy I was but knew I had potential,” he tells *Men’s Health*. “At the time, I couldn’t even run a few blocks without stopping.” In a total downpour, the Brooklynite finished the race without slowing to walk once. Six months later, he’d complete his first marathon in under six hours. Nine years later, the 32-year-old is now down 30 pounds and on the cusp of breaking that two-

hour half-marathon barrier, his loftiest goal.

“Running is both the hardest and most rewarding thing you can do for yourself,” he says. “I came from a neighborhood where health and wellness isn’t the first priority on everyone’s list. But when I found running, I became better.”

Strength in Numbers

If you ask Alomia’s friends Jason Suarez, Hector Espinal, and Emmanuel Rodriguez how they feel about the sport, they’ll all express similar feelings. Finding running has made a major impact in their lives, too. These four guys—who’ve adopted the nickname “[Pansa Boyz](#)” (“panza” the word for “belly” in Spanish)—weigh almost a ton combined. Recently, they teamed up to relay both the North Face Endurance 50K Challenge and the Brooklyn Mile, the native New Yorkers aren’t slowing down anytime soon—at least not because of their size. “If track and field had weight classes, technically we would be world record holders in the 4x4,” Suarez captioned [a photo](#) of the squad after their 6:06 Brooklyn Mile relay finish.

The former collegiate 47-second 400-meter runner admits that getting out on the road can be a hurdle in and of itself—but doing it shirtless when you’re a bigger guy is an entirely different challenge. Even so, his crew helps to cut down his doubts and insecurities.

“WHY AM I ANY DIFFERENT? THERE SHOULDN’T BE A DOUBLE STANDARD.”

“These guys, they’re getting me to be more comfortable in my own skin,” he says. “What I was able to do in high school and college, I’ll likely never do that again. I’m letting go of the past and looking forward to what’s to come. Doing it with my friends every week makes it better.” He says his goal is to cross off all six world marathon majors by the end of 2023, [qualifying for Boston](#) as his last.

For Espinal, running—and doing it with his shirt off—is a no-brainer at this point. “Would you tell that to a dude that’s 6-foot-1, 105 pounds, to cover up if he had his shirt off?” he asks. “Why am I any different? There shouldn’t be a double standard.”

Why Not Me?

Now, the guys are making an impact on others. Founder of [We Run Uptown](#), a running crew out of Upper Manhattan and the Bronx, Espinal remembers logging his first-ever runs at night about six years ago, running the 20 blocks down and back from 165th and Riverside Park. Now down almost 100 pounds, he wants those hesitant to lace up and move to ask: “Why not me?”

“For the people who look at me and wonder if they can run, too, you’ve gotta ask yourself: Why not do it now?” he says. “Are you stopping because of what someone else thinks? Is the cab driver gonna heckle you? Are you worried about running into someone you know? It’s nice when people tell me that I inspire them, but I want them to find inspiration inside too.” Rodriguez agrees. “I want to touch people,” he says. “I want to open a conversation. You’re an athlete just as you are. Don’t let anyone try to define that for you.”

These guys are strides ahead of most men when it comes to embracing their size and the body positivity movement. [Research shows](#) that 38 percent of guys would give up a year of life for the “perfect” body, and guys tend to be quieter about their body negativity, [seeking treatment less frequently](#) or holding off on treatment longer than women due to shame.

“Most guys have an unattainable cultural ideal that being tall and muscular equals strength, which creates internal discomfort, consternation, and negative emotions—all of which then can lead to serious health problems,” says [Brian Cook](#), Ph.D., VP of Movement, Research and Outcomes at Alsana. “Most think that it’s more masculine to suck it up, not talk about it, deal with it yourself, and pretend everything’s fine.”

Giving Bigger Guys the Road

As a 300-pound runner, Alomia thinks that there needs to be more of a dialogue about what the athletes you “don’t see on magazine covers” need. “Look at almost any brand out there, and they don’t make clothing that fits me as an athlete,” he says. “I have wide shoulders and a big chest, and the way that the marketing is—it’s hard not to wonder, ‘Am I supposed to be doing this, being this big?’”

“NO MATTER WHAT ANYONE ELSE THINKS ABOUT ME RUNNING. I’M GOING TO DO THIS REGARDLESS.”

For Rodriguez, that’s a resounding yes. Catching his breath after the June mile on Kent Avenue, he got a text message from an old coworker that read “you make me feel comfortable about running in a tank top. I’ve always been self-conscious about my body, but you’re changing the way people think, man.”

“I just want to run,” says Rodriguez. “No matter what anyone else thinks about me running. I’m going to do this regardless.”

As for what’s next for these four athletes? Suarez and Espinal are both signed up for the upcoming Chicago Marathon in October. Rodriguez and Alomia are taking on the Philadelphia Half together in November. And after that? Well, it won’t be long until the Pansa Boyz team up, all four of them, to conquer the next finish line—no shirts required

‘It’s a superpower’: how walking makes us healthier, happier and brainier

Neuroscientist Shane O’Mara believes that plenty of regular walking unlocks the cognitive powers of the brain like nothing else. He explains why you should exchange your gym kit for a pair of comfy shoes and get strolling.



Shane O’Mara with Amy Fleming in Dublin.

Taking a stroll with Shane O’Mara is a risky endeavour. The neuroscientist is so passionate about walking, and our collective right to go for walks, that he is determined not to let the slightest unfortunate aspect of urban design break his stride. So much so, that he has a habit of darting across busy roads as the lights change. “One of life’s great

horrors as you're walking is waiting for permission to cross the street," he tells me, when we are forced to stop for traffic – a rude interruption when, as he says, "the experience of synchrony when walking together is one of life's great pleasures". He knows this not only through personal experience, but from cold, hard data – walking makes us healthier, happier and brainier.

We are wandering the streets of Dublin discussing O'Mara's new book, *In Praise of Walking*, a backstage tour of what happens in our brains while we perambulate. Our jaunt begins at the grand old gates of his workplace, Trinity College, and takes in the Irish famine memorial at St Stephen's Green, the Georgian mile, the birthplace of Francis Bacon, the site of Facebook's new European mega-HQ and the salubrious seaside dwellings of Sandymount.

O'Mara, 53, is in his element striding through urban landscapes – from epic hikes across London's sprawl to more sedate ambles in Oxford, where he received his DPhil – and waxing lyrical about science, nature, architecture and literature. He favours what he calls a "motor-centric" view of the brain – that it evolved to support movement and, therefore, if we stop moving about, it won't work as well.

This is neatly illustrated by the life cycle of the humble sea squirt which, in its adult form, is a marine invertebrate found clinging to rocks or boat hulls. It has no brain because it has eaten it. During its larval stage, it had a backbone, a single eye and a basic brain to enable it to swim about hunting like "a small, water-dwelling, vertebrate cyclops", as O'Mara puts it. The larval sea squirt knew when it was hungry and how to move about, and it could tell up from down. But, when it fused on to a rock to start its new vegetative existence, it consumed its redundant eye, brain and spinal cord. Certain species of jellyfish, conversely, start out as brainless polyps on rocks, only developing complicated nerves that might be considered semi-brains as they become swimmers.

Sitting at a desk all day, it's easy to start feeling like a brainless polyp, whereas walking and talking, as we are this morning, while admiring the Great Sugar Loaf mountain rising beyond the city and a Huguenot cemetery formed in 1693, our minds are fizzing. "Our sensory systems work at their best when they're moving about the world," says O'Mara. He cites a 2018 study that tracked participants' activity levels and personality traits over 20 years, and found that those who moved the least showed malign personality changes, scoring lower in the positive traits: openness, extraversion and agreeableness. There is substantial data showing that walkers have lower rates of depression, too. And we know, says O'Mara, "from the scientific literature, that getting people to engage in physical activity before they engage in a creative act is very powerful. My notion – and we need to test this – is that the activation that occurs across the whole of the brain during problem-solving becomes much greater almost as an accident of walking demanding lots of neural resources."

O'Mara's enthusiasm for walking ties in with both of his main interests as a professor of experimental brain research: stress, depression and anxiety; and learning, memory and cognition. "It turns out that the brain systems that support learning, memory and cognition are the same ones that are very badly affected by stress and depression," he says. "And by a quirk of evolution, these brain systems also support functions such as cognitive mapping," by which he means our internal GPS system. But these aren't the only overlaps between movement and mental and cognitive health that neuroscience has identified.

I witnessed the brain-healing effects of walking when my partner was recovering from an acute brain injury. His mind was often unsettled, but during our evening strolls through east London, things started to make more sense and conversation flowed easily. O'Mara nods knowingly. "You're walking rhythmically together," he says, "and there are all sorts of rhythms happening in the brain as a result of engaging in that kind of activity, and they're absent when you're sitting. One of the great overlooked superpowers we have is that, when we get up and walk, our senses are sharpened. Rhythms that would previously be quiet suddenly come to life, and the way our brain interacts with our body changes."

From the scant data available on walking and brain injury, says O'Mara, "it is reasonable to surmise that supervised walking may help with acquired brain injury, depending on the nature, type and extent of injury – perhaps by promoting blood flow, and perhaps also through the effect of entraining various electrical rhythms in the brain. And perhaps by engaging in systematic dual tasking, such as talking and walking."

One such rhythm, he says, is that of theta brainwaves. Theta is a pulse or frequency (seven to eight hertz, to be precise) which, says O'Mara, "you can detect all over the brain during the course of movement, and it has all sorts of wonderful effects in terms of assisting learning and memory, and those kinds of things". Theta cranks up when we move around because it is needed for spatial learning, and O'Mara suspects that walking is the best movement for such learning. "The timescales that walking affords us are the ones we evolved with," he writes, "and in which information pickup from the environment most easily occurs."

Essential brain-nourishing molecules are produced by aerobically demanding activity, too. You'll get raised levels of brain-derived neurotrophic factor (BDNF) which, writes O'Mara, "could be thought of as a kind of a molecular fertiliser produced within the brain because it supports structural remodelling and growth of synapses after learning ... BDNF increases resilience to ageing, and damage caused by trauma or infection." Then there's vascular endothelial growth factor (VEGF), which helps to grow the network of blood vessels carrying oxygen and nutrients to brain cells.

Some people, I point out, don't think walking counts as proper exercise. "This is a terrible mistake," he says. "What we need to be is much more generally active over the course of the day than we are." And often, an hour at the gym doesn't

cut it. “What you see if you get people to wear activity monitors is that because they engage in an hour of really intense activity, they engage in much less activity afterwards.”

But you don’t get the endorphin high from walking, I say. “The same hit you get from running is what you’d get from taking morphine? We simply don’t know that’s true,” he says. “People who study this area don’t go on about endorphins and there may be a reason for that.” Not that he is opposed to vigorous exercise, but walking is much more accessible and easily woven into everyday life: “You don’t need to bring anything other than comfy shoes and a rain jacket. You don’t have to engage in lots of preparation; stretching, warm-up, warm-down ...” O’Mara gets off his commuter train a stop early so that he can clock up more steps on his pedometer. To get the maximum health benefits, he recommends that “speed should be consistently high over a reasonable distance – say consistently over 5km/h, sustained for at least 30 minutes, at least four or five times a week.”

Twice during our circuitous route, he asks me to point to where I think our starting point of Trinity College is, and my estimates are pretty close. “That just shows you how good your GPS is,” he says. “You have never been here before, but you have a very good sense of where you need to go.” This is reassuring, I say, because, of course, Google Maps is enfeebling our innate abilities to find our way. “That’s absolute garbage,” says O’Mara. “We really have to get a grip. If you hire a car and drive around a country you’ve never been in, taking a route into a city you’ve never driven into before, the first time, you rely very heavily on the GPS. The second time, not quite so much and, by the third or fourth time, you don’t need the GPS at all, because you’ve learned the route. I actually think GPS is great for helping us disambiguate where we are.” So it’s mere speculation that relying on satnavs is killing our sense of direction? “Yeah it is. There is no data of any quality showing that, over the long term, reliance on GPS is a bad thing. Honestly, the brain is much more robust.”

O’Mara describes our inbuilt GPS, or cognitive mapping system, as a silent sense. “It is constructed largely without our awareness, and we only notice it if it fails us.” While the sensitive vestibular system of the inner ear governs balance, for mental mapping (which can work even when our eyes don’t), we have what are known as place cells in our hippocampi. If you stay in one place, the cell for that position keeps firing, but if you move, that cell will stop firing and a cell marking your new position will start firing and so on. In rat experiments, the system worked less well when the rodents were wheeled around as opposed to walking.

It’s clever, but not infallible. “We get fooled when we walk a long way in a single direction,” says O’Mara. We need to keep looking around us and recalibrating with visual cues. “If you’re feeding your place cells by coming from a single direction, what they know about the environment is that single direction and you want them to have input from all directions, so look around occasionally and your place cells will reset from the whole sensorium around you.”

While all this is going on in the background, our social brains are working to predict which direction others will take, to avoid collision. In order to walk and navigate, the brain flickers between regions, just as our waking minds are often, says O’Mara, “flickering between big-picture states – thinking about what we have to do tomorrow, plans for next year, engaging in what is called ‘mental time travel’ – and task-focused work. And you need to flicker between these states in order to do creative work.” That’s how important associations get made, and this flickering seems to be bolstered by walking.

It’s part of the reason, O’Mara suspects, that the prolific writer and thinker Bertrand Russell said that walking was integral to his work. Likewise, the Irish mathematician William Rowan Hamilton, who pondered a single problem on his daily walks for seven years, eventually inventing a number system called quaternions, without which [we couldn’t make electric toothbrushes](#) or mobile phones.

O’Mara’s ultimate ode to urban walking is TS Eliot’s 1915 poem *The Love Song of J Alfred Prufrock*, which he describes as “a journey on foot, and a journey through states of mind”. Wordsworth composed poetry as he wandered, while Aristotle delivered lectures on foot in the grounds of his school in Athens. The philosopher Friedrich Nietzsche memorably said that “only thoughts reached by walking have value”, a notion that Charles Dickens – who was as prolific a walker as he was a writer – would no doubt have seconded.

And, while my mind has been flickering through the streets of Dublin, says O’Mara, “you haven’t died or fallen over, and you’re continuing to breathe. Your heart is booming away. You’re putting one foot in front of the other, and we’re engaging in this conversation, information exchange.” Plus, I’m checking out the area, admiring fanlights and looking for clues of neighbourhood life. “All of this is going on all the time. Robots can’t do this. Getting a robot to cross the road is really hard.” Whereas for our brains, “evolution has been solving this problem, billions of times an hour, for the past 400m years”.