

Humans have been endurance runners and walkers for at least 2 million years. Walking and running are our two main gaits. Whether we are more predisposed for the former or the latter is under debate. [Studies carried out in the past couple of decades](#) seemed to suggest that the genus *Homo* evolved to be mainly a runner, as indicated by certain skeletal and muscle modifications. One such adaptation is the nuchal ligament – a sort of elastic band that stabilises the head in running animals. Dogs and horses have it, and so do we, but it is absent in gorillas, chimps, and early hominins. We also have long springy tendons in our legs, and our feet have a flexible, elastic arch to help us with the bounce necessary for running. Another interesting factor is that humans have ten times more sweat glands than apes, which, coupled with bare skin, provide us with a super-efficient cooling system, that can translate into higher endurance capabilities. But whether we are ‘born to run’ (as theorised in 2009 by [Christopher McDougall in his eponymous book](#)), or to walk, is still mere speculation.

How did our early ancestors catch their prey before the invention of weapons such as arrows that allow for ‘remote’ killing? Did they run after animals until they fell to the ground due to exhaustion or heat stroke? It’s hard to say, but we do know something about the tactics used by the few hunter-gatherers still left on the planet, such as the Hadza, who live in the region of the Serengeti and East African Rift Valley. They seem to rely on a combination of mental and physical skills that involve outsmarting their prey by studying its habits, and developing strong tracking abilities, so they can follow it at a safer distance and at a more sustainable pace.

So, perhaps, the fairer thing to say is that we are born to locomote at varied speeds, alternating walking and running (see e.g. ‘[Comparing walking and running in persistence hunting](#)’, recently published in the *Journal of Human Evolution*). More widely, we are born to be physically active. Hunter-gatherers, who are generally not plagued with the same level of chronic morbidities as Westerners, walk nearly twice our health guideline target of 10,000 steps a day, which itself doubles the amount walked by the average person – around 5,000 steps a day (a little over 3 km). They are also ten times more active.

Inactivity: a ‘normalised catastrophe’

This massive drop in our activity levels has only begun to be recognised as a serious public health issue in the past 20 years, when it became strongly associated with a heightened risk of noncommunicable diseases (NCDs). In an effort to get a handle on the size of the problem, the World Health Organization developed the [Global Physical Activity Questionnaire](#) (GPAQ) for physical activity surveillance, which has been used in more than 100 countries, mainly in the context of the WHO’s wider strategy for controlling the rise in NCDs, through its [STEPwise approach to NCD risk factor surveillance](#) (STEPS). A large study that drew on this global data and was published in the [Lancet in 2012](#), estimated that around 1.5 billion people aged 15 and older had physical activity levels that were below the guideline considered necessary for health (see box). Ten years later, in the post (or maybe not-so-post?) Covid world, the picture is getting worse. In the words of Peter Walker, author of [The Miracle Pill, 2021](#), “[physical] inactivity is what you might call a normalised catastrophe.” It is now one of the leading causes of preventable death worldwide, from triggering heart attacks raising the risk of many forms of cancer. Inactivity causes 9% of premature mortality worldwide, which amounts to more than five million deaths a year. As James Levine, director of Mayo Clinic at Arizona State University, famously said, “Sitting is the New Smoking”.

Physical inactivity causes 9% of premature mortality worldwide

Meet 'Emma' our future colleague

The Covid-19 lockdown itself had a mixed effect on physical activity. People became more conscious of their health and many took advantage of their brief outings to jog and walk, lift weights, and do press-ups, while at home many took up online fitness classes. Paradoxically, it was the fittest who exercised less. Overall, physical activity was reduced.

More worrying is the 'new normal' that was brought on by the pandemic, which is pushing even further in the direction of sedentary life. More office staff are now working from home, at least a couple of days a week, thus reducing the physical activity involved in commuting, and potentially becoming less ready to venture outside their front door, having enjoyed the comfort of working in their pyjamas. A Google search of "death by desk" brought up nearly 372 million results, almost 100 million more since Louisa J. Morgan did the same search for her book *Walking + For Health and Fitness* in 2021.

Behavioural futurist William Higham collaborated with global manufacturer of business equipment Fellowes to create ['Emma', our colleague of the future](#) - a life-sized doll that shows how the human body will change for the worse if we do not address our workspace and our relationship with it. Despite her friendly smile, we really do not want to become like Emma, with her curved spine, jutting neck, varicose veins, bloodshot eyes, and numerous other signs of damage inflicted by sitting long hours at her computer.





Eczema, varicose veins, swollen ankles, hunched shoulders... Emma the 'future colleague', was created as a warning to us all about the multiple ways in which sedentary office lifestyles can impact on our health and fitness

Source: [Fellowes website](#)

Walking a treadmill: enjoyment or punishment?

As humans we have evolved to be physically active, but also to rest and conserve energy, and our ability to change the environment we live in can be at odds with our physiology, creating evolutionary mismatches or, at any rate, new sets of conundrums. Technological progress – from cars to washing machines, lifts, remote controls, online shopping and all sorts of automation – has increasingly eliminated or reduced the physical effort associated with daily activities. Exercise is no longer integral to our daily life, it is seen as something separate that we 'must do' for our health. It has become a billion-dollar industry.

Many of us find gym activities necessary neither for survival nor fun, these being the two fundamental human triggers for physical activity

This works well, particularly for the gym aficionados who are into the 'body beautiful', or who are simply happy to stick to exercise programmes while focussing on the end results of health and fitness. However, many of us find gym activities necessary neither for survival nor fun, these being the two fundamental human triggers for doing things. While we puff and pant on a treadmill or stationary bike, our ancestral brain cannot help wondering at the pointlessness or absurdity. After all, the treadmill was invented in Victorian times as a punishment for prisoners... and now we are asked to pay for the privilege?

Yet for our physical and mental health, we do have to change our sedentary lifestyle, and find ways to integrate movement into our daily routine. Looking again at the daily lives of hunter-gatherers, although they do much more running, walking and standing than us, they are not on their feet all day; spend quite some time sitting down, but they do so in a more dynamic way, preparing food or crafting things, getting up often and mostly sitting on their hunches or on backless seats.

Our modern health guidelines advocate for similar behaviours, recommending that we get up from our desks and stretch our legs every so often, take the stairs instead of the lift, park the car further away from our workplace or supermarket, and so on. None of these modifications offer a great deal of fun, so implementing them still requires a conscious effort. Managements who are keen to avoid the prospect of an office full of 'Emmas' can encourage more active behaviours through rewards and social incentives. Walking meetings are an interesting innovation that are becoming popular in some circles, as they not only enhance physical wellness, but also stimulate creativity.

Born to walk

[Health guidelines](#) recommend at least 150 minutes of moderate intensity activity or 75 minutes of vigorous intensity activity a week, so, some form of aerobic exercise that raises your heart rate between 50% and 80% of your maximum. It could be tennis, swimming, cycling, or something else. But the cheapest and most efficient activities are those that come more natural to us as a species: run or walk. Which of the two is best is ultimately a matter of choice.

Running and walking are both very versatile, allowing you to choose route, intensity, distance

Running requires more energy and can potentially cause more injuries, as it is high impact. It is also more vigorous, so you can reap more benefits in less time. Walking is ideal for beginners but can be adapted to any level of fitness by choosing the appropriate incline, speed, and distance. Running and walking are both very versatile, allowing you to choose route, intensity, distance. No equipment is needed beyond a good pair of shoes and comfortable clothing to suit the weather and environment. You can even keep yourself entertained by listening to music or audio books with your headphones.

But walking can be combined with a wider variety of physical and mental activities. As you walk you can also meditate or talk and laugh with fellow walkers. Depending on speed, you can even sing. You can incorporate strength and flexibility exercises, add some weights for extra endurance or walk with Nordic poles, thus working your upper body harder.

There are many ways to follow a running or walking regime, there are apps for your phone or watch to help you devise a route, keep track of steps, miles, incline (stairs), set goals for yourself or share them with others. For walking, there are leisure and nature organisations, such as the [Ramblers](#) in Britain, CAI ([Club Alpino Italiano](#)) in Italy, and so on. Health walks are organised by many public and private health institutions, including some for patients or survivors of particular illnesses, such as cancer or stroke. And community-based groups of likeminded people who enjoy a stroll or a hike can pop up anywhere.

For those who want a less 'casual' approach, who are maybe looking to achieve the maximum benefit, or for a sport-like – even competitive – activity, there is 'fitness walking', also known as 'power walking', 'fitwalk' and other names. Fitness walking concentrates on posture and the right kinetics to achieve the best results for performance and for health – minimising strain, while improving muscle tone, blood circulation, lung efficiency, even mood and mental capacity. It is an activity that can be done individually, but there are also fitness walking organisations that bring people together, teach techniques and organise events.



Not an Emma! *Cancerworld* editor Adriana Albini (pictured in foreground) taking part in Roccella Fitwalking 2022, in Calabria, organised by Fausto Certomà, of the National Scientific Committee for the Development of Fitwalking) and Maria Novella Luciani of the Directorate-General for Research and Innovation of the Health Ministry, together with former two-times world champion in the long jump, Fiona May

Source: Photo courtesy of Adriana Albini

Exercise for cancer patients and survivors

Physical exercise has been widely recognised as an important intervention for the entire cancer pathway, from prevention to treatment, to survivorship (see for instance *Cancerworld* 2021 [Tailored exercise: a key element in personalised treatments and prevention](#)).

The benefits of exercise have been known a while for breast and colon cancer, but we now have strong evidence that physical activity is associated with a lower risk in many other cancer sites, including endometrial, bladder, kidney, gastric, myeloma. However, the mechanisms of action remain unclear, and we are only just beginning to understand how physical activity impacts cancer risk and tumour growth.

A growing body of evidence shows that it may have direct effects on tumour-intrinsic factors, in addition to the more general beneficial impacts it has on fitness levels, body composition, weight control, mobility, blood circulation, lungs and heart functionality, mood, sleep, and more. Exercise has been found to have a suppressive effect on oestrogen levels, thereby reducing the risk of breast cancer. Extremely vigorous exercise inhibits anaerobic sugar metabolism, thus depriving cancer cells of energy, and it reduces inflammation, which can cause DNA damage and lead to cancer. It also raises body core temperature, impacting the tumour microenvironment.

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Immunomanipulation studies show that exercise can also enhance the body's immunity, depending on the type and intensity of training. Exercise may have an impact on NK (natural killer) cells, affecting their mobilisation and activation, as well as bringing changes to blood perfusion, which may enhance the effect of therapeutic drugs, though this research needs to give quantitative results, and [more tests need to be carried out](#). Other studies have concentrated on the immune system, and on the [mechanisms by which physical activity augments T cell competency](#), promoting the elimination or halting the proliferation of cancer cells.

Although some exercise is better than none, and the benefits of physical activity are all-encompassing, to actually understand the basis of its clinical effects on our bodies would be fundamental in order to prescribe a tailored programme for prevention and treatment of different forms of cancer and other chronic diseases.

One [recently published study](#), which looked at the optimal timing of a physical exercise intervention to improve cardiorespiratory fitness, compared outcomes for patients starting the intervention during chemotherapy to those of patients who started after their treatment was over. The ACT trial found that both timings, during and after, gave positive results when the two groups were checked a year later, but group A, who exercised during treatment, reported better cardiorespiratory fitness, less fatigue, and better muscle tone at the end of their chemotherapy course. Studies of this kind are important to optimise health results of physical activity.

Physical activity has been proposed to be 'prescribed' for cardiovascular prevention and for [treatment of heart failure](#) and a similar approach can be expected for cancer prevention in a not too distant future.

That said, there are many variables that affect the consistency of results in human trials, including self-reported activity, timeframe, and findings linked to incidental factors such as increased incidence of melanoma due to longer exposure to sunlight in outdoor activities.

Walking for cancer patients and survivors

In terms of general benefits, walking has become increasingly popular because it is cheap, cheerful, adaptable and a much more natural and satisfying activity for us humans than, say, cycling on a stationary bike. But what about its possible role in cancer prevention and treatment? A few studies have specifically concentrated on the effects of walking for cancer patients. One of them is the [Steps Toward Improving Diet and Exercise \(STRIDE\)](#) study. It was carried out in 2018 to evaluate the effectiveness of an online-delivered physical activity intervention for increasing walking in cancer survivors living in metropolitan and rural areas of South Australia. Participants experienced benefits in multiple fitness, health, mental health and social functioning measures.

Another study was [CanWalk](#): a feasibility study with embedded randomised controlled trial pilot of a walking intervention for people with recurrent or metastatic cancer. The researchers recruited patients with advanced breast, prostate, gynaecological or haematological cancers, and gave them a recommendation to walk for at least 30 minutes on alternate days and attend a volunteer-led group walk weekly. Results were encouraging, with good adherence and patient satisfaction. More tailored

randomised controlled trials are warranted to better establish the effectiveness of the programme.

Nordic Walking has been found [particularly beneficial for breast cancer survivors](#). The poles give a sense of secure balance, and at the same time reinforce muscles in the upper body. [Other exercise programmes](#) that combine intermittent aerobic exercise, muscle strength and walking were found to improve cardiorespiratory fitness and reduce perception of fatigue in women with breast cancer during adjuvant chemotherapy treatment. Walking groups are [particularly successful for women with breast cancer](#) because, beside the physical benefits, they add peer support, coupled with landscape, for a holistic experience of the physical, emotional and social. [Group based trail walking has physical, psychological, and social benefits in cancer survivors](#), reducing the prevalence of depression and anxiety. [Patients with acute myeloid leukaemia suffering from cancer related fatigue experienced a significant reduction in symptoms](#) after participating in a 10-day walking intervention.

Perhaps the greatest benefits walking can offer to cancer patients and survivors is that, in addition to the health benefits of being physically active, walking can also help restore mental balance, which takes a knock during diagnosis and treatment, and it can promote social support and integration, as was so well described to *Cancerworld* by Stefan Gijssels, in [Beating the odds in colorectal cancer](#). Walking is for everyone, irrespective of fitness levels and financial constraints. We were born to walk, alone or in a group, fast or slow, exploring our urban surroundings or basking in nature.

With the collaboration of Francesca Albini

Illustration by Sara Corsi