

Connection with coast and inland waterways has multiple health benefits—here's how we measure them

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Imagine you've had a hard day. You've only managed to get a fraction of your urgent tasks done. Your partner, boss, friend or mother (delete as

appropriate) has been giving you a hard time. Just thinking about this is raising your blood pressure (my apologies).

Now, imagine "paradise." Suddenly, thoughts of a calm, deep blue sea lapping gently onto a white sandy beach fringed with palm trees start to come to mind.

Others may turn inland and imagine a mountain lake reflecting the pine trees and jagged peaks with a sparkling waterfall cascading down. Just thinking about such scenes can quickly stabilize negative emotions and reduce stress-related [biomarkers](#) such as lower heart rate (you're welcome).

Water is present in nearly all of these daydreams. Oceans are lapping, rivers are bubbling, waterfalls are cascading, lakes are sparkling.

These "blue spaces" feature highly in the places we visit for recreation, holidays and retirement, so why do they play such an important role in helping us to de-stress? Are our intuitions that blue spaces are good for us backed up by evidence?

As part of what has become known over the last 15 years as the "blue [health](#)" program of work, colleagues and I around the world have been trying to answer these and [related questions](#).

In one of our earliest studies, we focused on the coast. Using census data from 40 million adults in England, we found that people living closer to the sea tended to report better overall health once other factors, such as age and local area income, employment, education and crime levels were [accounted for](#).

A second study tracked more than 15,000 people for a decade, some of whom moved closer to the coast and some further away during that

period. Supporting the census data, people reported being healthier and having less mental distress in years when they lived within [5km of the sea](#). Importantly, this wasn't just a "happy retiree effect"—we found the same results with the working age population.

Other researchers found similar effects for [inland waters](#), such as [lakes](#), [rivers](#) and [canals](#).

Why might living near the coast or [inland waters](#) benefit our health and well-being? One simple mechanism is more exercise. Our research showed that people who live near water are more likely to meet recommended levels of [physical activity](#) and this seems to be a major reason why they also report [better health](#).

Looking at, listening to, and immersing ourselves in both inland and [coastal waters](#) could directly benefit mental health. Lots of data relies on large-scale public surveys which suggests that visiting inland and coastal waters can reduce [negative emotions](#) and boost [positive ones](#).

Laboratory and field experiments show that exposure to blue spaces is associated with lower stress markers, such as [heart rate](#) and [sweating response](#).

A study conducted in a [dental surgery](#) showed that patients "walking" along a virtual beach during treatment reported lower pain both directly after the procedures and a week later when asked to recall pain levels, than those undergoing normal procedures or walking around a [pleasant town setting](#). Lower recalled pain is important because it's a major factor in deciding whether to go back to the dentists in future.

In-depth interview studies have been conducted to provide meaning [to the numbers](#), with people often referring to the importance of the dynamic changes which water settings magnify such as [sunrises and](#)

[sunsets](#).

Blue spaces are considered important places to spend quality time with [friends](#) and [families](#), which has a range of benefits for mental and physical health.

Although much of the work started in the UK, similar findings have now been demonstrated across Europe, North America, [Australia](#) and [Asia](#). One [study](#) from a [remote island](#) in Indonesia showed that local people who went sea swimming or snorkeling regularly during COVID coped better with the crisis.

Although it's tempting to explain these benefits in terms of a hardwired connection with blue spaces reflecting an evolutionary heritage, it's impossible to test those assumptions in a scientific way.

Inland and coastal waters also pose a myriad of threats to our health and well-being from floods to microbial pollution, and they can be breeding grounds for disease-carrying insects and larger predators, so a "pro-water" evolutionary account seems problematic. We have tried to better understand the balance of [risks and benefits](#) and view our evidence in terms of current benefits to individuals and societies rather than ones that may or may not have helped our ancestors.

Building resilience

Blue spaces can help us cope with adversity by [building resilience](#). Well-designed urban blue spaces such as fountains can help reduce [urban heat island effects](#), a growing threat under [climate change](#) especially for older people. Blue spaces can also be a great social leveler, reducing inequalities in health and well-being between [rich and poor](#).

Improving access to local urban blue spaces in poorer districts can

increase community cohesion and [resident well-being](#). At a more personal level, sharing blue [space](#) memories can stimulate positive shared experiences with friends and families in potentially stressful care contexts, such as with people [with dementia](#).

As blue spaces are under increasing threat from pollution, overdevelopment or climate change, enhancing the [quality](#) of blue spaces for our health and well-being is just part of a much wider challenge to protect these vitally important places.

Hopefully when asked to think about paradise, future generations can still daydream about clean pristine beaches and clear mountain lakes, knowing these exist in reality and are not just forgotten remnants of a once beautiful earth.

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