

Superhero behavior sheds light on staying healthy in later life

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Even for superheroes, regular physical activity and strong social bonds are important for healthy aging, suggest researchers in the Christmas issue of *The BMJ*.

Being able to stay healthy in later life is a crucial issue for everyone. Environmental and socioeconomic factors determine aging trajectories at a population level, but evidence also highlights the importance of individual factors. Some of these, such as genetics, are fixed but others are potentially modifiable.

As superheroes are likely to live substantially longer than most people, it seems timely to reflect on their [health status](#) and associations with aging trajectories and outcomes.

To do this, researchers in Australia reviewed 24 Marvel movies released between 2008 (Iron Man) and 2021 (Black Widow), with concentrated periods of study during lockdown in 2020 and 2021.

They assumed that (with the exception of Thor, who has lived for several millennia), superheroes will age, and that their individual aging trajectories will be modifiable by personal traits in much the same way as anyone else's.

First, they examined [positive behaviors](#) and health assets and found that the superheroes regularly engage in physical activity and exercise, both associated with [healthy aging](#), and they exhibit a high degree of social cohesion and connectedness, both associated with a reduced risk of dementia.

The superheroes also show a positive or optimistic mindset, as well as psychological resilience and a sense of purpose, all of which have been associated with healthy aging. And with the exception of Thor and Iron Man, the superheroes do not drink heavily or smoke, behaviors associated with longer life and healthy aging.

Next, they examined negative behaviors and [risk factors](#) and found that repeated exposure to loud noises, air pollution, and multiple [head](#)

[injuries](#) puts the superheroes at increased risk of dementia, life changing physical injury and disability.

The researchers then examined the personal traits and health behaviors of five of the superheroes (Iron Man, Hulk, Black Widow, Black Panther, and Spiderman).

They note that both Black Panther and Iron Man are extremely wealthy and intelligent, which puts them at reduced risk of dementia. Black Panther is also vegetarian, which is known to support healthy aging.

In contrast, Hulk's heart problems, high body mass index and almost constant anger puts him at risk of several chronic diseases, while Black Widow's traumatic childhood experiences increase her risk of physical and [mental illnesses](#).

And while Spiderman's strength, flexibility, and agility should reduce his risk of falls in old age, his nightly crime fighting means he is unlikely to be getting the recommended 8-10 hours of sleep for teenagers of his age, which can lead to obesity, lower mental health, and higher rates of unintentional injuries.

To date, the Marvel superheroes' combined efforts focus on matters such as on maintaining the safety of the multiverse, the modulation of human consciousness, the creation of artificial intelligence, and the development of technology to facilitate space travel, say the authors.

But they suggest they move their focus to dealing with challenges, such as how to provide high quality health and social care across large, aging populations and preventing frailty and dementia.

"This would enable people across the multiverse, including superheroes, to experience high quality of life in older age," they conclude.

More information: Anticipating the ageing trajectories of superheroes in the Marvel cinematic universe, *BMJ* (2021). [DOI: 10.1136/bmj-2021-068001](https://doi.org/10.1136/bmj-2021-068001) , www.bmj.com/content/375/bmj-2021-068001

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