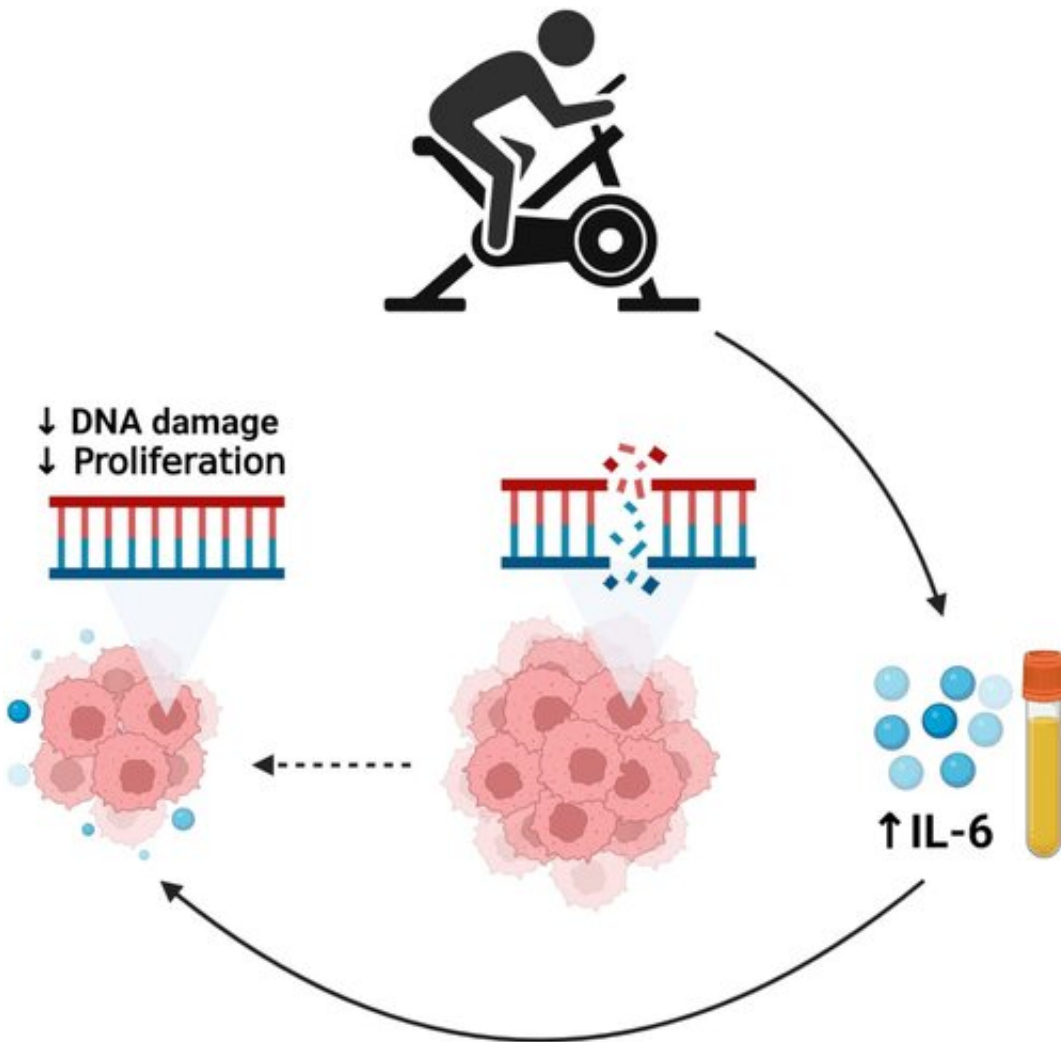


Exercise shown to release protein reducing bowel cancer risk

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Graphical abstract. Credit: *International Journal of Cancer* (2022). DOI: 10.1002/ijc.33982

Scientists at Newcastle University have shown that physical activity causes the cancer-fighting protein, interleukin-6 (IL-6), to be released into the bloodstream which helps repair the DNA of damaged cells.

The findings, published in the *International Journal of Cancer*, sheds new light on the importance of moderate activity in the fight against the life-threatening illness and could help develop treatments in the future.

Repairing DNA

Dr. Sam Orange, Lecturer in Exercise Physiology at Newcastle University, said: "Previous scientific evidence suggests that more [exercise](#) is better for reducing [bowel cancer](#) risk as the more [physical activity](#) people do, the lower their chances of getting it. Our findings support this idea.

"When exercise is repeated multiple times each week over an extended period, cancer-fighting substances—such as IL-6—released into the bloodstream have the opportunity to interact with abnormal cells, repairing their DNA and reducing growth into cancer."

In the [small-scale study](#), which is a proof of principle, the team from Newcastle and York St John universities recruited 16 men aged 50–80, all of whom had lifestyle risk factors for bowel cancer, such as being overweight or obese and not physically active.

After providing an initial blood sample, the participants cycled on indoor bikes for a total of 30-minutes at a moderate intensity and a second blood sample was taken as soon as they finished pedaling.

As a control measure, on a separate day, scientists took further blood samples before and after the participants had rested. Tests were carried out to see if exercise altered the concentration of cancer-fighting

proteins in the blood compared to resting samples and it was found that there was an increase in IL-6 protein.

Scientists added the blood samples to bowel cancer cells in a lab and monitored cell growth over 48 hours. They identified that blood samples collected straight after exercise slowed the growth of the cancer cells compared with those collected at rest.

Furthermore, as well as reducing cancer growth, the exercise [blood samples](#) reduced the extent of DNA damage, suggesting that physical activity can repair cells to create a genetically stable cell type.

Dr. Orange said: "Our findings are really exciting because they reveal a newly identified mechanism underlying how physical activity reduces bowel cancer risk that is not dependent on weight loss.

"Understanding these mechanisms better could help develop more precise exercise guidelines for cancer prevention. It could also help develop drug treatments that mimic some of the health benefits of exercise.

"Physical activity of any type, and any duration, can improve health and reduce bowel cancer risk but more is always better. People who are sedentary should begin by moving more and look to build physical activity into their daily routines."

Dr. Adam Odell, Senior Lecturer in Biosciences from York St John University, who was also involved in the study alongside Dr. Alastair Jordan and Dr. Owen Kavanagh, added: "Importantly, it is not just bowel cancer risk that can be reduced by leading a more [active lifestyle](#). Clear links exist between higher exercise levels and a lower risk of developing other cancers, such as cancers of the breast and endometrium.

"By working out a mechanism through which regular physical activity is able to produce anti-cancer effects, our study provides further support for current national and global efforts to increase exercise participation."

Bowel cancer prevalence

Bowel cancer is the 4th most common cancer in the UK, accounting for 11% of all new [cancer](#) cases. There are around 42,900 people diagnosed in the UK every year, that's nearly 120 each day.

It is estimated that physical activity reduces the risk by approximately 20%. It can be done by going to the gym, playing sports or through active travel such as walking or biking to work, but also as part of household tasks or work like gardening or cleaning.

The team intend to carry out further research to identify exactly how exercise reduces DNA damage in early-stage cancers and to establish the most effective form of exercise for protecting against the disease.

More information: Samuel T. Orange et al, Acute aerobic exercise-conditioned serum reduces colon cancer cell proliferation in vitro through interleukin-6-induced regulation of DNA damage, *International Journal of Cancer* (2022). [DOI: 10.1002/ijc.33982](https://doi.org/10.1002/ijc.33982)

Provided by Newcastle University

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