

# Exercise can protect against skin cancer

May 15 2006

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While doctors and scientists have long agreed that physical activity has health benefits, Rutgers cancer researcher Allan Conney and his New Jersey colleagues have found that exercise can even protect against skin cancer.

Their study, reported in the May 13 issue of the journal *Carcinogenesis*, found that mice exposed to ultraviolet B light (UVB) – and with continual access to running wheels – took longer to develop skin tumors and developed fewer and smaller tumors than a group of similarly exposed mice that didn't have a gym handy.

This is the first time the relationship between skin carcinogenesis and increased activity by voluntary running wheel exercise has been studied in the laboratory.

In both groups, the number of tumors per mouse increased with time, but animals with access to running wheels had approximately 32 percent fewer tumors than animals without running wheels. Tumor size per mouse in the non-exercising group was on average more than three times greater than for the group with the running wheels.

As might be expected, the exercising mice ate and drank more but had less body fat than their more sedentary associates, and the number of tumors also decreased with lower body fat.

"This relationship between body fat and tumors may also play an important role in carcinogenesis and warrants further investigation,

particularly with obesity on the increase in the Western world," said Conney, State of New Jersey Professor of Chemical Biology at Rutgers, The State University of New Jersey.

In another first, the researchers also detected what could be the mechanism responsible for this effect. Subsequent to the studies reported in the journal article, they conducted follow-up work that suggests that exercise enhances UVB-induced apoptosis (programmed cell death) both in the skin – a normal, protective process that removes sun-damaged cells – and in UVB-induced tumors.

"While UVB is triggering the development of tumors, exercise is counteracting the effect by stimulating the death of the developing cancer cells," said Conney, who is also the director of the Susan Lehman Cullman Laboratory for Cancer Research at Rutgers' Ernest Mario School of Pharmacy.

Conney noted that all these conclusions are based on laboratory studies on mice, and it is not yet known whether exercise decreases the risk of sunlight-induced skin cancer in humans. Clinical trials are needed to investigate this further. In bowel cancer, however, evidence from population studies already suggests that physically active people have a reduced risk of developing the disease, but the mechanisms remain unclear.

Source: Rutgers, the State University of New Jersey

Citation: Exercise can protect against skin cancer (2006, May 15) retrieved 23 April 2024 from <https://medicalxpress.com/news/2006-05-skin-cancer.html>

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