

# Cancer Prevention and Physical Activity: Global Guidelines and Emerging Insights

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## Opinion Article

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## ABOUT THE STUDY

Cancer and Public health agencies worldwide have recognized the benefit of regular physical activity for reducing cancer risk at the population and individual level. As previously mentioned, the World Cancer Research Fund (WCRF) and American Institute for Cancer Research (AICR) released its continuous Update Report 2018, which include the recommendation that individuals be at least moderately active and to follow or exceed national guidelines. Specifically, the achieve benefits for cancer prevention and to have a significant impact on weight control, they recommend that 45-60 minutes of moderate-intensity physical activity advise adults to be active daily and to participate in at least 150 minutes of moderate-intensity aerobic physical activity or least 75 minutes of vigorous-intensity aerobic activity or a combination of these intensities. These recommendations will include specific suggestions for cancer prevention when they are revised in 2020. The recommendations from the WCRF/AICR are also to limit the amount of sedentary time for extended time periods given that increased sedentary behaviour is also a cause of weight gain type 2 diabetes, which are established causes of several cancers.

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In 2018, the U.S. Department of Health and Human Services released the Physical Activity Guidelines for American (PAGA) report in which they recommended that adult should undertake at least 150-300 minutes per week of moderate-intensity or 75-150 minutes per week of vigorous-intensity or an equivalent combination of both moderate and vigorous-intensity aerobic activity. In addition, they recommended that adults should also perform muscle-strengthening activities on two or more days per week.

Additional suggestions were made for older persons to engage in multi-component physical activity, which involves balance training in addition to aerobic and muscle-strengthening exercises. A lower risk of numerous malignancies, including those of the bladder, breast, colon, endometrium, esophagus, kidney, lung, and stomach, was one of the benefits of greater physical activity, according to the PAGA 2018 study. While the PAGA 2018 report did not make specific recommendations for physical activity for cancer prevention, it is noteworthy that the guidelines developed by the WCRF/AICR and those from the PAGA committee are both targeting higher levels of activity than those that were previously developed by the WHO. Hence, with the increased evidences base and more precision on the amount, type, and timing of activity required for cancer prevention, it appears that a minimum level of 150 minutes per week of moderate-intensity activity is required, with greater benefit being observed with higher levels of activity. The evidence base for the etiologic role of physical activity and sedentary behavior associated with cancer incidence has grown rapidly in the past 30 years, and there is now clear evidence that regular physical activity and decreased sedentary behavior are associated with the risk of 10 or more cancer sites. These associations have been confirmed in nearly 500 studies conducted worldwide using different study designs, study populations, assessment methods, and analytic approached.

These consistent risk associations range from around 10-45% reductions for the highest levels of physical activity in these studies compared to the lowest. There is also evidence for dose-response effects with increased activity levels and decreasing cancer risk. In terms of the sort of physical activity, research is now showing that resistance exercise, in addition to aerobic exercise, for which the evidence base is well established, may also be useful in lowering cancer risk. Cardiorespiratory fitness has more recently been shown in some studies to be an independent risk factor for cancer risk. Sedentary behavior as an independent risk factor for cancer risk has recently emerged, and the risks associated with prolonged sitting are now apparent for at least three cancer sites.

Evidence that physical activity and sedentary behavior influence cancer risk through multiple pathways, including an effect on adiposity, endogenous sex and metabolic hormones, inflammation, and possibly also immune and skeletal muscle functions, is helping to elucidate the biologic mechanisms underlying these associations. The burden of cancer that can be attributed to physical inactivity and sedentary behavior is notable, with up to 10% of all cancers associated with these risk factors. Multiple barriers and facilitators to regular physical activity participation are also being recognized. Interventions and support networks that address these factors are needed to increase the levels of physical activity and reduce sedentary time in the general population since trends of increasing inactivity and sedentary behavior are being reported worldwide.

Public health and cancer agencies have recognized the need for clear guidelines on physical activity and sedentary behavior for cancer prevention, and recent updates from these agencies are recommending daily activity with a combination of aerobic and resistance exercise that reaches up to 300 minutes per week of moderate-intensity activity. While considerable progress has been made in elucidating the associations between physical activity, sedentary behavior, and cancer risk, there remain numerous areas that require future research to address the questions regarding the nature of these association by domain, type, dose, and timing in relation to cancer risk as

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well as by population subgroups and by cancer types. More behavior interventions specifically targeted at cancer prevention and focused on reducing sedentary behavior are also needed with the objective of increasing the prevalence of physically active individuals at the population level.