

Seasonality and climate change: Challenges for physical activity in older adults

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Research indicates seasonal variations in physical activity levels among adults in different climates due to temperature and humidity. Climate change's increasing extreme weather may significantly affect physical activity in older adults already struggling to meet activity guidelines. Isabelle J. Dionne from the Université de Sherbrooke explains

Physical activity (PA) is a key behavior in the determination of health and quality of life of older adults but remains low in developed countries. The environment where PA is practiced is emerging as a significant motivation factor to adhere to PA in adult populations, and natural environments are now being promoted as a favorable milieu. Indeed, PA practiced in natural environments was associated with greater feelings of revitalization and positive engagement, decreases in tension and depression, and increased energy compared with exercising in synthetic environments such as indoors. Because outdoor PA, also called 'green PA,' is associated with higher adherence to a program than the same indoor intervention, a better understanding of how safe outdoor PA can be practiced all year round seems a promising avenue for health promotion.

Various studies show a seasonal pattern in PA levels of adults living in different climate conditions. In an important review on the subject, inclement weather was shown to have the potential to reduce PA by up to 20%. In older adults, temperature (too cold or too hot) and humidity significantly affect attendance to an exercise program, indeed being considered the most important factors that influence PA. Hence, countries with a temperate climate face some challenges with regard to PA promotion in older adults, such as seasonality. Now, climate change greatly influences PA practice in older adults and commands adaptations to ensure safety and pleasantness.

The effects of climate change on physical activity

Climate change-related rise in temperature may become a greater barrier to outdoor PA due to thermal discomfort. This is especially true when ambient temperatures fall outside the range where body temperature is maintained through regular physiological processes. Recent science suggests that participation in PA starts to decline when temperatures reach around 26–29°C, depending on the activity, time of day, and age of participants. Around these temperatures, discomfort or fear of adverse events leads to a decline in PA in older adults. Unfortunately, it is expected that the number of days at these high temperatures will rise significantly every year.

Physical activity in hot temperatures

This being said it is sensible for older adults to refrain from vigorous PA when the weather is too hot. Thermoregulation refers to the ability of the human body to maintain a core body temperature at around 37°C, within a narrow range of 35–39°C, and is critical for human survival and cellular functions. Aging is often accompanied by health conditions that affect heat tolerance and thermoregulation: hypertension, diabetes, cardiovascular insufficiencies, or drug therapy. In addition, starting at around 60 years old, there is a reduced hydration state that contributes further to a deficient thermoregulation capacity. The sweating rate, the main physiological process of evading body heat, is also affected at this age.

The well-documented and substantial benefits of physical activity in older adults demand the identification of strategies to reduce any high-temperature associated risk when practicing physical activity. Research shows that some tips can contribute to preventing adverse events and favor safe and comfortable PA practice in older adults. For those involved in designing exercise programs for older adults in high-heat contexts, it is important to understand the risks, know how to overcome them and educate participants towards a safe practice. PA should be progressive and interspersed by short breaks. Frequent hydration is of particular importance, as well as paying attention to symptoms such as chest pain, difficulty breathing, moderate pain, or feeling dizzy. In more general terms, it should be recommended to practice PA early in the morning, when the temperature is cooler, and favor swimming and activities in shaded areas. Wearing soaked clothing may also be helpful. Still, if the temperature is too elevated or the environment is not favorable, exercising indoors where there is good air conditioning may sometimes be the key!

Nordic countries face a dual challenge. In addition to the rise in summertime temperatures, the winter season is considered risky and unpleasant for outdoor PA. Interestingly, cardiovascular disease mortality and risk factors are higher in the winter compared to the summer months, particularly in cold climates, and it is thought that PA patterns might partially explain this phenomenon. Hence, there is a growing interest in seasonality and its influence on PA.

Physical activity in winter

The fear of falling is common in healthy, high-functioning older men and women and is independently associated with reduced levels of participation in recreational PA. The combination of prolonged darkness and harsh, slippery conditions in winter thus makes outdoor PA challenging for older populations. The presence of ice is considered to be the most critical factor impacting older adults' outdoor mobility during winter months, with more than 37% of older adults reducing their outdoor walking during the winter. It has been shown that older adults also avoid driving during periods of inclement winter weather, suggesting that they may be deterred from seeking indoor exercise classes as well. Interestingly, the Scandinavian populations exhibit a distinct pattern during winter, where a scarce seasonal decline in walking behaviors was reported among older adults.

There thus seem to be some cultural distinctions about the perception of risk in outdoor PA during the winter. Research needs to address these distinctions to learn from these active populations!

Still, science has suggested some tactics that increase older adults' confidence towards outdoor winter PA and significantly reduce the risk of falling.

The largely purported tip of dressing in layers makes adaptations to temperature changes highly efficient. The use of walking poles and crampons is the best strategy to get some grip on slippery surfaces; keep in mind, however, that using walking poles implies good upper body strength... thus a good reason to do resistance training. Research also shows that group PA constitutes a significant motivational factor for older adults, especially during winter. Anyhow, sometimes online platforms may provide valuable alternatives on very bad weather days.

We collectively need to reflect on what future we wish for older adults' health and wellbeing. Public health messages around being more physically active need to be adapted to the environment in which PA is practiced. While research needs to address strategies to support older adults' PA practice in this evolving environment, decision-makers need to offer safe and attractive outdoor PA programs and infrastructures.

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