

Children's health will be negatively impacted by poorer fitness as global temperatures rise, new research shows

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Record levels of obesity and physical inactivity among children mean they are set to bear the brunt of poorer health effects from rising global

temperatures—that's the stark warning in a new comprehensive review of current studies on the topic.

Publishing her findings in the peer-reviewed journal *Temperature*, Dr. Shawnda Morrison, an environmental exercise physiologist, argues that while [physical fitness](#) is key to tolerating higher temperatures, [children](#) are more obese and less fit than ever before.

This could put them at greater risk of suffering heat-related health problems, such as dehydration, heat cramps, [heat exhaustion](#) or [heat stroke](#).

She says that current climate change policies fail to adequately address child health needs and that encouraging children to make exercise part of their everyday lives must be prioritized if they are to cope with living in a hotter world.

From Slovenia's University of Ljubljana, Faculty of Sport, Dr. Morrison is an expert in adaptive and integrative human physiology in extreme environments. She has over 20 years' experience investigating sport performance and exercise physiology, especially in hot environments.

Her assessments are based on a comprehensive review of more than 150 medical and scientific studies into how children maintain [physical activity](#), exercise, cope with heat, and how this might change as [global temperatures](#) rise.

The research she highlights includes a study of 457 [primary school](#) 5-12 year old boys in Thailand, which found that overweight youngsters were more than twice as likely to have difficulty regulating their body temperature as those of normal weight when exercising outdoors.

In another study, data from emergency departments at children's

hospitals in the US, found attendance was higher during hotter days. Younger children were particularly likely to need emergency care.

The research has also found:

- Children's aerobic fitness is 30% lower than that of their parents at the same age.
- There are rapid declines in child physical activity globally, especially over the last 30 years
- Most children are not meeting the World Health Organization's guideline of performing an average of at least 60 minutes of physical activity each day.
- Physical inactivity was accelerated, especially in Europe, during the COVID-19 pandemic when schools and other societal infrastructures were closed.

Rising temperatures could restrict physical activity further when parents of children perceive outdoor temperatures to be 'too hot to play', making it more uncomfortable for untrained or unfit children to meet the minimum physical activity levels to stay healthy, says Dr. Morrison, who is also the Founder of [Active Healthy Kids Slovenia](#).

Higher temperatures and changes in weather patterns are projected to also lead to outbreaks of new diseases entering the human population. If there are more movement restrictions put in place to contain novel diseases, this will have potentially devastating consequences to children's physical fitness, mental and physical health.

Dr. Morrison also points out that, in terms of thermoregulation—how the body maintains its internal, or core, [temperature](#)—young children are not simply smaller adults. When exposed to the heat, children sweat less

than adults; they lose heat by increasing blood flow to their skin—a process which can require the heart to work relatively harder.

Despite these differences, most of the research into how the body adapts to higher temperatures has been carried out on adults. The little mechanistic research done in children has mostly been conducted 15-30 years ago, when children's fitness levels were much higher than they are today.

Dr. Morrison concludes: "Fitter adults are better able to tolerate higher temperatures, due to a combination of physiological, behavioural and psychological factors.

"Yet, as the world warms, children are the least fit they have ever been. It is imperative that children are encouraged to do daily physical activity to build up, and maintain, their fitness, so that they enjoy moving their bodies and it doesn't feel like 'work' or 'a chore' to them."

Activities can be a combination of structured games, such as football, basketball and baseball, and active play with friends and family, preferably taking place outdoors.

Physical education (PE) lessons taught by PE teachers are the best and most cost-effective way to increase fitness levels and equip children to continue exercising throughout their lives. Families have a role to play, too, especially if schools offer little PE.

Dr. Morrison says: "Do what you love to do, whether it's a family bike ride or rollerblade, a stroll through the woods or walking the dog.

"Make sure the activity raises everyone's heart rate, enthusiasm, and positive energy and importantly, try not to completely avoid the heat but choose times of the day that are less hot (mornings/evenings) to keep

active, since we need to keep ourselves moving in this new warming world."

As part of Dr. Morrison's ongoing work, she is looking to determine how physically active children and adults are during heatwaves, and how hot, uncomfortable, or thirsty they feel when performing these activities.

During the rest of August, participants from Canada, U.S. and Slovenia can sign up to partake in this ongoing research here:

<https://activehw.lakeheadu.ca>

More information: Shawnda A. Morrison, Moving in a hotter world: Maintaining adequate childhood fitness as a climate change countermeasure, *Temperature* (2022). [DOI: 10.1080/23328940.2022.2102375](https://doi.org/10.1080/23328940.2022.2102375)

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