

Approved: September 2012

Due for review: 2017

Climate Change and Health

Background

The Intergovernmental Panel on Climate Change (IPCC) defines climate change as a 'change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer.'¹ Many scientists agree that this change is already occurring as observed from the gradual warming of the Earth. Furthermore, it is argued that the 'greenhouse' effect which contributes to this warming is being enhanced by an increasing concentration of the 'greenhouse' gases emitted from anthropogenic activities such as the combustion of fossil fuels, deforestation, agriculture and industrial processes.

While acknowledging that it is difficult to predict the exact impacts of climate change, the Australian Government Department of Energy Efficiency and Climate Change estimates that by 2030, there will be a further 1 degree Celsius of warming in temperatures throughout Australia, up to 20 per cent more months of droughts, up to 25 per cent increase in days of very high or extreme fire danger, and corresponding increases in storm surges and severe weather events.² A Western Australian State Government partnership investigation similarly found that the South West of Western Australia, identified by the Australian Greenhouse Office as one of three 'highly vulnerable' regions, will experience up to 20 more days of temperatures above 35 degrees Celsius, and up to a 20 per cent reduction in annual rainfall.³

There exists also a highly complex relationship between climate change and health. Climate change can cause impacts on the health of a given population that vary between direct impacts such as physical injuries suffered during an extreme weather event or increases in respiratory symptoms during high temperature events³, or indirect impacts such as floods causing the spread of infectious diseases and destroying crops, leading to malnutrition.⁴

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) stated that warmer 'summers' and milder 'winters' with more frequent and intense heat waves will result in an increase in heat waves which will cause an increase in the incidence of heat rashes, heat exhaustion, and heat stroke. People affected by extreme weather events also have an increased likelihood of physical injuries such as fractures^{4,5}, or temperature-related injuries⁶ such as heat exhaustion^{6,7}, burns⁸ and skin cancers⁹. Poor air quality caused by pollutants released during forest fires and industrial activity exacerbates respiratory and cardiovascular diseases⁹. In addition, it has been acknowledged that people with existing conditions such as cardiovascular, respiratory and neurological diseases, or with lifestyle factors such as having low physical fitness, adapt poorly to adverse conditions and are particularly vulnerable during any extreme weather event.

It has also been argued that environmental conditions after extreme weather events may encourage water, food, vector and rodent-borne pathogens to propagate, resulting in increased health risks such as arthritis, cancer, heart disease and diabetes that are associated with specific pathogens or groups of pathogens^{10,11}, and placing increased stress on the health system.

How physiotherapists can help in a changing climate

The efficacy of physiotherapy in preventing, treating and managing physical injuries and conditions is well established. For example, physiotherapy can improve aerobic capacity and decrease shortness of breath in people with chronic obstructive pulmonary disease¹², reduce impairments and improve upper limb function in specific upper limb fractures¹³, and reduce mortality and improve aerobic capacity in people with heart failure.¹⁴

Physiotherapists are hence well placed, and have the ideal qualifications and training to optimise health and function in vulnerable population groups, increasing their adaptability to the adverse conditions during floods and heatwaves. Through physiotherapy intervention and treatment including rehabilitation after injury sustained during extreme weather events, physiotherapists are also well placed to assist in recovery efforts and in the development of disaster management strategies.¹⁵

Working in primary care settings across the health sector, physiotherapists are also well equipped with the scientific knowledge and possess vital communication skills and rapport to educate their patients and clients on the effects of climate change and its impact on health. Physiotherapists can also promote the benefits and support the undertaking of lifestyle modifications, which can both improve or maintain good health and reduce carbon emissions, such as using active modes of travelling instead of driving.

The physiotherapy profession in Australia can also actively adopt practical measures to lower its own carbon footprint and contribute to the mitigation of climate change impacts. The APA supports the United Kingdom Chartered Society of Physiotherapy's environmental policy¹⁶ to:

- consider the cost and environmental benefits of using energy efficient suppliers for gas and electricity
- consider alternative replacements for equipment that reaches the end of its life – for example replacing a printer with an energy efficient double-sided printer or replacing lightbulbs with energy efficient bulbs
- assess energy consumption of new equipment when making purchasing decisions
- seek to ensure that electricity, gas and water is not wasted
- seek to reduce wastage on a day to day basis (such as using electronic health records)
- reduce fuel consumption, exhaust emissions and travel costs by careful consideration of travel modes
- consider whether a face to face meeting could better be co-ordinated through telephone or, when available, video conferencing or through extended use of the email system
- improve day to day behaviours in a greener way.

The APA position

The most recent IPCC report on climate change has confirmed 'unequivocally' that changes in the climate are occurring¹⁷, and the APA believes that these changes present significant direct and indirect risks to health. The position of the APA is that:

- Physiotherapists can prevent and manage many physical injuries and conditions caused by extreme weather events. They can also promote and optimise health and function in people with conditions that can be exacerbated during these events.
- Physiotherapists can assist individuals, employers and governments on strategies to prevent physical and respiratory injuries and illnesses that can be caused or exacerbated by climate change related extreme weather events.
- Federal and state governments must work with health professionals, including physiotherapists, to develop sustainable and cost-effective strategies to prevent and manage the health impacts of climate change.

- It is important that governments at all levels work to address barriers to access of physiotherapy, especially in the rural and remote regions of Australia. This will ensure that people at risk of developing or exacerbating injuries or conditions during extreme weather events, or who have suffered physical injury or conditions as a result of an extreme weather event, will have optimal access to the physiotherapy they require.
- Innovation and close collaboration between healthcare professionals is the key to facilitating effective and evidence-based care.
- Governments, the health professions and universities should continue to collaborate and support critical research on climate change and health.
- Physiotherapists have a responsibility to reduce their own contributions of greenhouse gas emissions, and the Australian physiotherapy profession can positively impact on the environment by reducing its own carbon footprint through a culture of environmental sustainability.

References

1. Intergovernmental Panel on Climate Change (2007). Climate Change 2007: Synthesis Report.
2. Impacts of Climate Change. Available: <http://www.climatechange.gov.au/en/climate-change/impacts.aspx>. Archived by the Australian Government Department of Energy Efficiency and Climate Change. Retrieved 27 February 2012.
3. Health Impacts of Climate Change: Adaptation Strategies for Western Australia. Available: http://www.public.health.wa.gov.au/cproot/1510/2/Health_Impacts_of_Climate_Change.pdf Retrieved 27 February 2012.
4. Nichols, A., Maynard, V., Goodman, B., & Richardson, J. (2009). Health, Climate Change and Sustainability: A Systematic Review and Thematic Analysis of the Literature. *Environmental Health Insights*. 3: 63-88.
5. Greenough, G., McGeehin, M., Bernard, S.M., Trtanj, J., Riad, J., & Engelberg, D. (2001). The Potential Impacts of Climate Variability and Change on Health Impacts of Extreme Weather Events in the United States. *Environmental Health Perspectives*. 109(2): 191-198.
6. McGeehin, M.A., & Mirabelli, M. (2001). The Potential Impacts of Climate Variability and Change on Temperature-Related Morbidity and Mortality in the United States. *Environmental Health Perspectives*. 109(2): 185-189.
7. Patz, J.A., McGeehin, M., Bernard, S.M., Ebi, K.L., Epstien, P.R., Grambsch, A., Gubler, D.J., Reither, P., Romieu, I., Rose, J.B., Samet, J.M., & Trtanj, J. (2000). The Potential Health Impacts of Climate Variability and Change for the United States: Executive Summary of the Report of the Health Sector of the U.S. National Assessment. *Environmental Health Perspectives*. 108(4): 367-376.
8. Jones, L.E. (2009). Physiotherapy and the Earth's global climate: a need for cultural change. *Physiotherapy Research International*. 14(2): 73-76.
9. Bernard, S.M., Samet, J.M., Grambsch, A., Ebi, K.L., & Romieu, I. (2001). The Potential Impacts of Climate Variability and Change on Air Pollution-Related Health Effects in the United States. *Environmental Health Perspectives*. 109(2): 199-210.

10. Rose, J.B., Epstein, P.R., Lipp, E.K., Sherman, B.H., Bernard, S.M., & Patz, J.A. (2001). Climate Variability and Change in the United States: Potential Impacts of Water- and Foodborne Diseases Caused by Microbiological Agents. *Environmental Health Perspectives*. 109(2): 211-222.
11. Gubler, D.J., Reiter, P., Ebi, K.L., Yap, W., Nasci, R., & Patz, J.A. (2001). Climate Variability and Change in the United States; Potential Impacts on Vector- and Rodent-Borne Diseases. *Environmental Health Perspectives*. 109(2): 223-234.
12. Salman, G.F., Mosier, M.C., Beasley, B.W., & Calkins, D.R. (2003) Rehabilitation for patients with chronic obstructive pulmonary disease. *Journal of General Internal Medicine*. 18: 213-221.
13. Bruder, A., Taylor, N.F., Dodd, K.J., & Shields, N. (2011). Exercise reduces impairment and improves activity in people after some upper limb fractures: a systematic review. *Journal of Physiotherapy*. 57: 71-82.
14. Rees, K., Taylor, R.S., Singh, S., Coats, A.J.S., & Ebrahim, S. (2004). Exercise based rehabilitation for heart failure. *The Cochrane Database of Systematic Reviews* 3: CD003331.
15. World Confederation for Physical Therapy Policy Statement on Disaster Management. Available: http://www.wcpt.org/sites/wcpt.org/files/files/PS_Disasters_Sept2011.pdf. Retrieved 27 February 2012.
16. The Chartered Society of Physiotherapy. Environmental Policy. Retrieved 27 September, 2011 from <http://www.csp.org.uk/about-csp/what-we-do/responsibilities/environment#download>
17. Climate Change 2007: Synthesis Report Summary for Policymakers. Available: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf. Retrieved 27 February 2012.