



From one pandemic to another: emerging lessons from COVID-19 for tackling physical inactivity in cities

McDougall, C. W., Brown, C., Thomson, C., Hanley, N., Tully, M. A., Quilliam, R. S., Bartie, P. J., Gibson, L., & Oliver, D. M. (2020). From one pandemic to another: emerging lessons from COVID-19 for tackling physical inactivity in cities. *Cities & Health*. <https://doi.org/10.1080/23748834.2020.1785165>

[Link to publication record in Ulster University Research Portal](#)

Published in:
Cities & Health

Publication Status:
Published (in print/issue): 28/07/2020

DOI:
[10.1080/23748834.2020.1785165](https://doi.org/10.1080/23748834.2020.1785165)

Document Version
Author Accepted version

General rights

Copyright for the publications made accessible via Ulster University's Research Portal is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

The Research Portal is Ulster University's institutional repository that provides access to Ulster's research outputs. Every effort has been made to ensure that content in the Research Portal does not infringe any person's rights, or applicable UK laws. If you discover content in the Research Portal that you believe breaches copyright or violates any law, please contact pure-support@ulster.ac.uk.

1 **From one pandemic to another: lessons from COVID-19 for (re)designing cities to tackle**
2 **physical inactivity**

3 Craig W. McDougall^a, Caroline Brown^b, Craig Thomson^c, Nick Hanley^d, Mark A. Tully^e, Richard S.
4 Quilliam^a, Phil J. Bartie^f, Lesley Gibson^g, David M. Oliver^a

5

6 ^a Biological & Environmental Sciences, Faculty of Natural Sciences, University of Stirling, Stirling,
7 UK

8 ^b The Urban Institute, School of Energy, Geoscience, Infrastructure and Society, Heriot Watt
9 University, Edinburgh, UK

10 ^c School of Computing, Engineering and Built Environment, Glasgow Caledonian University,
11 Glasgow, UK

12 ^d Institute of Biodiversity Animal Health and Comparative Medicine, University of Glasgow,
13 Glasgow, UK

14 ^e Institute of Mental Health Sciences, School of Health Sciences, Ulster University, Newtownabbey,
15 UK

16 ^f School of Mathematical and Computer Sciences, Heriot Watt University, Edinburgh, UK

17 ^g School of Engineering, University of Edinburgh, Edinburgh, UK

18

19 Craig W. McDougall corresponding author: c.w.mcdougall@stir.ac.uk

20 **Abstract**

21 Physical inactivity is a global pandemic. The COVID-19 crisis has altered global patterns of physical
22 activity in ways that were unimaginable before the outbreak. Enforced restrictions on mobility and the
23 mass closure of indoor fitness centres has highlighted the limitations of many urban areas for physical
24 activity and inequalities in physical activity opportunities across cities. However, unprecedented
25 reductions in mobility and increases in localised physical activity provide unique insight on emerging
26 challenges for urban health promotion. COVID-19 responses can therefore, encourage new perspectives
27 in urban planning and inspire novel future strategies for (re)designing more sustainable, healthier and
28 equitable cities.

29 Physical inactivity is one of the leading risk factors for global morbidity and mortality and has been
30 described as a world-wide health pandemic with extensive economic, environmental, and social
31 consequences (Kohl et al., 2012). Regular physical activity offers a variety of benefits for mental and
32 physical health and contributes to the prevention of communicable diseases, such as viral and bacterial
33 infections, and noncommunicable diseases (NCDs), such as diabetes and coronary heart disease. The
34 World Health Organisation (WHO) has a target of reducing global physical inactivity by 10 % by 2025;
35 however, this target will likely be missed as rates of inactivity continue to rise in many high-income
36 countries (Guthold et al., 2018), which are the focus of this commentary.

37 The outbreak of Coronavirus Disease-19 (COVID-19) and the public health measures put in place to
38 curb its transmission has rapidly and radically altered global patterns of physical activity. Restrictions
39 on mobility and the mass closure of indoor public spaces has localised opportunities for physical
40 activity, by only permitting exercise in the immediate neighbourhood. Even with these restrictions,
41 physical activity can play a key role in mitigating the health challenges presented by COVID-19 and
42 the physical and mental health side effects of the control measures designed to decrease the spread of
43 the virus. The links between COVID-19 and physical inactivity offer challenges and opportunities for
44 city policy-makers and these public health challenges should be addressed synergistically in order to
45 generate a positive legacy from the crisis.

46 The emergence of COVID-19 has highlighted a variety of inadequacies in the capability of cities to
47 respond to communicable disease outbreaks. As such, a new wave of public health thinking is required
48 to remediate the COVID-19 crisis and to ensure cities are more resilient to future infectious disease
49 outbreaks. As concepts such as ‘social distancing’ become embedded in the global public health lexicon,
50 we must not lose sight of other public health challenges including that of physical inactivity. Preventing
51 ill-health, both physical and mental, clearly has a key role in mitigating the overall negative effects of
52 COVID-19. However, the underlying health consequences and economic and social implications of
53 COVID-19 control measures require salutogenic public health approaches that ensure cities are places
54 of health promotion.

55 It is well established that opportunities for physical activity are inequitably distributed across societies
56 and the COVID-19 crisis may reinforce and deepen these inequalities. Opportunities and uptake of
57 physical activity is often greater in neighbourhoods with lower reported crime, more green, blue and
58 open space and better walkability, although these characteristics vary significantly among
59 neighbourhoods (Wolch, Byrne and Newell, 2014). Restrictions on mobility amplify differences in
60 neighbourhood characteristics and inequalities in the ability of neighbourhoods to support physical
61 activity are, therefore, more apparent than ever. These amplified inequalities mean that experiences of
62 restricted mobility or 'lockdown' will vary substantially among urban populations. There could be
63 considerable benefit to public health throughout and beyond the COVID-19 pandemic if city
64 governments recognise these differences and identify opportunities to negate area-level inequalities,
65 e.g. by permitting access to semi-private green space or implementing temporary pedestrianisation.

66 The potential for COVID-19 mitigation to reinforce inequalities in physical activity opportunities
67 extends beyond the built environment and may occur through the economic and social systems of cities.
68 As such, effective mitigation strategies must be viewed through the lens of gender, age and deprivation
69 to avoid increasing disparities in physical activity opportunities that are often present in high income
70 countries (Althoff et al., 2017). For example, in some cultures, there are issues related to the cultural
71 acceptance of women exercising in public spaces and these issues may be reinforced by the closure of
72 indoor or gender-specific fitness centres. Exploring options to remediate the emerging imbalances of
73 COVID-19 responses and their impact on physical activity opportunities represents a much needed and
74 valuable avenue for new research.

75 Significant life events can prompt major changes to physical activity patterns (Engberg et al., 2012) and
76 the COVID-19 crisis will likely have multi-directional effects on physical activity levels in cities. For
77 some, behaviours of recreational physical activity, such as organised sport or the use of indoor fitness
78 centres have been disrupted. The loss of employment and shift towards home-working mean reductions
79 in physical activity from active travel for some, whilst for others home-working may provide a chance
80 to increase active lifestyle choices. Additionally, government promotion of daily exercise to avoid the
81 unintended health consequences of COVID-19 mitigation measures may encourage more active

82 behaviours. Substantial variations in lifestyle are changing individual capabilities and opportunities for
83 physical activity in cities and understanding these changes and their lasting effect gives rise to a number
84 of important policy-relevant research questions. Indeed, the emerging research questions and public
85 health challenges are three-fold: (i) how can healthy activity habits and practices that have been
86 disrupted by COVID-19 be re-established (ii) where this is not possible, can alternative opportunities
87 be identified and facilitated to minimise physical inactivity; and (iii) what can be done to support the
88 continuation of positive changes to physical activity that have been developed as a result of COVID-19
89 interventions?

90 Global recommendations of household confinement have catalysed participation in ‘home-workouts’.
91 This new exercise trend, supported by international governments, sports stars and celebrities has seen
92 everyday household spaces in cities across the world reimagined, as furniture becomes temporary
93 fitness equipment and living spaces become multifunctional. Exploring the transferability of the home-
94 work out movement to city infrastructure and outdoor public spaces may offer potential to overcome
95 the limitations of many urban environments for facilitating physical activity. Rethinking the public
96 realm for physical activity and reimagining urban public space is common for children and many
97 subgroups of society including skateboarders and those who partake in free-running (parkour). Urban
98 governance often deters such behaviour by ‘designing-out’ processes or by legislating against it due to
99 associations with nuisance or crime. However, as cities densify, the benefits of multifunctional
100 infrastructure and public space is becoming increasingly apparent. The success of the home-workout
101 movement highlights a possibility to re-think the public realm and challenge conceptions of ‘normal’
102 behaviour in everyday spaces. Adopting inclusive urban planning approaches (Fig.1), rather than
103 preventative design strategies, may encourage a more collaborative approach to creating multifunctional
104 urban infrastructure and (re)designing public space for physical activity.

105 In some cities, parks and green spaces have been closed amid fears of congestion and difficulties in
106 maintaining safe social distancing practices. In others, such as Edinburgh and Auckland, temporary
107 restrictions on parking and road access around green spaces, beaches and key physical activity
108 ‘destinations’ have been deployed to discourage travel beyond the local neighbourhood. It is well

109 established that green spaces provide vital ecosystem services and play an important role in improving
110 the health and well-being of city populations and one mechanism for this is via physical activity (Hartig
111 et al., 2014). Despite these benefits, the loss and fragmentation of green space is a major issue in a
112 growing number of cities, which together with increasing concerns of green space congestion,
113 disproportionately affects low-income communities (Rigolon, 2016). In light of these challenges, it is
114 appropriate to question the greater dependence on green space, relative to other urban space, for
115 facilitating physical activity in cities.

116 It is generally accepted that the presence of ‘nature’ or ‘greenery’ induces positive impacts on mental
117 well-being when visiting or viewing green spaces (Markevych et al., 2017). However, the importance
118 of greenery or nature for physical activity is less known and greater feelings of safety appear to be a
119 more important factor as to why physical activity is popular in green space (Hartig et al., 2014).
120 Substantial reductions in traffic flow and improvements in air quality in cities as a consequence of
121 COVID-19 mobility restrictions have demonstrated that urban spaces are not inherently unsafe or
122 unsuitable for physical activity. In many cities it is how these spaces are used and managed, e.g. the
123 prioritisation of streets/road space for traffic rather than pedestrians, which perpetuates feelings of
124 unsafety. Amid growing pressure on urban green space and emerging issues of congestion, there may
125 be a need to question the notion of green exercise destinations in cities and explore approaches to
126 deconcentrate and localise outdoor physical activity opportunities. A greater focus on how urban
127 infrastructure can be managed to encourage physical activity across a wider spectrum of urban areas,
128 thus reducing growing pressure on urban green space and enabling physical activity in areas where
129 green space is not available may provide a more diverse range of possibilities for health promotion.

130 The COVID-19 crisis has fundamentally altered the way populations move and exercise in cities and
131 attempts to curb the spread of the virus have restricted mobility, augmenting the importance of the
132 neighbourhood as a resource for physical activity. As such, the unsuitability of many urban spaces for
133 physical activity and inequalities in physical activity opportunities among neighbourhoods has been
134 magnified. The COVID-19 crisis, therefore, offers a truly unique opportunity to critically review our
135 urban environments and their ability to support and enable physical activity; addressing these issues

136 synergistically offers scope to generate a positive legacy from the crisis. For some, as post COVID-19
137 normalities begin to emerge and restrictions on travel are reduced, opportunities for physical activity
138 beyond their own neighbourhood will resume. For more vulnerable members of society with limited
139 mobility, such as children, the elderly and those without the physical or economic means to travel, the
140 neighbourhood remains crucial. As normality returns, our collective experience of the geographies of
141 some of the most vulnerable in society should be used as a valuable reminder that to create more
142 sustainable, healthier and equitable cities, we must enable physical activity for all.

143 Acknowledgements

144 The Scottish Government Hydro Nation Scholars Programme provided funding to support this research.

145 Figure



146
147 **Fig. 1: Riverside Museum, Glasgow, Scotland.** A co-design process involving local authorities and
148 skateboarders enabled the creation of a multifunctional shared urban space. Subtle design features make
149 the area almost unrecognisable as a designated skating location thus catering to the needs of
150 skateboarders, who sought “street like” features and members of the public and museum visitors by
151 providing an open space that is suitable for play, socialising and physical activity.

152 **References**

- 153 Althoff, T. et al. (2017) ‘Large-scale physical activity data reveal worldwide activity inequality HHS
154 Public Access’, *Nature*, 547(7663), pp. 336–339. doi: 10.1038/nature23018.
- 155 Engberg, E. et al. (2012) ‘Life events and change in leisure time physical activity: A systematic
156 review’, *Sports Medicine*. Springer, pp. 433–447. doi: 10.2165/11597610-000000000-00000.
- 157 Guthold, R. et al. (2018) ‘Worldwide trends in insufficient physical activity from 2001 to 2016: a
158 pooled analysis of 358 population-based surveys with 1·9 million participants’, *The Lancet Global
159 Health*. Elsevier Ltd, 6(10), pp. e1077–e1086. doi: 10.1016/S2214-109X(18)30357-7.
- 160 Hartig, T. et al. (2014) ‘Nature and Health’, *Annual Review of Public Health*, 35(1), pp. 207–228.
161 doi: 10.1146/annurev-publhealth-032013-182443.
- 162 Kohl, H. W. et al. (2012) ‘The pandemic of physical inactivity: Global action for public health’, *The
163 Lancet*. Lancet Publishing Group, pp. 294–305. doi: 10.1016/S0140-6736(12)60898-8.
- 164 Markevych, I. *et al.* (2017) ‘Exploring pathways linking greenspace to health: Theoretical and
165 methodological guidance’, *Environmental Research*. Academic Press, 158, pp. 301–317. doi:
166 10.1016/J.ENVRES.2017.06.028.
- 167 Rigolon, A. (2016) ‘A complex landscape of inequity in access to urban parks: A literature review’,
168 *Landscape and Urban Planning*. Elsevier, 153, pp. 160–169. doi:
169 10.1016/J.LANDURBPLAN.2016.05.017.
- 170 Wolch, J. R., Byrne, J. and Newell, J. P. (2014) ‘Urban green space, public health, and environmental
171 justice: The challenge of making cities “just green enough”’, *Landscape and Urban Planning*, 125, pp.
172 234–244. doi: 10.1016/j.landurbplan.2014.01.017.