Physical Activity and COVID-19

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America Walks webinar. May 13, 2020

Http://sallis.ucsd.edu
Main Message: Physical activity is a powerful health enhancer that may help with the coronavirus pandemic in 6 ways
• Walking is very relevant during the pandemic
• More physical activity should be a priority during the pandemic, not an afterthought
• Many are questioning the wisdom of walkability (especially density) in the pandemic
  • What is the connection between density and COVID-19?
  • Does walkability hurt or help during the pandemic?
• Recommendations
  • This is an opportunity to advocate for walking and walkability even more forcefully
  • Promoting equitable solutions is more important than ever
Deaths attributed to 19 leading factors, by country income level, 2004

- High blood pressure
- Tobacco use
- High blood glucose
- Physical inactivity
- Overweight and obesity
- High cholesterol
- Unsafe sex
- Alcohol use
- Childhood underweight
- Indoor smoke from solid fuels
- Unsafe water, sanitation, hygiene
- Low fruit and vegetable intake
- Suboptimal breastfeeding
- Urban outdoor air pollution
- Occupational risks
- Vitamin A deficiency
- Zinc deficiency
- Unsafe health-care injections
- Iron deficiency

Mortality in thousands (total: 58.8 million)
### Moderate or strong evidence for health benefit

<table>
<thead>
<tr>
<th>Children</th>
<th>Adults</th>
<th>Older Adults</th>
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<tbody>
<tr>
<td>Bone Health</td>
<td>All-cause mortality</td>
<td>Falls</td>
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<tr>
<td>Cognitive function</td>
<td>Stroke and heart disease</td>
<td>Frailty</td>
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<td>CV fitness</td>
<td>Hypertension</td>
<td>Physical function</td>
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<td>Muscle fitness</td>
<td>Type 2 diabetes</td>
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<tr>
<td>Weight status</td>
<td>Depression</td>
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<tr>
<td>Depression</td>
<td>Cognitive function</td>
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<td>Dementia</td>
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<td></td>
<td>Quality of life</td>
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<td>Sleep</td>
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<td>Anxiety/depression</td>
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<tr>
<td></td>
<td>Weight status</td>
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When pneumonia occurs, the thin layer of alveolar cells is damaged by the virus. The body reacts by sending immune cells to the lung to fight it off.

"And that results in the linings becoming thicker than normal," he said. "As they thicken more and more, they essentially choke off the little air pocket, which is what you need to get the oxygen to your blood."
Physical Activity May Contribute to Controlling the Pandemic in 6 Ways

• Moderate PA enhances immune function and reduces inflammation, so it could reduce severity of infections
  • Extended vigorous PA seems to reduce immune function
  • Walking is an ideal and accessible activity for most people

• Moderate PA can improve the common chronic conditions that increase risk for severe COVID-19
  • About 95% of COVID-19 deaths are in people with chronic conditions

• Moderate PA is one of the best stress management methods
Physical Activity May Contribute to Controlling the Pandemic in 6 Ways

• Stress and distress create imbalances of cortisol, that negatively affect immune function and inflammation
  • Moderate PA helps bring cortisol into balance

• Moderate PA produces antioxidants that reduce the severity of acute respiratory distress syndrome (ARDS), a serious complication of COVID-19

• Both acute and chronic PA improve immune responses to vaccines
  • Older adults assigned to aerobic exercise were 30-100% more likely than a flexibility control group to attain sufficient antibodies from flu vaccines
What does this mean for built environments?

Strengths and weaknesses of activity-friendly neighbourhoods during the COVID-19 pandemic

Deepti Adlakha, PhD; James F. Sallis, PhD

Commentary submitted to “Cities & Health” special issue on COVID-19
Should we reduce density to reduce contagion?

Figure 2. Scatter plot of population density and per capita COVID-19 deaths

Note: COVID-19 case and death data are from early May 2020. Data are based on reports at the time of publication. At times, officials revise reports or offer incomplete information.
<table>
<thead>
<tr>
<th>Environmental attribute</th>
<th>Expected net NCD effect</th>
<th>Expected net ID effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential density</td>
<td>+</td>
<td>0</td>
</tr>
<tr>
<td>Mixed land use</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Automobile-optimized Transportation system</td>
<td>--</td>
<td>+</td>
</tr>
<tr>
<td>Public transportation</td>
<td>+</td>
<td>--</td>
</tr>
<tr>
<td>Pedestrian &amp; bicycling Facilities</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Parks, trails, open space</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Open streets programs</td>
<td>+</td>
<td>+</td>
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</tbody>
</table>

**Expected net effects of built environment attributes on non-communicable diseases and infectious diseases.**

Notes: + = favorable effect; 0 = no effect; - = unfavorable effect

This table represents a simplification because expected unfavourable effects of density and public transport use on IDs can be mitigated by aggressive public health measures.
Walkability generally benefits NCDs & IDs

• Concerns about risk of ID contagion in urban areas are leading to recommendations to reduce density and reliance on public transport

• Urban design recommendations need to be made considering effects on both IDs and NCDs
  • NCDs currently account for about 65% of global deaths.

• If permanent urban design decisions are made solely on the basis of ID risk, there could be severe unintended, though predictable, health consequences for NCDs
Conclusions and Requests

• Physical activity should be widely recommended and promoted during the pandemic

• Walkability is expected to have mostly favorable effects on infectious and chronic diseases

• The pandemic is impacting older adults, people of color, and lower-income communities particularly hard

Requests

• Oppose recommendations to reduce density and transit service

• We advocates should be even bolder in our advocacy for walking, walkability, and equity