¹ Camden Central PCN, London, UK² Royal Crescent Surgery, Cheltenham, UKCorrespondence to: T Haseler
toby.haseler@nhs.netCite this as: *BMJ* 2022;376:o348<http://dx.doi.org/10.1136/bmj.o348>

Published: 23 February 2022

Lack of physical activity is a global problem

Primary care is an essential partner in the response

Tobias Haseler,¹ Christine Haseler²

Physical activity has been more important than ever during the covid-19 pandemic. Insufficient physical activity is a global health problem and has itself been called a pandemic.¹ Lockdowns have reduced time spent on physical activity and increased sedentary time,^{2,3} both of which are associated with risks to health.

World Health Organization guidance (updated in 2020) recommends a minimum of 150–300 minutes of moderate intensity physical activity or 75–150 minutes of vigorous intensity physical activity weekly, and encourages people to exceed these targets.^{4,5} Healthcare professionals have an important role in helping people to make any necessary changes to their behaviour.⁶

The linked systematic review and meta-analysis of randomised trials by Kettle and colleagues (doi:10.1136/bmj-2021-068465) provides evidence of the effectiveness of physical activity interventions delivered or prompted by health professionals in primary care.⁷

The authors reviewed 51 trials evaluating ‘predominantly aerobic based physical activity’ interventions delivered to adults. Participants in trial intervention groups increased moderate to vigorous intensity physical activity (MVPA) by a modest 14 min/week on average relative to controls. But this weighted mean could obscure substantial variation between individuals. These participants were also more likely than controls to meet guideline targets for MVPA. Interventions involving five or more contacts with health professionals, longer follow-up, or those delivered by primary care and other professionals were associated with greater improvements.⁷

Many gaps remain in the literature, however, and Kettle and colleagues’ findings reflect this uncertainty.⁸ Trials measuring physical activity with objective devices, such as accelerometers or wearable activity trackers, found no significant difference in MVPA between groups, while trials relying on self-reported activity showed an increase of 24 min/week in intervention groups.⁷ In a previous meta-analysis, Larsen and colleagues found that interventions using physical activity monitors increased MVPA by 48.5 min/week.⁹ But they judged this evidence to be ‘low certainty’ due to publication and small study biases.

The 14 minute improvement reported by Kettle and colleagues might be an underestimate because some control group participants received brief advice on physical activity, itself a recognised intervention.⁸ This advice could have increased physical activity

levels among controls, reducing the difference between control and intervention groups.

Broad range of benefits

The benefits of physical activity are broad and include better mental health, a lower risk of cardiovascular disease, improved sleep, and a lower risk of some cancers.¹⁰ Benefits are dose dependent and nonlinear, with no lower threshold. The biggest benefits occur when moving from no activity to some activity; even small changes are clinically significant.^{4,5,11,12} Increasing duration of physical activity of any intensity, and less time spent sitting, is associated with a reduced risk of premature mortality.¹³

Evidence from the H1N1 influenza epidemic suggests that regular physical activity is associated in a dose dependent manner with reduced incidence, duration, and severity of acute upper respiratory infections.¹⁴ Evidence is emerging that physical activity could even improve immune response to covid-19 vaccines.^{15,16}

Time spent sitting (sedentary time) is an independent risk factor for all cause mortality, cardiovascular disease, cancer, and type 2 diabetes.⁴ Kettle and colleagues reported no significant effect of primary care interventions on sedentary time, while Larsen and colleagues found that physical activity monitor based interventions were associated with a mean decrease of 9.9 min/day.^{7,9}

The benefits of physical activity were already clear,⁴ and this new meta-analysis shows that interventions delivered by health professionals can increase physical activity levels among primary care patients.⁷ According to a third recent meta-analysis,¹⁷ the number needed to treat for primary care promotion to increase one inactive adult’s physical activity to internationally recommended levels is 12. This figure compares favourably with a number needed to treat of 20 for nicotine replacement therapy for smoking cessation.¹⁸

The interventions most powerfully associated with improvements are not yet clear, but guidelines such as those from the National Institute for Health and Care Excellence or other simple frameworks^{8,19} take a pragmatic approach and can be a useful tool in conversations with patients. But there is room for digital innovation: people using streaming and subscription services, apps, online platforms, and recorded or live activity classes are more likely to meet guideline targets for physical activity.²⁰ Tailored solutions are also likely to be more effective; home based exercise can improve physical activity levels in older adults, for example.²¹

Primary care is an essential partner in global efforts to increase physical activity to levels recommended by WHO, and we now have evidence to support primary care interventions. Future research should focus on identifying the most effective interventions, optimising outcomes for all population groups, and evaluating how best to decrease sedentary time as well as increasing physical activity.

Competing interests: The BMJ has judged that there are no disqualifying financial ties to commercial companies. The authors declare no other interests.

Provenance and peer review: Commissioned; not externally peer reviewed.

We would like to thank patient Michael Mortell for his helpful comments on a draft of this editorial.

- Kohl HW, 3rd, Craig CL, Lambert EV, et al. Lancet Physical Activity Series Working Group. The pandemic of physical inactivity: global action for public health. *Lancet* 2012;380:294-305. doi: 10.1016/S0140-6736(12)60898-8 pmid: 22818941
- Stockwell S, Trott M, Tully M, et al. Changes in physical activity and sedentary behaviours from before to during the COVID-19 pandemic lockdown: a systematic review. *BMJ Open Sport Exerc Med* 2021;7:e000960. doi: 10.1136/bmjsem-2020-000960 pmid: 34192010
- Buote Stella A, Aščević M, Furlanis G, et al. Smart technology for physical activity and health assessment during COVID-19 lockdown. *J Sports Med Phys Fitness* 2021;61:452-60. doi: 10.23736/S0022-4707.20.11373-2 pmid: 33092330
- WHO. World Health Organisation Physical Activity Fact Sheet. 2020. <https://www.who.int/news-room/fact-sheets/detail/physical-activity>
- Bull FC, Al-Ansari SS, Biddle S, et al. World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *Br J Sports Med* 2020;54:1451-62. doi: 10.1136/bjsports-2020-102955 pmid: 33239350
- World Health Organisation. More active people for a healthier world: Global action plan on physical activity 2018-2030. 2018.
- Kettle V, Madigan C, Coombe A, Graham H, Thomas J, Chalkley A, et al. Effectiveness of physical activity interventions delivered or prompted by health professionals in primary care settings: a systematic review and meta-analysis of randomised controlled trials. *BMJ* 2022;376:e068465.
- NICE. Physical activity: brief advice for adults in primary care. Public health guideline PH44. NICE Guidelines. 2013. <https://www.nice.org.uk/guidance/ph44/chapter/8-Gaps-in-the-evidence>
- Larsen RT, Wagner V, Korffitsen CB, et al. Effectiveness of physical activity monitors in adults: systematic review and meta-analysis. *BMJ* 2022;376:e068047. doi: 10.1136/bmj-2021-068047 pmid: 35082116
- Crooke R, Haseler C, Haseler T, Collins J, Crockett A. Physical activity and moving more for health. *J R Coll Physicians Edinb* 2020;50:173-80. doi: 10.4997/JRCPE.2020.223 pmid: 32568295
- Geidl W, Schlesinger S, Mino E, Miranda L, Pfeifer K. Dose-response relationship between physical activity and mortality in adults with noncommunicable diseases: a systematic review and meta-analysis of prospective observational studies. *Int J Behav Nutr Phys Act* 2020;17:109. doi: 10.1186/s12966-020-01007-5 pmid: 32843054
- Wen CP, Wai JPM, Tsai MK, et al. Minimum amount of physical activity for reduced mortality and extended life expectancy: a prospective cohort study. *Lancet* 2011;378:1244-53. doi: 10.1016/S0140-6736(11)60749-6 pmid: 21846575
- Ekelund U, Tarp J, Steene-Johannessen J, et al. Dose-response associations between accelerometry measured physical activity and sedentary time and all cause mortality: systematic review and harmonised meta-analysis. *BMJ* 2019;366:l4570. doi: 10.1136/bmj.l4570 pmid: 31434697
- Laddu DR, Lavie CJ, Phillips SA, Arena R. Physical activity for immunity protection: Inoculating populations with healthy living medicine in preparation for the next pandemic. *Prog Cardiovasc Dis* 2021;64:102-4. doi: 10.1016/j.pcad.2020.04.006 pmid: 32278694
- da Silveira MP, da Silva Fagundes KK, Bizuti MR, Starck É, Rossi RC, de Resende E Silva DT. Physical exercise as a tool to help the immune system against COVID-19: an integrative review of the current literature. *Clin Exp Med* 2021;21:15-28. doi: 10.1007/s10238-020-00650-3 pmid: 32728975
- Valenzuela PL, Simpson RJ, Castillo-García A, Lucia A. Physical activity: A coadjuvant treatment to COVID-19 vaccination? *Brain Behav Immun* 2021;94:1-3. doi: 10.1016/j.bbi.2021.03.003 pmid: 33691149
- Orron G, Kinmonth A-L, Sanderson S, Sutton S. Effectiveness of physical activity promotion based in primary care: systematic review and meta-analysis of randomised controlled trials. *BMJ* 2012;344:e1389. doi: 10.1136/bmj.e1389 pmid: 22451477
- Agboola S, McNeill A, Coleman T, Leonardi Bee J. A systematic review of the effectiveness of smoking relapse prevention interventions for abstinent smokers. *Addiction* 2010;105:1362-80. doi: 10.1111/j.1360-0443.2010.02996.x pmid: 20653619
- Haseler C, Crooke R, Haseler T. Promoting physical activity to patients. *BMJ* 2019;366:l5230. <https://www.bmj.com/content/366/bmj.l5230>. doi: 10.1136/bmj.l5230 pmid: 31530549
- Parker K, Uddin R, Ridgers ND, et al. The use of digital platforms for adults' and adolescents' physical activity during the covid-19 pandemic (our life at home): survey study. *J Med Internet Res* 2021;23:e23389. doi: 10.2196/23389 pmid: 33481759

- Gham A, Briki W, Mansoor H, Al-Mohannadi AS, Lavie CJ, Chamari K. Home-based exercise can be beneficial for counteracting sedentary behavior and physical inactivity during the COVID-19 pandemic in older adults. *Postgrad Med* 2021;133:469-80. doi: 10.1080/00325481.2020.1860394 pmid: 33275479

This is an Open Access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.