

Bond University  
Research Repository



## Physical activity and the prevention of chronic illness in the BRICS nations: Issues relating to gender equality

Mielke, Gregore I.; Brown, Wendy J.

*Published in:*  
Journal of Sport and Health Science

*DOI:*  
[10.1016/j.jshs.2019.08.001](https://doi.org/10.1016/j.jshs.2019.08.001)

*Licence:*  
CC BY-NC-ND

[Link to output in Bond University research repository.](#)

*Recommended citation(APA):*  
Mielke, G. I., & Brown, W. J. (2019). Physical activity and the prevention of chronic illness in the BRICS nations: Issues relating to gender equality. *Journal of Sport and Health Science*, 8(6), 507-508.  
<https://doi.org/10.1016/j.jshs.2019.08.001>

### General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

For more information, or if you believe that this document breaches copyright, please contact the Bond University research repository coordinator.

Opinion

# Physical activity and the prevention of chronic illness in the BRICS nations: Issues relating to gender equality

Gregore I. Mielke, Wendy J. Brown \*

*Centre for Research on Exercise, Physical Activity and Health, School of Human Movement and Nutrition Sciences, The University of Queensland, Brisbane, QLD 4072, Australia*

Received 10 July 2019; revised 20 July 2019; accepted 21 July 2019

Available online 9 August 2019

## 1. Background

BRICS is an acronym for an international association of 5 countries (Brazil, Russia, India, China, and South Africa), which together represent the world's major emerging economies and almost one-half of the world's population.<sup>1,2</sup> In these countries, infectious diseases and injuries still account for much of the health burden, but 71% of all deaths are attributable to noncommunicable diseases (NCDs).<sup>1</sup> Deaths from NCDs are highest in Russia and China (both 86%) and lowest in South Africa (43%), which has the highest proportion of infectious diseases (Table 1).

Physical inactivity (defined as not meeting the lower end of the range of physical activity (PA) recommended for health benefit by the World Health Organization (WHO)<sup>3</sup> and by current U.S.<sup>4</sup> and Australian<sup>5</sup> guidelines (150 min of at least moderate-intensity activity per week, or 75 min of vigorous-intensity activity, or an equivalent combination, per week), is a modifiable risk factor for many of the NCDs that are highly prevalent in the BRICS countries, including cardiovascular diseases, type 2 diabetes, certain cancers, and mental health problems. Data from the WHO Global Health Observatory suggest that between 9% (Russia) and 47% (South Africa) of the adult populations of the BRICS nations do not meet current PA guidelines.<sup>6,7</sup> This heterogeneity means that up to 14% of all deaths in the BRICS countries are attributable to physical inactivity (Table 1).

## 2. PA in the BRICS nations

Estimates of PA levels in the BRICS nations (Table 1) are based on activities carried out in the occupational, domestic, transport, and leisure domains. Trends in domain-specific time use and energy expenditure over the past 20 years in Brazil, Russia, China, and India<sup>8,9</sup> show that the major contributions to overall activity estimates are from occupational and domestic activity. There

have been marked decreases in activity in these 2 domains, particularly in China and Brazil.<sup>8</sup> Indeed, in China the average energy expended in occupational activity halved in the 15 years from 1991 to 2006.<sup>8</sup> Because all these countries are experiencing rapid economic and technological changes, occupational activity, which we estimate accounted at the turn of the century for about 65% of China's total activity, 74% of Brazil's, and 84% of India's, is likely to continue to decline.<sup>8</sup> With time spent in domestic and transport activity projected to remain stable, it is time to advocate for higher levels of leisure time activity in the BRICS countries. However, with increased urbanization and more people working in sedentary high-tech or manufacturing industries, it is unlikely that even marked improvements in leisure-time activity will offset the energy losses from decreases in occupational activity.

## 3. Gender differences in PA

Economic and technological changes in the BRICS nations are likely to have significant effects on women's PA levels. At present, considering PA across all domains, men are more active than women in all the BRICS countries, except Russia, where levels of activity are slightly higher among women than among men.<sup>7</sup> However, when only leisure-time activity is considered, these gender differences are more marked, because women in the BRICS countries still spend much more time in domestic activities and have fewer opportunities for leisure activities than do men. As more women enter the paid workforce, especially if they move into sedentary occupations, they will become much more reliant on leisure-time activity for health benefits.

The recent Global Action Plan on Physical Activity (2018–2030) has set a target of a 10% reduction in physical inactivity levels by 2025 in all countries.<sup>3</sup> In 2016, we advocated that addressing the gender gap in PA could be a feasible way of achieving this WHO target.<sup>7,10</sup> Using data from 142 countries, we estimated that an overall improvement of 4.8% points in the median level of physical inactivity among women could achieve this 10% reduction overall, without changing

Peer review under responsibility of Shanghai University of Sport.

\* Corresponding author.

E-mail address: [wbrown@uq.edu.au](mailto:wbrown@uq.edu.au) (W.J. Brown).

Table 1  
Deaths due to NCDs and indicators related to physical inactivity in the BRICS countries.

	Brazil	Russia	India	China	South Africa
Deaths attributable to NCDs <sup>1</sup> (%)	74	86	60	86	43
Prevalence of physical inactivity <sup>7</sup> (%)	27	9	13	24	47
Deaths attributable to physical inactivity <sup>14</sup> (%)	13.2	5.6	4.2	8.3	14.0
Prevalence of physical inactivity in men <sup>7</sup> (%)	26	10	11	22	42
Prevalence of physical inactivity in women <sup>7</sup> (%)	30	9	16	26	52
Absolute gender difference <sup>a</sup> in physical inactivity <sup>7</sup> (pp)	4	-1	5	4	10
Relative gender difference <sup>b</sup> in physical inactivity <sup>7</sup>	1.15	0.90	1.45	1.19	1.24
GII <sup>12</sup>	0.41	0.26	0.52	0.15	0.40
Proportion of women who are in the adult labor force <sup>11</sup> (%)	43	48	22	44	45

<sup>a</sup> Absolute gender difference in percentage points (pp).

<sup>b</sup> Relative gender difference is the ratio between the prevalence of physical inactivity in women and the prevalence of physical inactivity in men.

Abbreviations: GII = Gender Inequality Index; NCDs = noncommunicable diseases.

the distribution in men.<sup>7</sup> However, in some of the BRICS countries, where girls and women may have fewer opportunities for participation in leisure-time PA, achieving equity could be a major challenge.

For example, in India, where levels of inactivity are low, women are 45% more likely than men to not achieve the current recommendations for PA (relative gender difference in physical inactivity of 1.45). At present, only 22% of women in India are in the adult labor force<sup>11</sup> (Table 1). With increasing economic development in India, more women will move into paid employment, and inactivity levels are sure to increase, reflecting the sedentary nature of work, as well as barriers to safe, affordable, and accessible PA options. Similarly, in South Africa, where communicable diseases still cause more than one-quarter of deaths,<sup>1</sup> the prevalence of inactivity is high, with a 10% point gender gap<sup>7</sup> (Table 1). It is difficult to see how this gender gap will be addressed without considerable political will and policy change relating to women's participation in leisure-time PA.

The marked gender differences in PA in 4 of the 5 BRICS nations (Table 1) largely reflect the overall gender inequalities in these countries, as indicated by the UN Development Programme's Gender Inequality Index (GII).<sup>12</sup> The GII was developed to better depict differences in the distribution of achievements in women and men; the higher the GII value, the more disparities between women and men. Of the BRICS nations, India has the highest GII and is also the BRICS country with the highest relative gender difference in inactivity prevalence (Table 1).

Those leading the efforts to increase population levels of PA in the BRICS countries should consider the facts that both PA and health are underpinned by social factors, that individual behaviors are strongly modelled by society's values and

structures, and that inequities will always exist if we remain ignorant of their significance.<sup>13</sup> Therefore, a first step to closing the gender gap would include an equity agenda that (1) recognizes the needs of groups who systematically face social disadvantage and (2) considers allocation of budgets for both PA promotion and for research to improve our understanding of gender disparities in PA. The bottom line is that we need to empower women and create opportunities for them to be more physically active, especially during their leisure time. Intervention strategies that focus on individual factors (e.g., motivation), social factors (providing opportunities and support), and environmental factors (e.g., facilitating access to safe places to be active) will be required to successfully close the gender gap in PA and thereby decrease the proportion of NCD deaths attributable to physical inactivity.

### Competing interests

Both authors declare that they have no competing interests.

### References

- World Health Organization. *BRICS health and WHO country presence profile*. Available at: <https://apps.who.int/iris/bitstream/handle/10665/255800/WHO-CCU-17.05-eng.pdf?sequence=1&isAllowed=y>. [accessed 31.07.2019].
- Uvinha RR, de Oliveira NRC, Ridder JH, Chin MK, Durstine JL. The BRICS Council for Exercise and Sport Science (BRICSCESS) - a new era has dawned. *J Sport Health Sci* 2018;7:425-8.
- World Health Organization. *Global action plan on physical activity 2018-2030: more active people for a healthier world*. Geneva: World Health Organization; 2018.
- U.S. Department of Health and Human Services. *Physical activity guidelines for Americans*. 2nd ed. Washington, DC: US Dept of Health and Human Services; 2018.
- Brown WJ, Bauman AE, Bull F, Burton NW. *Development of evidence-based physical activity recommendations for adults (18-64 years)*. Report prepared for the Australian Government Department of Health, August 2012. Available at: [http://www.health.gov.au/internet/main/publishing.nsf/Content/health-pubhlth-strateg-phys-act-guidelines/\\$File/DEB-PAR-Adults-18-64years.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/health-pubhlth-strateg-phys-act-guidelines/$File/DEB-PAR-Adults-18-64years.pdf). [accessed 31.07.2019].
- World Health Organization. *World Health Statistics 2016: monitoring health for the SDGs sustainable development goals*. Geneva: World Health Organization; 2016.
- Mielke GI, da Silva ICM, Kolbe-Alexander TL, Brown WJ. Shifting the physical inactivity curve worldwide by closing the gender gap. *Sports Med* 2018;48:481-9.
- Ng SW, Popkin BM. Time use and physical activity: a shift away from movement across the globe. *Obes Rev* 2012;13:659-80.
- Dearth-Wesley T, Popkin BM, Ng SW. Estimated and forecasted trends in domain specific time-use and energy expenditure among adults in Russia. *Int J Behav Nutr Phys Act* 2014;11:11. doi:10.1186/1479-5868-11-11.
- Brown WJ, Mielke GI, Kolbe-Alexander TL. Gender equality in sport for improved public health. *The Lancet* 2016;388:1257-8.
- The World Bank. *Labor force, female (% of total labor force)*. Available at: <https://data.worldbank.org/indicator/SL.TLF.TOTL.FE.ZS>. [accessed 31.07.2019].
- UN Human Development Report Office. *Human development indices and indicators: 2018 statistical update*. Available at: <http://hdr.undp.org/en/global-reports>. [accessed 31.07.2019].
- Williams O, Coen SE, Gibson K. Comment on: "Equity in physical activity: a misguided goal". *Sports Med* 2019;49:637-9.
- Lee IM, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT, et al. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *The Lancet* 2012;380:219-29.