The Vancouver 2010 Olympics and Leisure-Time Physical Activity Rates in Canada: Any Evidence of an Epicenter Effect?

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Jurisdictions vying to host a mega sport-events, such as the Olympic Games often point to trickle-down effects as one of the benefits associated with hosting such an event. These trickle-down effects refer to the event’s capacity to increase sport and/or physical activity (PA) levels within host populations (Hogan & Norton, 2000). The few studies examining the trickle-down phenomenon suggest that the effects of such events on host populations’ activity levels are negligible, or at best marginal (Weed, Coren, & Fiore, 2009). In fact, Weed et al. (2009) concluded “that no reliable evidence was available to indicate that any Games staged to date had raised sport participation in the host community” (p. 7).

We argue this lack of evidence might stem from not having appropriate population-level data required to robustly evaluate the impact of such an event and, in particular, not using the appropriate level of jurisdictional analysis if an evaluation is performed. Indeed, the majority of evidence on trickle-down effects tends to reflect an event’s influence on an entire host population, and data are not delineated by socio-demographic and/or geographic characteristics of a host population (Potwarka & McCarville, 2010). Thus, the purpose of our study was to explore the nature and reach of the Vancouver 2010 Winter Olympics’ influence on the leisure-time PA rates among female youth in Canada. Our paper represents a shift from “one size fits all” (i.e., entire national, state/provincial population-based) explorations of trickle-down effect phenomena, to more targeted approaches to understanding this area of inquiry.

Consistent with realist synthesis methodology (cf., Coalter, 2007; Pawson & Tilly, 1997), we contend that if approached from a slightly different contextual perspective, trickle-down effects may in fact occur. However, they may tend to be localized within certain communities (i.e., close to where Olympic events are staged) and among particular segments of a population (e.g., male youths, female, youths). We term this as a an “epicenter effect”, suggesting that when searching for evidence of a trickle-down effect, researchers should first consider available participation data at local and regional levels and then move outward and consider data at provincial/state and national-levels. The concept being that any potential effects would be greatest at the epicenter of the mega-event (e.g., host city, venue locations, etc.) and then dissipate as you expand outward. Specifically, we hypothesized that any evidence of a trickle-down effect would be strongest in regions that housed Olympic venues (i.e., Richmond, North Shore, and metropolitan Vancouver) and among female youth that lived in each of these regions. These hypotheses were based on previous research, which suggests a record setting number of medal performances among Canadian female athletes (e.g., Lockwood & Kunda, 1999), extensive enthusiasm and leveraging efforts (e.g., sport and PA education and awareness programs) in host jurisdictions (e.g., McCartney et al., 2012; Waitt, 2003), and access to newly developed sport and PA infrastructure (e.g., Lockhead, 2005) may influence the nature and extent of trickle-down effects.

Our data captured a time period from the two years leading up to the Games (2007-2008), the year leading up to and the year of the event (2009-2010), and two years after the event (2011-2012). Leisure-time physical activity rates of females and males, aged 12-19, were extracted from the Canadian Community Health Survey (CCHS) 2007-2008 (n = 1,007,499); 2009-2010 (n = 1,041,552); and 2011-2012 (n = 1,037,017) (Statistics Canada, 2013). The CCHS is a repeat cross-sectional nationally representative survey, with a central objective of gathering health-related data at the sub-provincial levels of geography (health region or combined health regions) (Statistics Canada, 2013). Respondents were classified as “moderately active to active” or “inactive” based on an index of average daily physical activity over the past three months. Consistent with Health Canada indicators, 1.5 kcal/kg/day or more was defined as being “moderately active to active” (Statistics Canada, 2013). For the purposes of subsequent analyses, leisure-time participation data were grouped at the national (i.e., Canada), provincial, and regional levels (i.e., health regions of...
Richmond, North Shore, and metropolitan Vancouver). We also considered a “control” region of Vancouver Island. This region of British Columbia (BC) is relatively close to mainland Vancouver, but did not house any Olympic venues. Male youth were also treated as control samples in all levels of analysis. Time-series analyses (i.e., bootstrap variance estimations) were employed to test if the proportions of females and males classified as being “moderately active to active” were statistically different from the previous two-year reference period.

As expected, no statistically significant changes were observed in the rate of moderately active to active female youth in Canada or the province of BC over the two year time periods under investigation. Moreover, no significant trends in activity levels emerged among male or Vancouver Island control samples. However, the proportion of female youth in Richmond classified as moderately active to active during leisure time increased substantially across each two year time period. Specifically, 51.0% of female youth in Richmond were moderately active to active in 2007-2008 (n = 4,240); 75.9% in 2009-2010 (n = 7,394); and 92.7% in 2011-2012 (n = 7,461). The change in rate (+24.9%) of moderately active to active females from 2007-2008 (pre-event) to 2009-2010 (the year prior to the event and the year the event was staged) was statistically significant in this geographic context (z = 2.05, p <.05). Similarly, the proportion of female youth in the region of North Shore classified as moderately active to active during leisure time also increased across each two year time period. Specifically, 64.1% of female youth in North Shore were moderately active or active in 2007-2008 (n = 8,010); 82.1% in 2009-2010 (n = 10,555); and 86.2% in 2011-2012 (n = 7,461). No statistically significant changes were observed in the rate of moderately active to active female youth in the metropolitan region of Vancouver.

Mass conclusions that trickle-down effects do not occur (e.g., Weed et al., 2009) are not supported by our data. Our data suggests that trickle-down effects may in fact occur, and that they appear to be highly localized in regions that hosted events and venues, and tend to occur only within certain segments of a population. As such, we advocate for future research that explores our notion of an “epicenter effect” in other mega-sport event contexts. More targeted and contextual approaches to understanding the trickle-down effect may reveal more subtle or meaningful evidence of impact among particular sub-populations rather than concluding such effects do not exist more generally. Regions that host events and venues allow citizens to witness outstanding performances live, which might have inspirational effects that are unattainable via televised viewership or in other geographic locals. Hosting regions may provide opportunities for people to act on an inspired state, in the same spaces as the athletes they previously witnessed.