Mass Sporting and Physical Activity Events—Are They “Bread and Circuses” or Public Health Interventions to Increase Population Levels of Physical Activity?

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Background: Large-scale, one-off sporting or physical activity (PA) events are often thought to impact population PA levels. This article reviews the evidence and explores the nature of the effect. Methods: A search of the published and grey literature was conducted to July 2005 using relevant databases, web sources, and personal contacts. Impacts are described at the individual, societal and community, and environmental levels. Results: Few quality evaluations have been conducted. While mass sporting events appear to influence PA-related infrastructure, there is scant evidence of impact on individual participation at the population level. There is some evidence that events promoting active transport can positively affect PA. Conclusions: The public health potential of major sporting and PA events is often cited, but evidence for public health benefit is lacking. An evaluation framework is proposed.

Key Words: evaluation, physical activity, mass participation, Olympic Games, mass campaigns

Large scale, such as the Olympic Games, or local “mass sporting events” are thought to impact the physical activity (PA) behavior of the population. There is a perception that mega-events create community euphoria that translates into motivation for PA. The potential for increased PA participation is often quoted in the bidding process, such as for the 2012 London Olympics.1 Newspaper reports following the 2000 Sydney Olympic Games claimed a “rising of the couch potatoes.”2 If such effects occurred, their benefit would be considerable. PA events are widely used to encourage populations to adopt more active lifestyles.3,4

We included an “event” if it was short-term, discrete, and organized, rather than a longer term purposive community-wide campaign.5 Other reviews have examined sports development,6 travel behavior,7 and health-promotion events.8 We identified examples of mass events, but it is not possible to undertake a systematic review of all possible PA-related events. The categories of events reviewed here were:
1) elite sporting events, such as the Olympic Games (population involved as spectators);
2) non-elite mass events, with potential for community-wide participation; and
3) major population-level health promotion events, such as Walk or Ride to Work Days.

**Measuring the Impact of Major Events on Physical Activity**

Major events may result in diverse community benefits, including new sporting facilities, improved transport, social cohesion and community volunteerism, and the enhancement of national sporting culture. For this review, evidence was sought that mass events had increased population-level participation in PA sufficient for health benefit. At the environmental level, built sporting infrastructure may increase access and community usage.

Few events are underpinned by explanatory behavior change theories. Elite high-profile events may have a “trickle down” effect on general community participation, or a “discouragement effect,” where such performance levels are perceived as unattainable but support for these hypotheses is anecdotal.

**Methods**

We searched published literature via SPORTDiscus, Pubmed, CINAHL, PsycInfo, Dissertation Abstracts, ISI Web of Science, Journals@Ovid, and Cochrane databases. Key words and search terms were: PA/sport/exercise, or Olympics/Games; mega/mass/special events or campaign; health promotion; participation; population; evaluation/impact; walk, cycle, or active commuting. Sports agency, event, health promotion, and government websites were examined, as well as PA-related conference abstracts for 2005. Personal contact was made with government agencies responsible for sports development and evaluation, with university research centers in the UK, US, Canada, and Australia, and with directors of major sporting events to capture unpublished examples of evaluations of sports-related events.

**Results**

**The Effects of Major Sporting Events on Physical Activity**

Few evaluations have been carried out, despite extensive claims of mega-event organizers. National annual PA surveys were carried out before and after the 2000 Sydney Olympic Games. There was no change in the proportion meeting health-enhancing PA levels following the Sydney Olympics. Concurrently, the Australian Bureau of Statistics carried out adult population surveys of “any physical activity or sports participation” in the previous 12 months. Participation rates, when compared with the same months in the previous year, were lower in 2000 than in 1999 and 1998, and do not identify evidence for a “trickle down” effect among Australian adults.
Population data collected following the 2002 Manchester Commonwealth Games also demonstrated no impact on participation in sports activities, which excluded walking, more than 4 times in the last 4 wk, or at least once in the last 12 months.\textsuperscript{17}

Process evaluation outcomes are often assessed following mass events. Various reports of increases in sports club membership followed the 1992 Barcelona Olympics, 1994 Soccer World Cup, and the 2002 Winter Olympics.\textsuperscript{13,18,19} The “rising of the couch potatoes”\textsuperscript{2} reported after the Sydney Olympics was not corroborated by any objective data, but have been widely quoted and used by sport-sector policymakers.

**The Impact of Mass Participation Events on Physical Activity Participation**

There is a paucity of research on the impact of mass participation running or cycling events on subsequent PA. Some events, such as the London or Boston Marathons, are heavily over-subscribed, and attract international media attention.\textsuperscript{20} However, participants are at least moderately active prior to the event. Of greater public health potential is the increased percentage of walkers in road races (close to 40% of participants in the Honolulu Marathon) which suggests that such events have the potential for mass community “reach.” Unfortunately, no evaluations have assessed pre-event PA patterns, or tracked activity post-event.

**The Impact of Health Promotion Events on Physical Activity**

Few mass PA events have provided evaluation data. Recently, evaluation data were collected following mass events designed to promote active travel, such as Australia’s Walk to Work Day;\textsuperscript{21} this demonstrated a modal shift in active commuting. Another project assessed “Walk Safely to School Day” among Australian schoolchildren,\textsuperscript{22} and showed impact on schools’ participation, and a 7% increase in the prevalence of walking to school. In Canada, more schools participated in the International Walk to School Day 2001 to 2003.\textsuperscript{23} In Switzerland, car-free human-powered mobility (HPM) events have taken place since 2000, with a total of 220,000 participants counted at seven events in 2004.\textsuperscript{24} The cycle-promoting “Ride to Work Day” in Victoria (Australia)\textsuperscript{25} demonstrated increased participation and increased first-time riders. Five months after the 2003 event, 23% were still riding to work.\textsuperscript{25} The California Bike Commute Week had 25,000 participants and 35% first-time riders;\textsuperscript{26} although 70% of these first-time riders are said to have continued biking to work, no data support this. Other events encouraging cycling may attract those who already cycle and are sufficiently active for health.\textsuperscript{27}

**Mass Health Promotion Events**

Several mass single-day health promotion events target PA, mostly embedded within multi-strategy initiatives. This is true in developing nations, where mass events are part of national PA strategies in the Philippines, Malaysia, Fiji, Thailand, and Brazil.\textsuperscript{4} A specific example is Agita Galera (“active community day”), an annual event as part of the Agita Sao Paulo community-wide PA program, that reaches
<table>
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<tr>
<td><strong>Minimum evaluation</strong></td>
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<tr>
<td>Process evaluation of event</td>
<td>Monitoring implementation of community components; enumerating attendees;</td>
<td>Systematic efforts at process evaluation; planning data collections and possible</td>
<td>For a mass running event, collect online data from registrants; follow up a random sample of participants</td>
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<td>implementation</td>
<td>describing the demographic characteristics of participants; assessing the</td>
<td>follow up of event participants</td>
<td>with a web-based survey regarding their PA habits prior to and following the event</td>
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<td>proportion who are “new” participants or previously inactive.</td>
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<td>Innovative research methods could include online registration data collections;</td>
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<td>follow-up surveys of event participants to assess maintained change(s)</td>
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<td>Process evaluation of other</td>
<td>Describing mental health, well-being, and social health status of participants;</td>
<td>Systematic efforts at quantifying mental and social benefits</td>
<td>Assess what proportion of women participating in a walking challenge experience psychosocial benefits</td>
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<td>physical activity-related behaviors</td>
<td>identify representativeness of participants before generalizing to population-level effects</td>
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<td>e.g., social cohesion, mental</td>
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<td>health</td>
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<td><strong>Substantive evaluation</strong></td>
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<td>Assessing event “reach”</td>
<td>Assess the proportion of a whole population that are aware of, interested in,</td>
<td>Public health research expertise to define and measure “reach”</td>
<td>For example, assess the proportion of all women in a community that participate in a “women’s walking</td>
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<td>and engage in physical activity as a result of mega or mass events</td>
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<td>challenge”</td>
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<td>Assess effects of an event on physical activity</td>
<td>Appropriate representative sample population-level surveys regarding physical activity in the exposed regions/city prior to and following the mega event. Even better is a quasi-experimental time series design, with multiple pre- and multiple post-event population measurements and comparison communities/regions</td>
<td>Health promotion evaluation expertise, especially in community-level research design and analytic methods</td>
<td>Planned comprehensive population surveys, using validated physical activity instruments, before and after Olympic Games or major events—with sufficient sample size from the host city and from surveys of comparison samples in non-exposed regions</td>
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<td>Assessing the effect of infrastructure on physical activity</td>
<td>Careful environmental audits of infrastructure from community physical activity and active transport perspectives</td>
<td>Expertise in environmental audits and checklists</td>
<td>Physical activity environment audits; measures of walkability, access, and population-level facility usage.</td>
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<td>Using population-level surveillance systems</td>
<td>Link to routine population health surveillance systems, adaptable to local level monitoring Link to non-health surveillance systems, such as population surveys of sport and recreation or transportation surveys</td>
<td>Public health surveillance; population surveys</td>
<td>Asking additional questions in existing surveillance systems regarding participation; monitor trends in exposed host regions or cities compared to elsewhere in a country</td>
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<td>Assessing effects of mass events on correlates of physical activity, e.g., social cohesion, social norms, “active living” culture, psychosocial outcomes</td>
<td>Link to population surveys of mental health and social well-being; or add these questions to physical activity surveys In addition, qualitative and formative research to identify and measure the potential range of these outcomes</td>
<td>Mental and social health surveillance; Expertise in qualitative research</td>
<td>Compare measures from (mental and social health) surveillance systems before and after an event</td>
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students in over 6000 schools. An evaluation of PA change was conducted in one school, but this was in response to a year-long initiative and not to the one-off Agita Galera day.

Large-scale mass-events are promoted by health-related charities. The largest are in the US, involving 1,000,000 annually. Participant numbers are increasing, but no information on their prior PA has been collected.

Effect of Major Events on Physical Activity Culture

While infrastructure developments are obvious post-event benefits, there may be social and community benefits such as social interaction and social capital, improved sporting “culture,” civic pride, social regeneration, and volunteerism. Data from Manchester indicate that volunteers were mostly Caucasian (92%) who already were active.

Major sporting events are a showcase for national sporting prowess, with little evidenced impact on population-level PA participation. Despite the alleged “euphoric mass consciousness” generated among Sydneysiders during the 2000 Olympics, there is no evidence that these feelings translated into PA behaviors. Waitt likened the Sydney Olympics to the ancient Roman notion of “bread and circuses,” where social control was maintained by appeasing the populace with culturally-reinforcing sporting entertainments.

Effect of Major Events on Physical Activity-Promoting Environments

The most common long-term benefits, or “legacies” from hosting major events are physical facilities, and financial resources, sometimes contributing to other improvements, including transport infrastructure. There have been no analyses of the impact of these environmental changes on subsequent PA participation of host communities. Only process evaluation data are available. Following the 2002 Manchester Commonwealth Games, higher than expected use of the new facilities was reported. However, new stadia and infrastructure may not always result in economic and social benefits, sometimes alienating communities and drawing resources from local-level infrastructure development.

Discussion

Our search identified much rhetoric, but limited evidence that mass sporting events impact PA participation at the individual, community, or environmental level. This is similar to Whitelaw and Watson’s review of events and campaigns in the wider health promotion field. There are good examples of evaluations of travel behavior change, which have demonstrated small but positive event effects on PA. Evaluations of major sporting events on PA behavior are scarce, and suggest either a modest, or no effect. Data are limited to process evaluations of sporting club membership, environmental infrastructure development and some information on volunteers and community capacity building. Economic impacts are more commonly evaluated, such as tourism-related images of the host city, urban regeneration, and community pride.
The problem may be a lack of coordinated efforts between the organizers of mass events and public health agencies. The health sector has generally failed to engage with the opportunities provided by mega-events to market the PA message, and has not evaluated the health impact of events. The sports sector agenda seems primarily concerned with elite sporting achievements. To date, no review has challenged the rhetoric regarding population-level flow on effects; the present article demonstrates the lack of population impacts across the categories of mega-events and mass events, with a little more promise shown for health promotion single-day events.

There are methodological difficulties in assessing the impact of major events on PA outcomes, but careful research designs could provide better causal evidence for mass-event effects. Sport-sector efforts at evaluation seldom consider measurement of population-level PA. In order to address this, a framework for evaluation of mega-events is proposed in Table 1, to establish minimum standards for assessing them and their population reach, through to more substantive methods for assessing evidence of event effectiveness.

It may be that the primary agenda of mass sporting events is short-term public entertainment, as “bread and circuses,” rather than a missed public health opportunity. No examples from mass events, with shared interagency planning and a clear public health agenda can be identified to counter this view. Theoretically, mass events might influence PA only when the event is embedded in a broader strategic program. Organized inter-agency campaigns, supported by community-wide programs, coherent policies, and supportive environments are required to increase participation levels. Similarly, Coalter has suggested the 2012 London Olympics might catalyze broader social change, but would require substantial commitment and clear epidemiological designs to evaluate its population impact.

Considerable and extravagant claims continue to be made by hosts of some major events regarding their impact on PA, sports participation, or the social-change agenda. However, the public health potential of mass participation events for PA promotion remains to be realized. If we are to move beyond “bread and circuses,” future mass events should include integrated and multi-sectoral PA and sport-related planning, and commit to investment in research that provides a clearer evidence base.

References


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