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Limited or lasting legacy? The effect of non-mega sport event attendance on participation

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Research question: It is often claimed by event promoters that hosting major sports events will inspire increased participation at grass-roots level. However, evidence of this linkage is scarce. This paper addresses the research gap by examining the legacy effect of ‘non-mega’ events on the sport participation levels of those who attend them.

Research methods: Data gathered using a combination of face-to-face and online surveys with spectators during and following their attendance at one of nine events, held in England between 2010 and 2012, yielded 434 matched responses.

Results and findings: The analysis revealed different types of increases in post-event participation behaviour of both previously active and inactive respondents, including ‘initial’, ‘sustained’ and ‘lagged’ effects. However, attributing causality for these positive changes in activity behaviour to a single event is problematic due to the range of other factors that audiences may experience with the passage of time, including other events.

Implications: The key implication of the research for management practice is that major sport events can have a positive market penetration effect but market development effects are as yet unproven.

Keywords: behaviour change; inspiration; market development; market penetration; transtheoretical model

This paper contributes to the debate on the legacy of sports events for local communities by focusing on the effect of non-mega sports events on sports participation. It builds on the work of Ramchandani and Coleman (2012) and Ramchandani, Kokolakis, and Coleman (2014). The focus of these studies was the initial sense of inspiration reported by audiences during an event to be more active in sport and the factors that underpin the occurrence of an inspiration effect. It is the next stage of progression, moving from the intention of inspiration to the action of participation, which this paper investigates.

Hosting major sports events is widely assumed to deliver a broad range of economic, physical, social and sporting outcomes to local communities lasting beyond the duration of the event itself. However, much of the research on event impacts, outcomes and legacies focuses on mega events such as the Olympic Games or Football World Cup and the economic dimensions of legacy (e.g. Preuss, 2007). Limited consideration is given to small and medium-sized events and wider non-monetary legacies, such as community

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cohesion, civic pride or the fostering of social value through a sense of ‘*communitas*’ (Chalip, 2006). The latter, in part, reflects the historical indicators used by event organisers and funders to measure ‘success’, such as the economic impact on a city or the level and value of media exposure that a place or brand received from an event. These indicators are tangible and necessary for political and financial justification of public and private investment in major events. It has been much more difficult for event organisers to demonstrate and prove other additional effects that can occur as a direct and indirect result of an event taking place in a particular locality.

From an economic perspective, Preuss (2007) distinguishes between ‘impact’ as the change caused by a short-term stimulation of the economy directly through an event and ‘legacy’ as the changes caused over time. Mangan (2008, p. 1896) similarly considers legacy in its simplest form to be a ‘tangible or intangible thing handed down by a predecessor; a long lasting effect of an event or process; the act of bequeathing’. This paper considers the legacy dimension of the inspiration effect, namely any subsequent change in sports participation behaviour (rather than immediate attitudinal change) as a result of attending/watching a major, but not mega, sport event.

The paper analyses data gathered from spectators during and following nine sports events selected by UK Sport for independent analysis. UK Sport is the lead agency responsible for co-ordinating the bidding and staging of major international sport events in the United Kingdom. All the events selected represent non-mega sports events that are smaller in size, scale and scope than mega events such as the Olympic Games. The nine events under investigation included two team events (hockey and rugby), a mass participation event featuring both elite and non-elite participants (triathlon), an age group event (rowing) and five other individual elite events of international sporting significance (athletics, badminton, BMX, trampoline/tumbling and track cycling). Further details about these events and the programme of research undertaken are presented in the Methods section of the paper.

Policy context

There is an important political context that underpins this research surrounding the International Olympic Committee’s decision in July 2005 to award the 2012 Olympic Games to London. Paris was widely perceived to be the city most likely to win the right to stage the 2012 Olympic Games and London was a distinct second favourite. What is thought to have been a deciding factor in London’s favour was the pledge to deliver a lasting legacy, which was subsequently operationalised into four legacy outcomes (Department for Culture, Media and Sport [DCMS], 2010):

Harnessing the United Kingdom’s passion for sport to increase grassroots participation, particularly by young people – and to encourage the whole population to be more physically active;

Exploiting to the full the opportunities for economic growth offered by hosting the Games;

Promoting community engagement and achieving participation across all groups in society through the Games; and

Ensuring that the Olympic Park can be developed after the Games as one of the principal drivers of regeneration in East London.

Of particular relevance to this paper is the first promise to increase participation in sport and physical activity. In England (one of four nations that comprise the United Kingdom and home to 84% of the UK’s population) two targets were set by the Government for Sport England (the arm’s-length body responsible for grassroots sport in England) for the planned increases in participation in sport and physical activity. The first target was to achieve one million people taking part in more sport. This target was designed to increase the proportion of the population taking part in three 30-minute bouts of moderate-intensity sport per week (the ‘3 × 30’ indicator). In essence, this target was about converting people who were already doing one or two 30-minute bouts of moderate-intensity sport per week into people who achieved the 3 × 30 indicator. The second target was to achieve one million more people taking part in sport and physical activity more generally.

In business strategy parlance, the intentions behind the sport and physical activity targets can be described as attempts to drive up the demand for these products on two broad market segments, namely, the already active and the inactive. These are best articulated by using the Ansoff matrix (Ansoff, 1965) as shown in Figure 1.

The first target, to encourage one million people to do more sport, is a market penetration strategy as it is predicated on the existing market for sport (participants) using a product they already consume more intensively. In short, market penetration is concerned with making already active people even more active. By contrast, one million more people doing sport and physical activity is a market development strategy as it seeks to attract current non-consumers (i.e. sedentary people) to the existing products of sport and physical activity. Market development is concerned with converting inactive people into active people.

The paper explores whether the sample of spectators at the nine events reported an increase in participation as a result of attending an event and analyses variations between subgroups of respondents reporting differing pre-event activity levels, including testing for market penetration or market development effects. We argue that there is evidence to suggest that non-mega sports events can inspire an increase in sports participation post-event for some sections of the audience, both initially and over time. The paper concludes

		PRODUCTS	
		Existing	New
MARKETS	Existing	<p>Market Penetration <i>One million people doing more sport e.g. 1x30 and 2x30 achieving 3x30</i></p>	<p>Product Development</p>
	New	<p>Market Development <i>One million more people doing sport and physical activity e.g. 0x30 achieving at least 1x30</i></p>	<p>Diversification</p>

Figure 1. Ansoff matrix.
 Source: Adapted from Ansoff (1965).

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by outlining the limitations of the study and recommendations to progress the research in the future.

Literature review

Participation legacy of engagement with sports events

It is often claimed by event promoters that hosting major sports events will inspire people to choose sport and raise longer term participation levels. Reducing physical inactivity is a desired outcome of investment that resonates with policymakers worldwide given its negative health effect on various diseases and life expectancy (Lee et al., 2012). However, evidence that mega events such as the Olympic Games create a ‘demonstration effect’ or ‘trickle-down effect’ whereby spectators are inspired by elite sporting events and as a result increase their participation in physical and sporting activity is both mixed and limited. Mahtani et al. (2013) carried out a review of systematic reviews to examine if there is an increase in participation in physical or sporting activities following an Olympic or Paralympic Games and concluded that there was a paucity of evidence to support the notion that it leads to increased participation in the host country. A previous systematic review of the health and socio-economic impacts of major events by McCartney et al. (2010) was inconclusive. They found evidence of an upward trend in sport participation from the early 1980s until 1994 in association with the 1992 Barcelona Olympic Games, but in other cases, such as the 2002 Manchester Commonwealth Games, overall participation decreased by 2%. A systematic review by Weed et al. (2009) of the evidence for developing a physical activity and health legacy from the London 2012 Olympic and Paralympic Games similarly suggested mixed evidence for a demonstration effect on participation. In both systematic reviews, the quality of evidence was considered to be poor. Other studies of specific mega events have drawn similar inconclusive findings (e.g. Veal, 2003).

There is some evidence that actually participating in non-mega events has a positive impact on engagement in sport, although the longitudinal effects of increased participation are unknown. For example, Bowles, Rissel, and Bauman (2006) concluded that novice riders significantly increased their participation one month after a mass participation cycling event and Lane, Murphy, and Bauman (2008) showed that the Dublin mini-marathon engaged far more than just already active women within the Irish population and that training for the event was an important stimulus to action for most participants. Furthermore, Crofts, Schofield, and Dickson (2012) examined the physical activity patterns of participants in a women-only mass participation triathlon event and found that 50% of women who were considered ‘insufficiently’ active before the event remained ‘sufficiently’ active three months later. However, there is little (if any) evidence on the link between attending a non-mega event in a non-participant capacity and subsequent (lasting) increases in sports participation.

Two recent studies have considered the changes in attitudes of audiences to participation in sport as a result of attending non-mega sports events. The first of these was a pilot study that measured the extent to which spectators at three events in England felt inspired by their event experience to increase their own participation in sport (Ramchandani & Coleman, 2012). The second was based on a larger sample of 10 events and used logistic regression to analyse the socio-demographic and sport participation profile of the audience as well as the characteristics of an event as predictors of inspiration (Ramchandani et al., 2014). An obvious limitation of these studies is that they

concentrated on the primary ‘impact’ of attendance on intentions during an event and not the ‘legacy’ (or outcome) of increased participation (or behaviour change) after an event. The analysis presented in this paper incorporates 9 of the 10 events included in the Ramchandani et al. (2014) study. It develops the previous findings by providing new insights into the impact of non-mega sports events to inspire people to engage in sport and physical activity and for this inspiration to be converted subsequently into measureable behaviour change.

Conceptual models of participation and engagement in sport

There are numerous theories that have been used to explain participation and engagement in sport and physical activity and several authors have identified these previously. Boardley (2013) and Foster, Hillsdon, Cavill, Allender, and Cowburn (2005) outlined some of the more popular theories applied in this context including the social cognitive theory and self-efficacy theory by Bandura (1996, 1997), self-determination theory by Deci and Ryan (1985; Ryan & Deci, 2000), theory of planned behaviour by Ajzen & Madden (1986), theory of reasoned action by Fishbein and Ajzen (1975) and transtheoretical model (TTM) by Prochaska, DiClemente, and Norcross (1992). Boardley (2013) suggested that these models reveal several themes that have relevance to the debate surrounding the potential for a demonstration effect resulting from major events including confidence and competence, attitudes and norms, and stages of participation.

The systematic review of literature by Weed et al. (2009) for developing a physical activity and health legacy from the 2012 Olympic and Paralympic Games identified three models that have been widely used to examine engagement with sport and physical activity, although none of them were originally developed in this context. These are the TTM (Prochaska et al., 1992), the Exercise Adoption Model (Brooks, Lindenfeld, & Chovanec, 1996) and the Psychological Continuum Model (Funk & James, 2001). A common theme of these models is that each suggest a staged process of engagement in physical activity and sport and describe initial stages or processes that relate to changes in attitude, intention and awareness, rather than actual behavioural change with participation as a defined outcome (Boardley, 2013).

The TTM is the most widely adopted and researched in the literature relating to engagement with sport and physical activity (e.g. Foster et al., 2005; Marshall & Biddle, 2001; Spencer, Adams, Malone, Roy, & Yost, 2006; Weed et al., 2009). Originally developed within psychology to understand addictive behaviours, the TTM suggests that modification of behaviour involves progression through five stages – pre-contemplation (not ready, no intention of becoming active), contemplation (getting ready, thinking about becoming physically active), preparation (ready, making small changes in physical activity behaviour), action (meeting a criterion of activity, but only recently) and maintenance, meeting a criterion of activity for a sustained period of time). The TTM is a dynamic framework where people move forwards and backwards through stages in the process of change (Mair & Laing, 2013). An adaptation of the model to incorporate the notion of inspiration (gained from attending an event) and participation is shown in Figure 2.

The TTM allows us to understand *when* change occurs (stages of change) and *how* change occurs (process of change). Prochaska et al. (1992) suggested that change processes are ‘covert and overt activities and experiences that individuals engage in when they attempt to modify problem behaviors’ (p. 1107). They go on to suggest 10 change

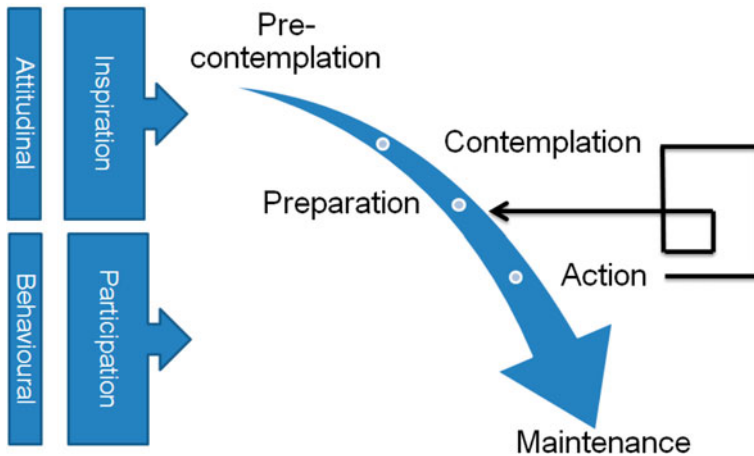


Figure 2. Stages of change (TTM).
Source: Adapted from Prochaska et al. (1992) and Mair and Laing (2013).

processes that have been identified across various health-related problems (Figure 3). If physical inactivity or under-activity is considered to be the problem behaviour, and by attending an event, people become inspired to do more sport or physical activity, then inspiration is acting as a catalyst for, and predictor of, change.

Mair and Laing (2013) suggested that the first three stages and associated processes can be considered to have an attitudinal dimension, focusing on changing attitudes, with the fourth and fifth stages and associated processes having behavioural dimensions. It is therefore the early stages of the TTM that appear to be most susceptible to messages delivered through events and the points at which the inspiration effect, as an intermediary outcome, may later influence the process of behaviour change. It is likely that in the early

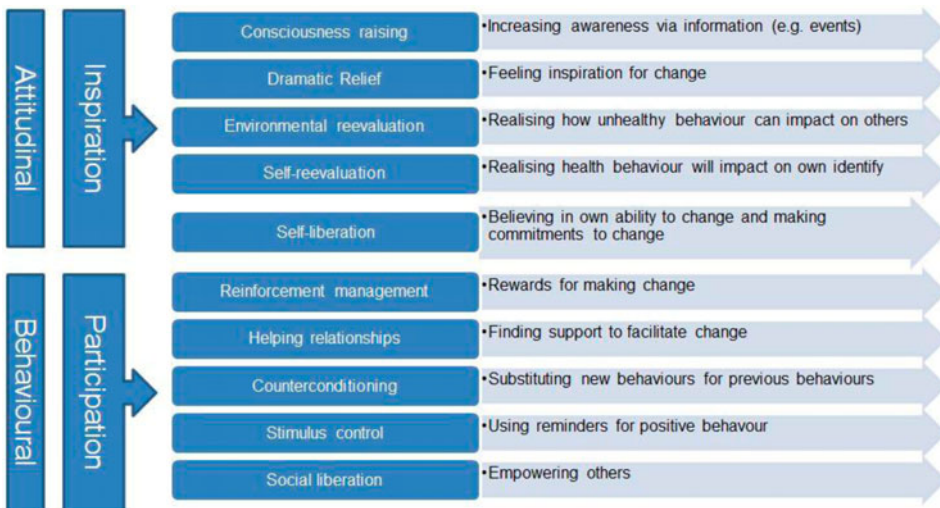


Figure 3. Processes of change (TTM).
Source: Adapted from Prochaska et al. (1992) and Mair and Laing (2013).

stages inspiration gained from attending an event increases people's awareness of sport (conscious raising) and gives people belief in their own ability to change (self-liberation). The latter processes of change (behavioural) such as helping relationships (finding people supportive of change) and stimulus control (using reminders and cues that encourage positive participation behaviour) are more likely to be linked to strategies, interventions and programmes seeking to help people increase exercise behaviour. It is unclear from the literature whether the inspirational effect increases the likelihood of staged progression of behaviour change towards converting non-active people to active people (market development) and already active people to being even more active (market penetration). Furthermore, it is not known whether inspiration gained from attending an event influences different 'early' stages of change (attitudinal) for existing participants and non-participants. Based on the above, the following key questions guided this research:

- To what extent are audiences likely to increase their participation in sport or active recreation following their attendance at a live sporting event?
- Does this outcome vary for different types of attenders, that is for individuals who were previously inactive compared with those who were already active?
- Can any post-event changes in participation behaviour be attributed to a specific event?
- What other factors beyond attending a specific event influence people's activity levels?
- How do the findings relate to the relevant theory and what are their implications for policy?

Methods

Events

The research covered nine events held in England between 2010 and 2012 (Table 1) and was divided into two phases. The selection of these events was made by UK Sport, who commissioned the programme of research, in order to evaluate the prevalence of the wider benefits of its investment in elite sport, which have historically been evaluated in economic terms. Seven of the nine events were funded by UK Sport's World Class Events Programme. However, it is relevant to note that their criteria for receiving UK Sport

Table 1. Overview of the nine events.

Year	Event	Phase I		Phase II
		Sample	Contact details	Sample
2010	Women's Hockey Champions Trophy	781	160	52
2010	London Triathlon	781	130	31
2010	Women's Rugby World Cup	750	197	50
2011	London Grand Prix Athletics	793	121	32
2011	World Badminton Championships	768	138	39
2011	BMX Supercross World Cup	778	154	54
2011	World Rowing Junior Championships	752	134	35
2011	Trampoline & Tumbling World Championships	741	180	53
2012	Track Cycling World Cup Classics	849	227	88
	Overall	6993	1441	434

funding or inclusion in this research were not incumbent upon their perceived ability to facilitate increased participation by audiences. In other words, UK Sport did not have any preconceived notions about the potential of these events to stimulate participation increases; rather it commissioned the research in order to test the existence of any such effects. In comparison with discontinuous mega events of global interest like the Olympic Games or the Football World Cup, the events shown in [Table 1](#) are fairly routine, albeit still ‘major’ competitions in their respective sporting calendars.

Participants and data collection

Overall, Phase I of the research yielded 6993 respondents across the nine events, of whom 1441 agreed to be contacted to take part in future follow-up research by providing an email address. The research was concerned solely with adults, who are defined as people aged 16 years or over. Further methodological details for the Phase I research are documented in the authors’ previous publications (Ramchandani & Coleman, 2012; Ramchandani et al., 2014). Respondents from Phase I who had provided their contact details were invited to complete an online survey approximately one year following the conclusion of each event in order to explore actual changes in their post-event participation behaviour. In the case of the track cycling event, the follow-up period was six months in order to minimise any contamination effects caused by the build-up to the London 2012 Olympic Games.

Of the 1441 individuals approached in Phase II, 434 responded to the follow-up survey, a response rate of 30.1%. The minimum number of respondents from any one event was 31 and the maximum was 88 ([Table 1](#)). This paper evaluates the findings from Phase II based on the cohort of 434 respondents who engaged with both phases of the research. However, baseline findings relating to the initial sense of inspiration that the Phase II sample had reported during an event are also considered.

Measurements

Changes in sport participation behaviour

Respondents were asked how their participation had changed following an event compared with pre-event levels; a 5-point ordinal scale was used (much more, slightly more, about the same, slightly less and much less), which revealed whether participation had: (1) increased, (2) stayed the same or (3) reduced post-event. Increased participation post-event was further operationalised taking into account a temporal effect, which generated three distinct groups:

- Initial increase: Respondents doing more sport/active recreation in the first three months following their attendance at one of the nine events, than they did pre-event.
- Sustained increase: Respondents doing more sport/active recreation in the first three months following their attendance at one of the nine events and at the time of the follow-up survey (i.e. six months to one year post-event), than they did pre-event.
- Lagged increase: Respondents not doing more sport/active recreation in the first three months following their attendance at one of the nine events but doing more

at the time of the follow-up survey (i.e. six months to one year post-event), than they did pre-event.

In addition, where respondents indicated an increase in post-event participation, a categorical scale was used to identify whether this increase was in a specific sport (featured at the event that they attended), in other sports or both.

Inspirational effect

The inspirational effect was retrieved from Phase I of the study, which involved primary data collection, using a standard self-completion survey from the spectators at the nine events. The inspirational effect (an attitudinal change) was captured using a 5-point Likert scale of 'strongly agree' to 'strongly disagree' in response to the statement: 'as a result of attending this event, I am inspired to do sport more frequently than I normally do'. The wording of the inspiration question was designed to capture responses from existing, regular and infrequent, sport participants as well as non-participants, in order investigate potential market penetration and market development effects. (The Phase I survey also included additional questions concerned with demographic information and existing predisposition to sport. Moreover, those who reported being inspired were also questioned about the attitudinal changes brought about by the event and the interventions that could facilitate participation, but these aspects are not the focus of this paper.)

Event influence and other impact factors

Ordinal scales were used in relation to the level of influence attributed by respondents to any increases in post-event participation to attending a particular event (very influential, moderately influential, slightly influential and not at all influential). Other impact factors were measured using a 4-point Likert scale (significant impact, moderate impact, slight impact and no impact).

Data analysis

The small sample sizes associated with the nine events included in this research made it difficult to conduct meaningful analysis of the data at an event-specific level or indeed to conduct any statistically robust cross-event comparisons. The analysis therefore concentrates on the overall data set of 434 respondents. Frequencies and indices are calculated to illustrate the effect of event attendance on participation behaviour. The main software used to analyse the raw data was SPSS. The processed data from SPSS were transported to Excel spreadsheets for further analysis.

Results and discussion

Participant characteristics

There was a fairly even split between male (54.3%) and female (45.7%) respondents to the Phase II follow-up survey. The age breakdown of respondents was as follows: 14.5% were aged 16–24; 20.5% were 25–34, 24.6% were 35–44; 22.5% were aged 45–54; 14.7% were 55–64; and 3.1% were aged 65 and over. The majority did not have a disability that limited their daily activities (94.7%). Prior to their attendance at the events

at which they were surveyed in Phase I, just over half (50.9%) had taken part in some sport on average three or more days per week in the previous four weeks (very active) and a further 38.6% had participated on 1–11 occasions (occasionally active), whereas 10.5% were inactive during that period. Furthermore, 63% had said during Phase I that they felt either strongly inspired (17% strongly agreed) or inspired (46% agreed) by a specific event to take part in sport more frequently than they did currently.

The level of participation in sport by the sample as a whole is worth putting into context with the adult population of England. Within the sample, 51% met the 3×30 criterion, whereas among the adult population in England as a whole the corresponding statistic was 21%. When we consider people who took part in some, but less than 3×30 bouts of, moderate-intensity activity per week, the sample score was 39% and for all adults in England the score was 28%. This in turn means that 10% of the sample respondents were classified as inactive compared with 51% of the population as a whole. We therefore conclude that the sample is atypical of the population as a whole by virtue of its much higher levels of sport participation.

In order to analyse the effect of events on market penetration and market development, four distinct ‘clusters’ or ‘market segments’ of respondents were created, based on respondents’ participation levels in sport prior to their event attendance (whether they met a specified threshold of sport participation – the 3×30 indicator), and their predisposition to the specific sport featured at the event they had attended and at which they were first surveyed. The following four respondent clusters were distinguished:

- Respondents undertaking sport on a regular basis (3+ times per week for at least 30 minutes at moderate intensity) and a participant in the sport that was featured at the event that they attended (34.3% of the sample);
- Respondents undertaking sport on a regular basis but a non-participant in the sport that was featured at the event that they attended (16.6% of the sample);
- Respondents not undertaking sport regularly but a participant in the sport that was featured at the event that they attended (23.4% of the sample); and,
- Respondents not undertaking sport regularly or at all and a non-participant in the sport that was featured at the event that they attended (25.7% of the sample).

Aggregate analysis

Some 60.8% of the 434 respondents were doing about the same amount of sport in the three months following their attendance at one of the nine events compared with their pre-event activity levels, whereas 4.6% reported a decline in participation in this initial time period. A notable 34.8% of the sample reported an initial increase in participation post-event. Of those who reported an initial increase, 69.5% were still participating more often at the time of the follow-up survey (i.e. 12 months later apart from the track cycling event) than they were prior to their event attendance. Hence, 24.2% of the overall sample demonstrated a sustained increase in participation post-event (i.e. $69.5\% \times 34.8\%$). Moreover, there was also a lagged increase reported by 11.3% of respondents (i.e. not initially but at the time of the follow-up survey).

While these findings provide some evidence of positive changes in activity behaviour among the sample, it does not imply that this was necessarily caused by, and attributable to the events as these changes may well have occurred regardless of attendance at an event. The initial, sustained and lagged effects could therefore be regarded as being

'gross' rather than 'net' changes in participation. In order to test the extent to which an event may, in fact, have stimulated such a change, we have converted the gross figures into net figures. The conversion process takes into account two down-weighting factors, as follows:

- First, we discount the proportion of respondents who did not report being inspired by an event during Phase I of the research. (B in Table 2)
- Second, we consider the perceived level of influence on participation that respondents attributed to a given event. (D in Table 2)
- The calculation of the net effects of event attendance on participation is presented in Table 2 and explained below.

As stated previously, 34.8% of respondents reported an initial increase in participation following their event attendance. During Phase I, around three-quarters of this group (75.5%) had reported that they felt inspired (to some extent) as a result of attending an event to participate in sport more frequently than they did normally. Consequently, the gross initial change had been reduced from 34.8% to 26.3%. The latter figure was adjusted further to only account for the proportion of those who had increased participation initially and reported an inspiration effect, and who also cited their attendance at an event as being at least 'slightly influential' in leading them to do more sport. This adjustment meant that the net initial increase in participation was 24%. This statistic corresponds to an index score of 69 meaning that 69% of any positive initial change in behaviour can be attributed to the event. Following the same steps revealed a net sustained increase of 17.1% (index = 71) and a net lagged increase of 7.1% (index = 63). It is interesting to note that for those reporting a lagged increase in participation, the index score of 63 is the lowest across the three groups and is primarily driven by a lower 'event influence factor' (86.1%) relative to the other two categories, which have scores of 91.2 and 94.9, respectively. These findings point to the conclusion that other contaminating factors must have been present and contributed to the behaviour changes reported.

Those who reported any positive effects were asked to identify the broad sport categories in which they had increased their participation levels (i.e. the sport featured at the event that they attended or other sports and activities). This analysis is shown in Table 3. There is some crossover between the two broad categorisations, with some respondents undertaking more of a particular sport and also other sports. This

Table 2. Derivation of net changes in post-event participation ($n = 434$).

		Initial increase	Sustained increase	Lagged increase
Gross change %	<i>A</i>	34.8	24.2	11.3
Inspiration factor % ^a	<i>B</i>	75.5	74.3	73.5
Adjusted change %	$C (= A \times B)$	26.3	18.0	8.3
Event influence factor % ^b	<i>D</i>	91.2	94.9	86.1
Net change %	$E (= C \times D)$	24.0	17.1	7.1
Index score	$F (= E/A \times 100)$	69	71	63

Note: ^aPercentage of respondents who felt inspired (to some extent) as a result of attending an event.

^bPercentage of inspired respondents who attributed increases in participation to the event (at least slightly influenced).

Table 3. Gross and net changes in sport-specific and other participation ($n = 434$).

		Initial increase	Sustained increase	Lagged increase
Featured sport(s)	Gross change %	20.0	13.4	6.5
	Net change %	15.4	10.6	4.4
	Index	77.0	79.3	67.9
Other sports	Gross change %	25.3	18.4	9.7
	Net change %	16.8	12.4	6.0
	Index	66.4	67.5	61.9

phenomenon explains why the sum of the two categories exceeds the overall figures (for each type of increase) shown in Table 2 previously.

There are two key findings that emerge from Table 3. First, the highest gross and net changes are found in sports and activities other than the sport featured at the event at which respondents were surveyed. This is a surprising finding as the basic thinking behind the 'demonstration effect' is that having seen a particular sport demonstrated at an event, those who are inspired to take up sport would gravitate towards the sport featured in the event (Weed et al., 2009). Second, the index scores for other sports and activities are all lower than the corresponding scores for the featured sports. This in turn means that the catalytic effect or extent of attribution is lower for other sports and activities than for the sport featured at the event. This interpretation in turn supports the notion that other contaminating factors must also be involved.

The analysis thus far has not differentiated between those who were already active in sport and those who were not. Consideration of people's predisposition to sport is important in order to make inferences about the market penetration (people doing more sport) and market development (more people doing sport) potential of events. These concepts are examined in the next section.

Respondent clusters

Results on the four clusters are presented in Table 4. In broad terms, any increase in participation for the first two clusters corresponds to a market penetration effect and for the last two clusters a market development effect. The analysis for these clusters focuses on the net (rather than gross) increases in post-event participation as these are attributed by respondents to event attendance. Consistent with the overall picture, event-related behaviour change across all clusters is most likely to occur in the initial post-event period,

Table 4. Net changes by respondent clusters

Cluster	Increase type (%)		
	Initial	Sustained	Lagged
Regular sport participant and participant in featured sport	27.2	18.4	8.8
Regular sport participant and non-participant in featured sport	18.3	14.1	5.6
Infrequent sport participant and participant in featured sport	32.0	22.0	4.0
Infrequent/non-sport participant and non-participant in featured sport	14.5	10.9	9.1
Overall	24.0	17.1	7.1

with the majority of this increase being sustained six months to one year following an event; the lagged increases are generally modest in comparison (Table 4).

There is also indicative evidence, given the small subsample sizes associated with each cluster, that the largest increases in initial and sustained participation were among infrequent sport participants who also took part in the sport featured at an event. Around one-third of this group (32%) increased their participation initially with more than one in five (22%) sustaining this increase. Conversely, those who were not regularly or not at all active and did not participate in the sport featured at an event were least likely to demonstrate positive changes in initial and sustained participation levels. However, this cluster was most likely to exhibit positive lagged changes. Comparisons between the different clusters also indicate limited variations in lagged participation effects, which range between 4% and 9%.

Figure 4 presents the net changes in sport-specific and other participation, whether initial, sustained or lagged, by the four clusters. There are only marginal differences between the proportionate increases in the two categories of participation for the two clusters involving existing participants in the sport featured at an event. For the two other clusters involving non-participants in a specific sport, however, the likelihood of increased participation in other sports was around twice as much as any increase in the sport featured at an event. Thus, even though respondents may not necessarily participate in the sport they watched at an event, the data for this sample suggest that there have been wider market penetration and market development effects that would probably not have been expected and which are without precedent in the literature.

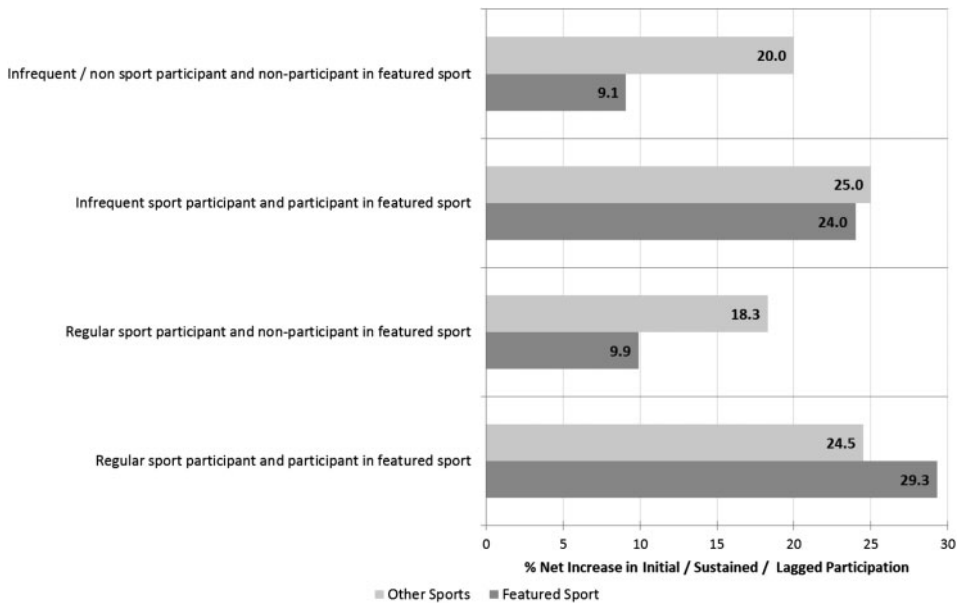


Figure 4. Net changes in sport-specific and other participation by respondent clusters.

Attribution and impact of other factors

Events do not take place in a vacuum. Despite the evidence presented in favour of the net effects of event attendance on increasing participation, it would be somewhat naïve to infer that by simply attending a one-off sport event people will be driven to be more active in sport, not least because of the sheer volume of such events that audiences may experience on a regular basis. For example, UK Sport helped to stage in excess of 100 major sporting events in the United Kingdom in preparation for the London 2012 Olympic Games. In recognising that there may have been other influences on post-event changes in participation, we present in Figure 5 the factors reported by respondents (over and above their event attendance) that had some impact on their participation.

The two most influential factors were linked to watching other major sports events (apart from those included in this research), either on television or live at the event. This finding reinforces the potential of the demonstration effect for increasing participation in sport particularly among existing participants. The relative impact of other factors listed in Figure 5 (e.g. taster sessions, meeting athletes) might be limited by the extent to which respondents had the opportunity to experience them between Phase I and Phase II. Moderate to strong correlations were found between the overall impact ratings of the factors and the impact ratings according to the different respondent clusters examined ($0.5 < r < 0.9$). Therefore, a broadly consistent pattern emerged in the importance of factors for each cluster, regardless of respondents' sport participation profile. The main implication of these findings is that the attribution of post-event net increases in participation by previously active and sedentary audiences to a specific event is not necessarily clear cut. In practice various factors are likely to have an influence on behaviour change that compromises our ability to attribute any such change to attendance at a specific sport event.

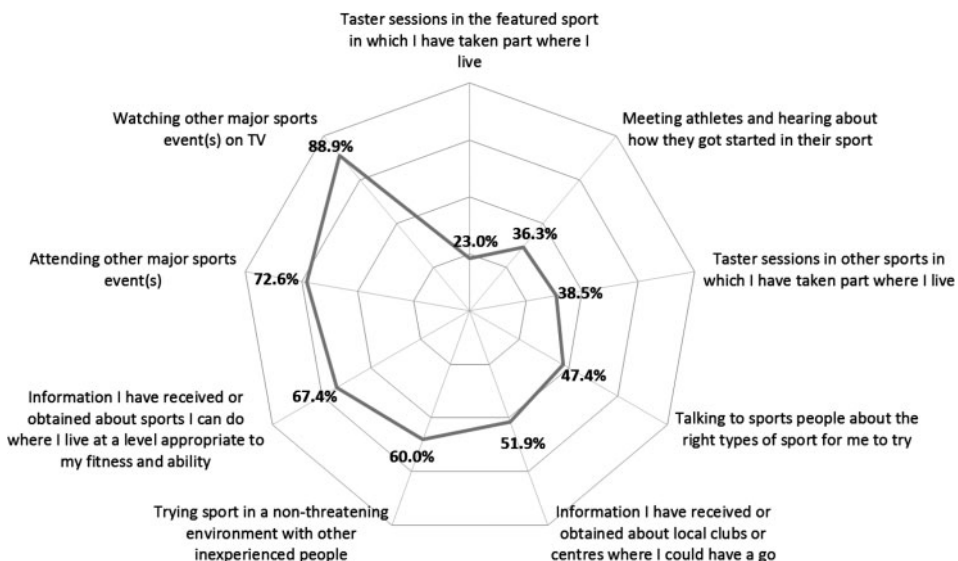


Figure 5. Influence of other factors on participation increases. The data presented in this figure relate to respondents for whom there was a net change in initial, sustained or lagged participation.

The findings presented thus far have addressed the first four research questions outlined in the conclusion to the literature review. In the next section, we consider the fifth research question – the relevance of the findings to theory and their practical implications.

Theoretical relevance and practical implications

From the literature, it was established that the TTM has traditionally been the most widely adopted model for examining engagement in sport and physical activity; therefore, its relevance to the findings are considered here. Prochaska et al. (1992) suggest that there are two major dimensions to the TTM:

The stages of change represent a temporal dimension that allows us to understand *when* particular shifts in attitudes, intentions, and behaviours occur. The processes of change are a second major dimension of the transtheoretical model that enable us to understand *how* these shifts occur. (p. 1107)

In relation to understanding the temporal dimension, it is difficult to pigeonhole the changes in respondents' attitudes and behaviours to the specific stages of the TTM because the research was not set up to achieve this. For example, the survey instrument in both phases did not gather data about whether those who were not already (or sufficiently) active in sport were 'pre-contemplators', 'contemplators' or 'in preparation'. This represents both a limitation of the current research and an area for consideration in the design of future research.

Around three of four respondents in this research who reported initial, sustained or lagged increases post-event had also reported being inspired during an event to participate in sport more often. Thus, in the context of the second dimension of the TTM and understanding *how* change occurs (processes of change), it is primarily through 'consciousness raising' (increasing awareness via information at events) and 'dramatic relief' (feeling inspiration for change as a result of attending event). From a behavioural perspective, the research presented in this paper investigates the TTM process of 'counterconditioning', namely the substitution of new behaviours for previous behaviours. This process applies to both inactive and active audiences. With respect to the former, this means moving from a sedentary to active state; for the latter it is about being even more active. However, the findings indicate that the counterconditioning process is more evident in the case of existing participants, which is in line with the evidence from previous systematic reviews (Mahtani et al., 2013; McCartney et al., 2010; Weed et al., 2009).

Beyond their theoretical relevance, the results have some practical implications for event organisers, funders and policymakers. The nature of the sample indicates that audiences drawn to sport events are primarily active in sport. If this is correct, then it effectively constrains the extent to which events can act as a catalyst for increasing participation among the sedentary. In the euphoria of attending an event, some attendees report an inspiration to participate more often in sport. The actual conversion from inspiration (attitudinal change) to increased participation (behaviour change) occurs for a subset of these attendees. The attribution of any positive change in participation behaviour post-event to the sense of inspiration felt/reported by spectators during a specific event occurs for an even smaller subset of people. These issues combined with

the range of other influential factors at play make it problematic for event organisers to lay claim to any positive outcomes achieved.

Consistent with the notion of the demonstration effect, there appear to be market penetration effects to which event attendance contributes. While market penetration effects have their merits, in this context they do not lead to more people taking part in sport. The market development effects identified in this research are relatively minor compared with the market penetration effects, due in part to the high predisposition to sport for those who attend sports events and the lower tendency to increase participation among attendees who are the least active (Ramchandani & Coleman, 2012; Ramchandani et al., 2014). On the basis of these findings, the logic behind claims that sports events can have a market development effect is questionable. Those seeking to achieve such an effect from organising or funding sports events need to first think about how they can attract inactive individuals and make them feel sufficiently inspired in order to make positive changes in their behaviour. What is clear is that an event in and of itself will not generate new or increased participation and that other factors also need to be considered, including leveraging tactics (e.g. Chalip 2006; Taks, Green, Misener, & Chalip, 2014).

Conclusion

What is known from previous research is that non-mega events have the power to inspire audiences to be more active in sport and that the notion of inspiration varies across different population segments and across different types of events. The added contribution of this study is that it explores the transition between the inspiration derived from attending an event and subsequent changes in sports participation behaviour. The longevity of such behavioural changes and their attribution to event attendance is also examined.

The authors acknowledge that there are some limitations to the research. The absolute size of the Phase II sample was constrained by the number of valid email addresses provided by respondents during Phase I and the eventual response rate to the follow-up online survey. Moreover, the research relies on a self-report methodology, which could be affected by response bias. During both phases of data collection, the research attempted to mitigate this issue by ensuring confidentiality of responses in order to encourage respondents to provide reliable answers.

The sample size prevented further analysis of changes associated with different types of events. This is one direction for future research, along with further inquiries into why any intentions to undertake more sport are not confined to the sport being observed at an event, but also extend to sport and physical activity more generally. Future research in this area would also benefit from closer alignment with theoretical frameworks such as the TTM, as well as consideration of alternative definitions of what is meant by the terms 'sport' and 'participation'.

In conclusion, the evidence from this research indicates that non-mega sports events have the potential to contribute to increases in participation by those who attend them. Nevertheless, given the dominance of the market penetration effect over the market development effect in this research, the key implication for management practice is that while exposure to an event facilitates increased participation by those who are already active, more needs to be done to change sedentary behaviour, beyond simply hosting an event. Fundamentally, it can be argued that what has happened in the nine events featured

in this paper is successful preaching to the converted but a distinct absence of missionary work.

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